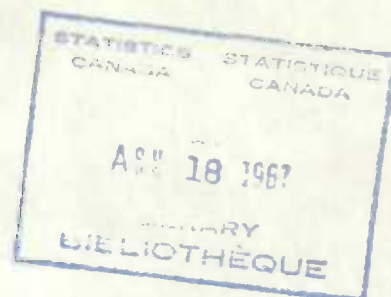


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THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1952



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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¢
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- 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, 1952

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 1952 totalled \$266,721,382 compared with \$262,972,790 in 1951. 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 1952 cost \$50,571,452, including 11,176,775,949 k.w.h. of purchased electricity at \$26,712,955.

The value of process supplies consumed during the year amounted to \$52,575,665.

There were 24,608 persons employed by the industry. Earnings of the employees amounted to \$87,964,295. The man-hours of labour totalled 55,188,884.

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, 1950-1952

| | 1950 | 1951 | 1952 |
|---|------------------------|---------------------|---------------------|
| Number of companies | 10 | 10 | 10 |
| Number of plants | 17 | 17 | 18 |
| Number of employees — Administrative and office | 3, 134 | 3, 748 | 4, 066 |
| Workmen | 16, 729 | 19, 066 | 20, 542 |
| Total | 19, 863 | 22, 814 | 24, 608 |
| Earnings — Administrative and office | \$ 10, 940, 723 | 13, 816, 942 | 16, 290, 926 |
| Workmen | \$ 47, 807, 639 | 61, 657, 563 | 71, 673, 369 |
| Total | \$ 58, 748, 362 | 75, 474, 505 | 87, 964, 295 |
| Gross value of products ¹ | \$ 669, 882, 806 | 861, 315, 930 | 837, 074, 065 |
| Estimated cost of ores, concentrates, etc., treated | \$ 397, 490, 223 | 507, 247, 437 | 467, 205, 566 |
| Cost of fuel and purchased electricity | \$ 38, 473, 238 | 44, 684, 200 | 50, 571, 452 |
| Process supplies (other than ores, fuel, etc.) | \$ 31, 207, 564 | 46, 411, 504 | 52, 575, 665 |
| Value added by smelting (net) ² | \$ 202, 711, 781 | 262, 972, 790 | 266, 721, 382 |

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, 1950-1952 (Administrative and office employees not included)

| Month | 1950 | | 1951 | | 1952 | |
|---------------------------------|----------|--------|---------|------------------------|--------------|--------|
| | Male | Female | Male | Female | Male | Female |
| | (Number) | | | | | |
| January | 15, 501 | 68 | 17, 603 | 59 | 19, 906 | 61 |
| February | 15, 469 | 66 | 18, 098 | 59 | 19, 961 | 60 |
| March | 15, 588 | 67 | 18, 386 | 60 | 20, 017 | 60 |
| April | 15, 985 | 64 | 18, 558 | 60 | 19, 908 | 60 |
| May | 16, 648 | 64 | 18, 851 | 60 | 20, 341 | 63 |
| June | 16, 977 | 63 | 19, 736 | 60 | 20, 273 | 71 |
| July | 17, 170 | 67 | 19, 889 | 64 | 20, 795 | 74 |
| August | 17, 205 | 68 | 19, 820 | 62 | 20, 946 | 60 |
| September | 17, 284 | 69 | 19, 139 | 60 | 21, 033 | 71 |
| October | 17, 371 | 67 | 19, 232 | 60 | 21, 026 | 70 |
| November | 17, 353 | 67 | 19, 390 | 81 | 20, 776 | 73 |
| December | 17, 390 | 69 | 19, 577 | 57 | 20, 692 | 73 |
| Average | 16, 662 | 67 | 19, 005 | 61 | 20, 232 | 68 |
| | | | | Total man-hours worked | | |
| | | | | 1951 | 1952 | |
| Administrative and office | | | | 9, 561, 287 | 10, 405, 571 | |
| Workmen | | | | 43, 470, 333 | 44, 783, 313 | |
| Total | | | | 53, 031, 620 | 55, 188, 884 | |

TABLE 3. Average Annual Metal Prices, in Canadian Dollars, 1943-1952

| Year | Gold | Silver | Copper | Lead | Zinc |
|------------|-----------|----------|---------|---------|---------|
| | Troy oz. | Troy oz. | Pound | Pound | Pound |
| | (Dollars) | | | | |
| 1943 | 38. 50 | 0. 4525 | 0. 1175 | 0. 0370 | 0. 0400 |
| 1944 | 38. 50 | 0. 4300 | 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. 7500 | 0. 2235 | 0. 1804 | 0. 1393 |
| 1949 | 36. 00 | 0. 7425 | 0. 1997 | 0. 1580 | 0. 1335 |
| 1950 | 38. 05 | 0. 8082 | 0. 2342 | 0. 1445 | 0. 1565 |
| 1951 | 36. 85 | 0. 9455 | 0. 2770 | 0. 1840 | 0. 1935 |
| 1952 | 34. 27 | 0. 8352 | 0. 2854 | 0. 1619 | 0. 1742 |

TABLE 4. Production of New Gold and Silver, 1948-1952 (From all types of ores)

| Year | Gold | | Silver | |
|------------|-------------|-------------|-------------|------------|
| | Fine ounces | \$ | Fine ounces | \$ |
| 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 |
| 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 |

TABLE 5. Source of Canadian Gold Production, 1948-1952

| Source | 1948 | 1949 | 1950 | 1951 | 1952 |
|---|------------|-------|-------|-------|-------|
| | (Per cent) | | | | |
| In alluvial gold | 2.23 | 2.35 | 2.43 | 2.49 | 2.08 |
| In crude gold bullion produced at mines | 83.19 | 83.94 | 81.51 | 81.66 | 83.22 |
| In base bullion produced at lead smelters | 0.22 | 0.23 | 0.38 | 0.33 | 0.39 |
| In blister copper | 10.01 | 9.71 | 12.26 | 12.20 | 11.37 |
| In ores, matte, slags, etc., exported | 4.35 | 3.77 | 3.42 | 3.42 | 2.94 |

TABLE 6. Source of Canadian Silver Production, 1948-1952

| Source | 1948 | 1949 | 1950 | 1951 | 1952 |
|--|------------|-------|-------|-------|-------|
| | (Per cent) | | | | |
| In silver-cobalt ores | 6.08 | 5.41 | 12.68 | 12.80 | 19.21 |
| In base bullion ¹ | 41.03 | 52.81 | 53.05 | 51.84 | 48.01 |
| In gold bullion and placer | 3.82 | 3.84 | 3.06 | 3.21 | 2.83 |
| In blister and anode copper | 27.47 | 27.00 | 22.04 | 21.93 | 18.66 |
| In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores) | 21.80 | 10.94 | 9.17 | 10.22 | 11.29 |

1. Includes silver bullion from silver-lead ores.

TABLE 7. Production of Copper, 1948-1952 (From all types of ores)

| Year | Copper in all forms ¹ | | Refined copper ² |
|------------|----------------------------------|-------------|-----------------------------|
| | Tons | \$ | Tons |
| 1948 | 240,732 | 107,159,756 | 221,275 |
| 1949 | 263,457 | 104,719,151 | 226,083 |
| 1950 | 264,209 | 123,211,407 | 238,204 |
| 1951 | 269,971 | 149,026,216 | 245,466 |
| 1952 | 258,038 | 146,679,040 | 196,320 |

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

2. Does not include a small tonnage recovered from scrap in secondary smelters.

NON-FERROUS METAL PRODUCTS

TABLE 8. Production of Copper, by Sources, 1951 and 1952

| Source | 1951 | | 1952 | |
|---|----------------|--------------------|----------------|--------------------|
| | Tons | Value \$ | Tons | Value \$ |
| In blister and anode copper produced ¹ | 236,036 | 130,763,621 | 223,394 | 127,512,951 |
| In ores, concentrates and any copper matte exported | 25,634 | 14,161,852 | 25,228 | 14,363,928 |
| In nickel-copper matte exported | 8,301 | 4,100,743 | 9,416 | 4,802,161 |
| Total | 269,921 | 149,026,216 | 258,038 | 146,679,040 |

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

TABLE 9. Production¹ of Nickel, 1948-1952

| Year | Tons | \$ |
|------------|---------|-------------|
| 1948 | 131,740 | 86,904,235 |
| 1949 | 128,689 | 99,173,289 |
| 1950 | 123,654 | 112,104,685 |
| 1951 | 137,903 | 151,269,994 |
| 1952 | 140,558 | 151,349,438 |

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, 1948-1952

| Year | Lead in all forms ¹ | | Refined lead ² |
|------------|--------------------------------|------------|---------------------------|
| | Tons | \$ | Tons |
| 1948 | 187,251 | 60,344,146 | 160,025 |
| 1949 | 159,775 | 50,488,879 | 146,149 |
| 1950 | 165,697 | 47,886,452 | 170,023 |
| 1951 | 158,231 | 58,229,146 | 182,000 |
| 1952 | 168,842 | 54,671,021 | 182,943 |

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 11. Production of Zinc, 1948-1952

| Year | Zinc in all forms ¹ | | Refined zinc ² |
|------------|--------------------------------|-------------|---------------------------|
| | Tons | \$ | Tons |
| 1948 | 234,164 | 65,237,956 | 196,575 |
| 1949 | 288,262 | 76,372,147 | 208,045 |
| 1950 | 313,227 | 98,040,145 | 204,367 |
| 1951 | 341,112 | 135,762,643 | 218,578 |
| 1952 | 371,802 | 129,833,285 | 222,200 |

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 12. Production of Bismuth and Cadmium, 1948-1952

| Year | Bismuth | | Cadmium | |
|------------|---------|---------|-----------|-----------|
| | Pounds | \$ | Pounds | \$ |
| 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 |
| 1951 | 230,298 | 543,504 | 1,326,920 | 3,556,145 |
| 1952 | 162,373 | 347,224 | 948,587 | 2,086,891 |

TABLE 13. Production of Selenium and Tellurium, 1948-1952

| Year | Selenium | | Tellurium | |
|------------|----------|-----------|-----------|--------|
| | Pounds | \$ | Pounds | \$ |
| 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 |
| 1951 | 382,603 | 1,239,633 | 8,913 | 16,400 |
| 1952 | 242,030 | 786,599 | 6,035 | 10,259 |

TABLE 14. Production of New Aluminum and Magnesium, 1948-1952

| Year | Aluminum ¹ | Magnesium | |
|------------|-----------------------|-------------------------------------|----|
| | Tons | Pounds | \$ |
| 1948 | 367,079 | Not available for publication | |
| 1949 | 369,466 | | |
| 1950 | 396,882 | | |
| 1951 | 447,095 | | |
| 1952 | 499,758 | | |

1. All from imported ores.

TABLE 15. Production of New Antimony and Tin, 1948-1952

| Year | Antimony (Content of antimonial lead) | | Tin | |
|------------|--|-----------|---------|---------|
| | Pounds | \$ | Pounds | \$ |
| 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 |
| 1951 | 6,702,164 ¹ | 1,436,713 | 346,718 | 494,073 |
| 1952 | 2,330,900 ² | 601,483 | 212,113 | 253,581 |

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

2. Content of antimonial lead and Doré slag.

NON-FERROUS METAL PRODUCTS

TABLE 16. Production (shipments) of Molybdenite Concentrates and Tungsten Concentrates, 1948-1952

| Year | Molybdenite concentrates | | | Tungsten concentrates | | |
|-----------|--------------------------|--------------------------|---------|-----------------------|-------------------------|-----------|
| | Gross weight | MoS ₂ content | \$ | Gross weight | WO ₃ content | \$ |
| | Tons | Tons | | Tons | Tons | |
| 1948..... | 174 | 152 | 137,143 | 705 | 523 | 1,046,160 |
| 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 |

TABLE 17. Production of Cobalt and Arsenic, 1948-1952

| Year | Cobalt ¹ | | Arsenious oxide ² | |
|-----------|---------------------|-----------|------------------------------|---------|
| | Pounds | \$ | Tons | \$ |
| 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 |
| 1951..... | 951,607 | 1,999,612 | 1,177 ³ | 129,435 |
| 1952..... | 1,421,923 | 3,226,903 | 854 ³ | 76,876 |

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.

3. Includes some arsenic recovered from foreign ores.

TABLE 18. Platinum Metals¹ Produced, 1948-1952

| Year | Platinum | | Palladium and other platinum metals | |
|-----------|----------|------------|-------------------------------------|-----------|
| | Ounces | \$ | Ounces | \$ |
| 1948..... | 121,404 | 10,622,850 | 148,343 | 6,295,132 |
| 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 | 184,905 | 7,950,107 |
| 1952..... | 122,317 | 10,916,792 | 157,407 | 7,559,379 |

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, 1952

| 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 | | |

TABLE 20. Lead Smelting Capacity of Canada, 1952

| Company | Number of blast furnaces | Annual capacity Tons of charge |
|--|--------------------------|-----------------------------------|
| Consolidated Mining & Smelting Company of Canada, Limited, Trail, British Columbia | 5 | 711,000 |

TABLE 21. Capacity of Electrolytic Zinc Plants in Canada, 1952

| Company | Estimated annual capacity for cathode zinc Short tons |
|---|--|
| Consolidated Mining & Smelting Company of Canada, Ltd. | 192,450 |
| Hudson Bay Mining & Smelting Co., Ltd. | 78,135 |

Directory of Firms in the Non-ferrous Smelting and Refining Industry, 1952

| 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. | 1709 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 Drummoud 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.

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