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THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY, 1950

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NOTICE

It has been the practice of the Bureau of Statistics, since 1920, to issue an annual printed report on the Mineral Production of Canada. This report was comprised to a large extent of the data which had already been issued in bulletin form as statistics for each industry were completed. The final report was necessarily late in being issued, and its main use was for library purposes and for historical research. It also had the advantage of having complete statistics of the Canadian Mining Industry for a year in one volume.

Such a procedure necessitated the preparation of new manuscript, duplication of proof-reading, and extra costs in type-setting and printing. In order to avoid this extra cost, a system has been devised whereby libraries and other similar organizations may file the separate reports in a ring binder as issued, and if they so desire, may have them bound in a volume when the series for the year is complete.

The reports have been paged in such a manner that when bound they will correspond to the chapters of the annual printed report hitherto issued, but which has been discontinued.

The following reports will constitute the complete volume on Mineral Statistics of Canada:

- A General Review of the Mining Industry, 25¢.
- B The Gold Mining Industry, 50¢.
- C The Silver-Lead-Zinc Mining Industry, 30¢.
- D The Nickel-Copper Mining, Smelting and Refining Industry, 25¢.
- E The Miscellaneous Metal Mining Industry, 30¢.
- F The Non-ferrous Smelting and Refining Industry, 25¢.
- G The Coal Mining Industry, 75¢.
- H The Natural Gas and Crude Petroleum Industry, 25¢.
- I The Asbestos Mining Industry, 25¢.
- J The Feldspar and Quartz Mining Industry, 25¢.
- K The Gypsum Industry, 15¢.
- L The Peat Industry, 25¢.
- M The Salt Industry, 25¢.
- N The Talc and Soapstone Industry, 25¢.
- O The Miscellaneous Non-Metal Mining Industry, 30¢.
- 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, 35¢.
- U Contract Diamond Drilling in the Mining Industry, 25¢.

THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY, 1950

Statistics relating to the nickel-copper mining, smelting and refining industry, as shown in this report, include those pertaining to the mining of nickel-copper ores, the smelting of these ores in Canada, and the production in the Dominion of refined copper, nickel, etc., by the firms constituting this industry.

In addition to production of nickel, copper and the platinum metals, there is an important recovery from these ores of the associated metals — silver, gold, selenium and tellurium; sulphur for the manufacture of sulphuric acid is also salvaged in the gaseous state from waste smelter gases. The total gross value of the various primary products of this industry, considered as a whole, was estimated at \$195,157,966 in 1950 compared with \$172,391,089 in 1949.

Two companies operated both mines and metallurgical plants in the Sudbury area in 1950. The International Nickel Company of Canada, Limited, operated smelters at Copper Cliff and Coniston, while the Falconbridge Nickel Mines, Ltd. smelted its ores at the Falconbridge mine located a few miles east of the town of Sudbury. This last-named company ex-

ported its matte to a refinery located at Kristiansand, Norway.

The relatively small amount of nickel-oxide sometimes produced at Deloro, Ontario, is recovered from silver-cobalt-nickel-arsenic ores mined in northern Ontario. Smelter matte made by the International Nickel Company of Canada, Limited, is treated in plants located at Clydach, Wales; Huntington, West Virginia, U.S.A.; and at Port Colborne, Ontario and Copper Cliff, Ontario. Converter copper made by the International Nickel Company is electrolytically refined at Copper Cliff, and refined nickel is produced by the company at Port Colborne. In 1950 the International Nickel Company of Canada, Limited, shipped ores from the Garson, Creighton, Levack, Frood, and Murray mines.

In the Lynn Lake area in Manitoba, the Sherritt-Gordon Mines Ltd. continued development work on its promising deposit of nickel-copper ore.

The industry, as a whole, employed 15,348 persons and distributed \$49,174,618 in wages and salaries. The cost of fuel was \$11,454,829 and 394,097,746 k.w.h. of electricity were purchased for \$2,875,345. The process supplies used were valued at \$14,016,729.

TABLE 1. Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry, 1948-1950¹

| | 1948 | 1949 | 1950 |
|---|----------------------|----------------------|----------------------|
| Number of firms | 11 | 7 | 5 |
| Number of mines | 15 | 11 | 10 |
| Number of smelters | 3 | 3 | 3 |
| Number of copper refineries | 1 | 1 | 1 |
| Number of nickel refineries | 1 | 1 | 1 |
| Number of employees: | | | |
| Administrative and office | 1,409 | 1,516 | 1,617 |
| Workmen | 12,824 | 12,882 | 13,731 |
| Total | 14,233 | 14,398 | 15,348 |
| Earnings: | | | |
| Administrative and office | \$ 5,442,325 | \$ 6,367,661 | \$ 7,022,331 |
| Workmen | \$ 35,387,532 | \$ 38,289,431 | \$ 42,152,287 |
| Total | \$ 40,829,857 | \$ 44,657,092 | \$ 49,174,618 |
| Fuel and purchased electricity used | \$ 13,917,980 | \$ 14,342,097 | \$ 14,330,174 |
| Process supplies used | \$ 13,670,771 | \$ 12,821,605 | \$ 14,016,729 |
| Estimated gross value of matte exported and Canadian refinery products ² | \$ 142,228,550 | \$ 172,391,089 | \$ 195,157,966 |
| Net value of production | \$ 114,639,799 | \$ 145,227,387 | \$ 166,811,067 |

1. Does not include data for mines, power plants, etc., operated by subsidiary companies.
2. Includes value of customs material.

TABLE 2. Output from Nickel-Copper Mines and Smelters in Ontario, 1948-1950

| | 1948 | 1949 | 1950 |
|---|------------------------|------------|------------|
| | (Tons of 2,000 pounds) | | |
| Ore shipped from mines | 11,688,146 | 10,923,823 | 10,777,859 |
| Ore treated ¹ | 11,674,955 | 10,919,950 | 10,788,506 |
| Converter copper produced in Ontario from Ontario ores ² | 113,968 | 104,000 | 108,802 |
| Nickel produced in Ontario ³ | 90,952 | 80,101 | 82,816 |
| Matte and residues exported ⁴ | 60,870 | 72,392 | 60,399 |
| Nickel content of matte exported | 40,654 | 48,509 | 40,775 |
| Copper content of matte exported | 6,367 | 8,363 | 8,395 |

1. Represents the tonnage of crude ore smelted together with the tonnage of ore milled.
2. Copper content, including copper content of Ontario ores purchased, less reverts.
3. Includes nickel content of salts and oxides produced from nickel-copper ores.
4. Less a small tonnage of matte returned to Canada for retreatment.

TABLE 3. Production of Nickel¹ from Canadian Ores, 1941-1950

| Year | Tons | Value | Year | Tons | Value |
|------------|---------|------------|------------|---------|-------------|
| | | \$ | | | \$ |
| 1941 | 141,129 | 68,656,795 | 1946 | 96,062 | 45,385,155 |
| 1942 | 142,606 | 69,998,427 | 1947 | 118,626 | 70,650,764 |
| 1943 | 144,009 | 71,675,322 | 1948 | 131,740 | 86,904,235 |
| 1944 | 137,299 | 69,204,152 | 1949 | 128,689 | 99,173,289 |
| 1945 | 122,565 | 61,982,133 | 1950 | 123,659 | 112,104,685 |

1. Usually includes a small quantity of nickel recovered from silver-cobalt ores.

TABLE 4. Production of New Nickel¹, by Months, 1949 and 1950

| Month | 1949 | 1950 | Month | 1949 | 1950 |
|----------------|------------------------|--------|--------------------|------------------------|----------------|
| | (Tons of 2,000 pounds) | | | (Tons of 2,000 pounds) | |
| January | 11,279 | 10,244 | August | 10,014 | 7,721 |
| February | 10,960 | 9,610 | September | 9,616 | 11,762 |
| March | 12,717 | 9,325 | October | 10,827 | 11,354 |
| April | 11,146 | 11,234 | November | 9,750 | 11,912 |
| May | 11,261 | 11,021 | December | 10,771 | 10,319 |
| June | 10,675 | 10,818 | | | |
| July | 9,673 | 9,379 | Total | 128,689 | 123,659 |

1. Refined nickel and nickel in oxide produced plus recoverable nickel in matte, etc., exported.

TABLE 5. Imports and Exports of Nickel, 1949 and 1950

| | | 1949 | | 1950 | |
|--|-----|-----------|------------|-----------|------------|
| | | Quantity | Value | Quantity | Value |
| | | | \$ | | \$ |
| IMPORTS | | | | | |
| Nickel and nickel silver in ingots | lb. | 26,638 | 11,517 | 41,886 | 20,811 |
| Nickel rods for wire (90% nickel) | lb. | 9,460 | 7,160 | 728 | 579 |
| Nickel in bars and rods, strips and sheets | lb. | 2,666,550 | 1,832,733 | 2,398,799 | 1,856,864 |
| Nickel-silver bars, rods and strips | lb. | 86,166 | 47,141 | 104,060 | 54,648 |
| Nickel-chromium in bars | lb. | 107,000 | 118,512 | 128,467 | 149,272 |
| Nickel, manufactures of, not plated | | — | 286,307 | — | 336,803 |
| Nickel-plated household hollow-ware | | — | 14,872 | — | 12,866 |
| Nickel household hollow-ware | | — | — | — | — |
| Nickel-plated ware, n.o.p. | | — | 4,319,306 | — | 4,448,385 |
| EXPORTS | | | | | |
| Nickel in matte or speiss | ton | 56,902 | 41,760,237 | 53,090 | 46,423,080 |
| Nickel in oxide | ton | 1,151 | 689,148 | 1,667 | 1,308,141 |
| Nickel, fine | ton | 89,088 | 49,874,301 | 66,894 | 57,568,522 |

TABLE 6. Production, Consumption and Exports of Nickel, 1941-1950

| Year | Production in Canada (all forms, including content in oxide and in matte exported) | Consumption of refined nickel in Canada | Exports | | |
|------------------------|---|--|--|------------------------------------|-------------------|
| | | | Nickel contained in matte or speiss | Nickel contained in oxide | Refined nickel |
| (Tons of 2,000 pounds) | | | | | |
| 1941 | 141, 129 | 3, 464 | 42, 616 | 7, 240 | 87, 739 |
| 1942 | 142, 606 | 4, 509 | 41, 263 | 9, 224 | 86, 308 |
| 1943 | 144, 009 | 3, 440 | 36, 415 | 3, 892 | 95, 240 |
| 1944 | 137, 299 | 2, 350 | 33, 848 | 1, 242 | 97, 509 |
| 1945 | 122, 565 | 2, 410 | 28, 295 | 1, 758 | 78, 168 |
| 1946 | 96, 062 | 1, 820 | 30, 625 | 517 | 80, 797 |
| 1947 | 118, 626 | 1, 670 | 39, 767 | 6, 535 | 70, 755 |
| 1948 | 131, 740 | 1, 887 | 50, 801 | 9, 792 | 71, 247 |
| 1949 | 128, 689 | 1, 749 | 56, 902 | 1, 151 | 69, 088 |
| 1950 | 123, 659 | 2, 226 | 53, 090 | 1, 667 | 66, 894 |

TABLE 7. World Production of Nickel, 1945-1950 (From the "Annual Report of the American Bureau of Metal Statistics")

| Country | 1945 | 1946 | 1947 | 1948 | 1949 | 1950 |
|----------------------------------|----------|---------|----------|----------|----------|----------|
| (Tons of 2,000 pounds) | | | | | | |
| Canada ¹ | 122, 565 | 96, 062 | 116, 621 | 131, 740 | 128, 689 | 123, 209 |
| New Caledonia ² | 4, 771 | 3, 063 | 3, 671 | 5, 381 | 3, 716 | 5, 622 |
| Norway | 606 | — | — | — | — | — |
| United States ³ | 1, 155 | 352 | 646 | 883 | 790 | 903 |
| Cuba ⁴ | 12, 000 | 12, 391 | 2, 220 | — | — | — |
| Finland | 992 | 729 | 595 | — | — | — |
| Japan | 185 | — | — | — | — | — |

1. Production in all forms from Canadian ores.

2. Nickel content of ore produced, estimated at 3.5% Ni. from which recovery in matte of 75% Ni. may be no more than 60%.

3. By-product in electrolytic refining of copper.

4. Nickel content of oxide.

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

| | 1949 | | 1950 | |
|---|----------|---------------|----------|---------------|
| | Tons | Value | Tons | Value |
| | | \$ | | \$ |
| By Provinces: | | | | |
| Newfoundland | 3, 617 | 1, 444, 837 | 3, 221 | 1, 508, 910 |
| Quebec | 67, 822 | 27, 092, 363 | 72, 891 | 34, 141, 997 |
| Ontario | 113, 043 | 44, 658, 786 | 117, 210 | 54, 411, 033 |
| Manitoba | 16, 960 | 6, 774, 871 | 20, 617 | 9, 750, 846 |
| Saskatchewan | 34, 960 | 13, 964, 980 | 28, 982 | 13, 575, 052 |
| British Columbia | 27, 055 | 10, 783, 314 | 21, 088 | 9, 823, 569 |
| Total | 263, 457 | 104, 719, 151 | 264, 209 | 123, 211, 407 |
| By Sources (where computed): | | | | |
| In blister and anode copper produced ¹ | 224, 422 | 69, 647, 631 | 231, 241 | 108, 313, 437 |
| In ores, concentrates and copper matte exported | 30, 672 | 12, 228, 151 | 24, 573 | 11, 456, 065 |
| 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 of Copper¹, by Months, 1949 and 1950

| Month | 1949 | 1950 | Month | 1949 | 1950 |
|----------------|------------------------|--------|--------------------|------------------------|----------------|
| | (Tons of 2,000 pounds) | | | (Tons of 2,000 pounds) | |
| January | 20,843 | 22,044 | August | 22,806 | 21,359 |
| February | 21,578 | 22,643 | September | 22,151 | 20,955 |
| March | 21,936 | 22,348 | October | 22,311 | 22,240 |
| April | 22,588 | 22,284 | November | 22,082 | 23,434 |
| May | 21,691 | 22,378 | December | 23,682 | 22,759 |
| June | 20,295 | 20,421 | | | |
| July | 21,494 | 21,344 | Total | 263,457 | 264,209 |

1. Blister copper produced in Canada plus recoverable copper in concentrates, matte, etc., exported.

TABLE 10. Production of Copper from Ontario Ores Only, 1941-1950

| Year | Tons | Value | Year | Tons | Value |
|------------|---------|------------|------------|---------|------------|
| | | \$ | | | \$ |
| 1941 | 166,915 | 33,192,644 | 1946 | 89,712 | 22,502,528 |
| 1942 | 154,141 | 30,625,404 | 1947 | 113,933 | 46,018,544 |
| 1943 | 138,920 | 32,232,027 | 1948 | 120,383 | 53,384,560 |
| 1944 | 142,654 | 33,845,632 | 1949 | 113,043 | 44,658,786 |
| 1945 | 119,725 | 29,771,633 | 1950 | 117,210 | 54,411,033 |

Note. Almost entirely from nickel ores.

TABLE 11. Production of Copper, According to Kinds of Ores and by Provinces, 1949 and 1950

| Province | From copper-gold-silver ores | From nickel-copper ores | From gold and other ores | Total |
|------------------------|------------------------------|-------------------------|--------------------------|----------------|
| | (Tons) | | | |
| 1949 | | | | |
| Newfoundland | — | — | 3,617 | 3,617 |
| Quebec | 67,822 | — | — | 67,822 |
| Ontario | — | 112,363 | 680 | 113,043 |
| Manitoba | 16,960 | — | — | 16,960 |
| Saskatchewan | 34,960 | — | — | 34,960 |
| British Columbia | 26,598 | — | 457 | 27,055 |
| Canada | 146,340 | 112,363 | 4,754 | 263,457 |
| 1950 | | | | |
| Newfoundland | — | — | 3,221 | 3,221 |
| Quebec | 72,627 | — | 264 | 72,891 |
| Ontario | — | 117,197 | 13 | 117,210 |
| Manitoba | 20,817 | — | — | 20,817 |
| Saskatchewan | 28,982 | — | — | 28,982 |
| British Columbia | 20,165 | — | 923 | 21,088 |
| Canada | 142,591 | 117,197 | 4,421 | 264,209 |

TABLE 12. Production of Refined Copper, 1941-1950

| Year | Tons | Year | Tons |
|------------|---------|------------|---------|
| 1941 | 278,224 | 1946 | 167,221 |
| 1942 | 268,447 | 1947 | 202,427 |
| 1943 | 251,495 | 1948 | 221,275 |
| 1944 | 256,244 | 1949 | 226,083 |
| 1945 | 228,861 | 1950 | 238,204 |

TABLE 13. Production of Refined Copper, by Months, 1949 and 1950

| Month | 1949 | 1950 | Month | 1949 | 1950 |
|----------------|--------|--------|--------------------|----------------|----------------|
| | (Tons) | | | (Tons) | |
| January | 17,476 | 19,434 | August | 19,228 | 19,922 |
| February | 16,616 | 18,599 | September | 18,019 | 18,782 |
| March | 20,093 | 21,902 | October | 18,438 | 20,832 |
| April | 19,729 | 19,487 | November | 19,211 | 19,191 |
| May | 20,694 | 21,145 | December | 19,385 | 19,825 |
| June | 19,727 | 21,424 | | | |
| July | 17,467 | 17,661 | Total | 226,083 | 238,204 |

TABLE 14. Imports and Exports of Copper, 1949 and 1950

| | | 1949 | | 1950 | |
|--|-----|-----------|------------|-----------|------------|
| | | Quantity | \$ | Quantity | \$ |
| IMPORTS | | | | | |
| Copper in blocks, pigs and ingots | lb. | 18,900 | 6,015 | 244,800 | 60,844 |
| Copper, scrap | lb. | 760,600 | 137,380 | 924,700 | 205,732 |
| Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables | lb. | 2,856,900 | 581,110 | 3,252,900 | 730,208 |
| Copper bars or rods, n.o.p. | lb. | 145,300 | 51,065 | 70,200 | 37,922 |
| Copper in strips, sheets or plates | lb. | 241,800 | 113,824 | 293,400 | 140,150 |
| Copper tubing, not manufactured | lb. | 682,800 | 329,091 | 452,000 | 295,748 |
| Copper rollers for wall paper | — | — | 171,536 | — | 144,340 |
| Copper wire, n.o.p. | lb. | 91,735 | 48,309 | 225,751 | 82,825 |
| Copper wire cloth, woven | — | — | 6,772 | — | 8,163 |
| Copper manufactures, n.o.p. | — | — | 567,378 | — | 665,166 |
| Copper sub-acetate | lb. | 700 | 235 | 600 | 214 |
| Copper sulphate (blue vitriol) | lb. | 1,032,346 | 106,721 | 1,416,689 | 115,902 |
| Total | — | — | 2,119,436 | — | 2,487,214 |
| EXPORTS | | | | | |
| Copper, fine, contained in ore, matte, regulus, etc. | ton | 37,058 | 14,823,140 | 32,299 | 12,919,680 |
| Copper, old and scrap | ton | 3,516 | 1,143,857 | 6,234 | 2,694,616 |
| Copper in ingots, bars, cakes, slabs and billets | ton | 127,160 | 53,714,754 | 134,244 | 59,665,730 |
| Copper in rods, strips, sheets and plates | ton | 31,054 | 14,370,505 | 15,262 | 7,510,151 |
| Copper tubing | lb. | 949,800 | 368,512 | 1,359,600 | 520,456 |
| Copper wire and cable, insulated | — | — | 1,787,164 | — | 2,659,022 |
| Copper wire, bare | — | — | 319,109 | — | 1,350,165 |
| Copper wire, screen | — | — | 66,757 | — | 14,492 |
| Copper manufactures, n.o.p. | — | — | 29,563 | — | 42,764 |
| Total | — | — | 86,623,361 | — | 87,587,076 |

TABLE 15. Production of Primary Copper, Exports and Imports, 1941-1950

| Year | Production in Canada ¹ | Exports | | | Imports Refined copper |
|------------------------|--------------------------------------|-------------------------------|-------------------|--------------------------------------|------------------------------|
| | | Copper in ore, matte, etc. | Blister copper | Refined copper ingots, bars, etc. | |
| (Tons of 2,000 pounds) | | | | | |
| 1941 | 321,658 | 47,769 | 11,962 | 126,424 | — |
| 1942 | 301,831 | 34,047 | 6,455 | 98,617 | — |
| 1943 | 287,595 | 36,210 | 4,274 | 64,333 | — |
| 1944 | 273,535 | 27,989 | — | 135,233 | 2 |
| 1945 | 237,457 | 19,295 | — | 129,349 | — |
| 1946 | 183,968 | 17,628 | — | 101,414 | — |
| 1947 | 225,861 | 29,094 | — | 87,478 | — |
| 1948 | 240,732 | 28,556 | — | 116,169 | — |
| 1949 | 263,457 | 37,057 | — | 127,160 | 9 |
| 1950 | 264,209 | 32,299 | — | 134,244 | 122 |

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

TABLE 16. Production of Refined Copper, Consumption, Imports and Exports, 1941-1950

| Year | Production in Canada | Domestic consumption | Exports | Imports | Stocks at end of period |
|------------------------|-------------------------|-------------------------|---------|---------|----------------------------|
| (Tons of 2,000 pounds) | | | | | |
| 1941..... | 278,224 | 142,000 | 126,424 | — | 18,312 |
| 1942..... | 268,447 | 183,000 | 98,617 | — | 21,446 |
| 1943..... | 251,405 | 176,000 | 64,333 | — | 27,710 |
| 1944..... | 256,244 | 122,000 | 135,233 | 2 | 26,600 |
| 1945..... | 228,861 | 90,000 | 129,349 | — | 16,760 |
| 1946..... | 167,221 | 80,500 | 101,414 | — | 19,390 |
| 1947..... | 202,425 | 109,210 | 87,478 | — | 10,931 |
| 1948..... | 221,275 | 109,844 | 116,169 | — | 13,956 |
| 1949..... | 226,083 | 100,905 | 127,160 | — | 9,844 |
| 1950..... | 238,204 | 106,876 | 134,244 | — | 11,598 |

TABLE 17. World Production of Copper by Countries of Origin of Ore¹
(From the "Annual Report of The American Bureau of Metal Statistics")

| Country | 1947 | 1948 | 1949 | 1950 |
|-------------------------------------|------------------|------------------|------------------|------------------|
| (Tons of 2,000 pounds) | | | | |
| United States..... | 874,105 | 855,198 | 761,904 | 915,446 |
| Mexico..... | 72,675 | 63,928 | 70,662 | 65,266 |
| Canada..... | 225,862 | 240,732 | 263,457 | 261,914 |
| Newfoundland..... | 4,250 | 4,550 | — | — |
| Cuba..... | 15,132 | 17,966 | 19,178 | 22,000 |
| Bolivia..... | 6,879 | 7,293 | 5,593 | 5,185 |
| Chile..... | 470,318 | 490,597 | 409,055 | 399,857 |
| Peru..... | 24,793 | 19,917 | 30,819 | 30,702 |
| Ecuador..... | 158 | 523 | 776 | 580 |
| Total America..... | 1,694,172 | 1,700,704 | 1,561,444 | 1,701,623 |
| Austria..... | 285 | 1,082 | 1,429 | 1,808 |
| Finland..... | 19,200 | 25,713 | 26,811 | 18,993 |
| Germany ² | 263 | 401 | 962 | 1,500 |
| Italy..... | 105 | 99 | 33 | 60 |
| Norway..... | 16,212 | 16,658 | 16,398 | 16,975 |
| Spain..... | 7,114 | 6,066 | 7,388 | 7,498 |
| Sweden..... | 14,489 | 16,353 | 17,938 | 17,746 |
| Yugoslavia..... | 44,600 | 57,900 | 37,500 | 44,100 |
| Other Europe..... | 1,000 | 16,800 | 17,000 | — |
| Total Europe..... | 103,268 | 141,072 | 125,459 | — |
| Japan..... | 24,127 | 28,353 | 36,090 | 43,345 |
| India..... | 6,643 | 6,567 | 7,157 | 7,408 |
| Korea (South)..... | 429 | 73 | 31 | — |
| Turkey..... | 11,111 | 12,102 | 11,889 | 12,793 |
| Philippines..... | 2,502 | 2,300 | 7,724 | 11,446 |
| Cyprus..... | 17,400 | 21,500 | 30,912 | 31,884 |
| Other Asia..... | 6,500 | 7,500 | 9,800 | — |
| Total Asia..... | 68,712 | 78,395 | 103,603 | — |
| Belgian Congo..... | 166,271 | 171,424 | 155,864 | 193,917 |
| Rhodesia..... | 218,222 | 234,647 | 289,946 | 314,589 |
| South West Africa..... | 4,575 | 6,616 | 9,514 | 10,678 |
| Union of South Africa..... | 32,400 | 32,300 | 33,060 | 36,848 |
| Other Africa..... | 100 | 900 | 1,300 | — |
| Total Africa..... | 421,568 | 445,887 | 489,684 | — |
| Australia..... | 14,698 | 13,793 | 15,080 | 17,540 |
| Russia..... | 181,900 | 198,400 | 220,500 | 240,000 |
| Total World as Reported..... | 2,484,318 | 2,578,251 | 2,515,770 | — |

1. Includes copper contents or recoverable contents of ores or concentrates smelted in country of origin and/or shipped to other countries for smelting.

2. 1946-1948 Bizonal area only; beginning 1949 Federal Republic of Germany;— beginning 1948 Soviet Zone is estimated and included under "Other Europe". Russia, Yugoslavia and to some extent countries grouped under "Other" have been estimated.

TABLE 18. Canadian Copper Ore Reserves as Officially Reported (From the "Annual Report of the American Bureau of Metal Statistics")

| | Year | Province | Short tons ore | Average grade % | Short tons copper |
|---|------|------------------------|----------------|-----------------|------------------------|
| Amulet Dufault | 1950 | Quebec | 1,123,186 | 4.94 | 55,500 |
| East Sullivan | 1950 | Quebec | 4,918,545 | 1.79 | 88,000 |
| Falconbridge | 1950 | Ontario | 15,147,500 | 0.93 | 140,900 |
| Granby Consolidated (Allenby) | 1950 | British Columbia | 5,530,000 | 1.00 | 55,300 |
| Hudson Bay | 1950 | Manitoba | 20,157,000 | 3.04 | 612,800 |
| International Nickel | 1950 | Ontario | 252,859,725 | — | 7,669,200 ¹ |
| Noranda | 1950 | Quebec | 17,547,900 | 2.10 | 369,200 |
| Normetal | 1950 | Quebec | 1,573,100 | 3.32 | 52,200 |
| Queмонт | 1950 | Quebec | 9,402,000 | 1.43 | 134,400 |
| Sherritt-Gordon | 1950 | Manitoba | 128,431 | 2.59 | 3,300 |
| Sherritt-Gordon Lynn Lake | 1950 | Manitoba | 14,055,000 | 0.62 | 86,900 |
| Waite Amulet "F" and "C" ore bodies | 1950 | Quebec | 765,000 | 3.61 | 29,100 |

1. Copper-nickel content.

TABLE 19. Production of Metals of the Platinum Group from Ontario Copper-Nickel Ores, 1941-1950¹

| Year | Platinum ² | | Palladium ³ | |
|------------|-----------------------|------------|------------------------|------------|
| | Fine ounces | \$ | Fine ounces | \$ |
| 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 | 18,671,074 |
| 1946 | 121,771 | 7,672,791 | 117,566 | 5,162,801 |
| 1947 | 94,570 | 5,582,467 | 110,332 | 4,387,740 |
| 1948 | 121,162 | 10,601,675 | 148,343 | 6,295,132 |
| 1949 | 153,691 | 11,595,986 | 182,225 | 8,289,063 |
| 1950 | 124,453 | 10,248,215 | 146,741 | 7,578,144 |

1. Prior to 1945 the figures reported were the refined metals recovered and the contents of concentrates sold each year. The figures for 1945 represent the metal content of platinum metals concentrates produced, together with adjustment of previous figures to this basis for the years 1938 through 1944.

2. In addition, a relatively small quantity of alluvial platinum is usually recovered annually in British Columbia; such recovery in 1943 totalled 7 ounces valued at \$270; 1944-1947, nil; 1948, 242 ounces; 1949, 93 ounces and 1950, 129 ounces.

3. Includes other platinum metals except platinum and represents the entire Canadian production.

TABLE 20. Production of Selenium and Tellurium from Nickel-Copper Ores, 1941-1950

| Year | Selenium | | Tellurium | |
|------------|----------|---------|-----------|--------|
| | Pounds | Value | Pounds | Value |
| | | \$ | | \$ |
| 1941 | 142,498 | 272,171 | 11,453 | 18,394 |
| 1942 | 76,000 | 145,920 | 9,500 | 15,200 |
| 1943 | 82,000 | 143,500 | 8,600 | 15,050 |
| 1944 | 65,000 | 117,000 | 9,900 | 17,325 |
| 1945 | 168,000 | 322,560 | — | — |
| 1946 | 270,606 | 492,503 | 14,200 | 21,868 |
| 1947 | 146,406 | 273,779 | 6,169 | 10,796 |
| 1948 | 108,989 | 217,978 | 8,739 | 15,293 |
| 1949 | 86,842 | 178,026 | 8,726 | 15,707 |
| 1950 | 63,709 | 154,176 | 6,010 | 11,419 |

Note. These metals are recovered also from other types of ores in addition to above.

TABLE 21. Production of Gold and Silver from Nickel-Copper Ores, 1941-1950

| Year | Gold | | Silver | |
|-----------|-------------|-----------|-------------|--------------------|
| | Fine ounces | Value | Fine ounces | Value ¹ |
| | | \$ | | \$ |
| 1941..... | 77,960 | 3,001,460 | 2,633,815 | 1,007,698 |
| 1942..... | 70,861 | 2,728,148 | 2,238,177 | 943,839 |
| 1943..... | 55,776 | 2,147,376 | 1,648,888 | 746,122 |
| 1944..... | 55,286 | 2,128,472 | 1,828,978 | 786,461 |
| 1945..... | 91,369 | 3,528,102 | 1,735,143 | 815,417 |
| 1946..... | 51,490 | 1,892,257 | 1,205,664 | 1,008,538 |
| 1947..... | 43,672 | 1,528,520 | 1,434,652 | 1,032,949 |
| 1948..... | 39,752 | 1,391,320 | 1,404,338 | 1,053,254 |
| 1949..... | 35,748 | 1,286,928 | 1,202,989 | 893,219 |
| 1950..... | 36,264 | 1,379,845 | 1,045,106 | 844,655 |

1. Estimated.

2. Includes 26,589 ounces of gold and 84,614 ounces of silver recovered from platinum metals concentrates in foreign plants in previous years and not previously recorded.

TABLE 22. Employees and Their Earnings in Nickel-Copper Mines, Smelters and Refineries, 1950

| | Administrative and Office Employees | | | | Workmen | | | |
|------------------------------|-------------------------------------|------------|--------------|------------------|---------------|----------|---------------|-------------------|
| | Male | Female | Total | Total salaries | Male | Female | Total | Total wages |
| | (Number) | | | \$ | (Number) | | | \$ |
| Mines..... | 556 | 28 | 584 | 2,760,657 | 7,125 | 4 | 7,129 | 22,553,181 |
| Smelters and refineries..... | 899 | 134 | 1,033 | 4,261,874 | 6,598 | 4 | 6,602 | 19,599,106 |
| Total..... | 1,455 | 162 | 1,617 | 7,022,331 | 13,723 | 8 | 13,731 | 42,152,287 |

TABLE 23. Workmen, by Sex and Months, Entire Industry, 1948-1950

| Month | 1948 | | 1949 | | 1950 | |
|---------------------|---------------|----------|---------------|----------|---------------|----------|
| | Male | Female | Male | Female | Male | Female |
| | (Number) | | (Number) | | (Number) | |
| January..... | 12,206 | 8 | 13,592 | 5 | 12,405 | 6 |
| February..... | 12,264 | 8 | 13,531 | 6 | 12,626 | 8 |
| March..... | 12,345 | 9 | 13,588 | 7 | 12,914 | 8 |
| April..... | 12,197 | 8 | 13,465 | 7 | 13,130 | 8 |
| May..... | 12,428 | 8 | 13,005 | 7 | 13,846 | 7 |
| June..... | 13,050 | 7 | 12,447 | 6 | 13,984 | 7 |
| July..... | 13,095 | 10 | 12,305 | 6 | 14,089 | 7 |
| August..... | 12,832 | 10 | 12,533 | 7 | 14,012 | 7 |
| September..... | 13,140 | 6 | 12,223 | 7 | 14,122 | 8 |
| October..... | 13,398 | 8 | 12,517 | 7 | 14,440 | 8 |
| November..... | 13,366 | 8 | 12,488 | 7 | 14,573 | 8 |
| December..... | 13,351 | 6 | 12,503 | 6 | 14,570 | 8 |
| Average..... | 12,817 | 7 | 12,875 | 7 | 13,723 | 8 |

TABLE 24. Workmen, by Months, in Nickel-Copper Mines Only, 1949¹ and 1950

| Month | 1949 | | | | 1950 | | | |
|---------------------|--------------|----------|--------------|------------|--------------|----------|--------------|------------|
| | Mine | | Mill | | Mine | | Mill | |
| | Surface | | Underground | Male | Surface | | Underground | Male |
| | Male | Female | | | Male | Female | | |
| January..... | 2,065 | 1 | 4,635 | 254 | 1,741 | 4 | 4,387 | 218 |
| February..... | 1,979 | 2 | 4,662 | 265 | 1,800 | 4 | 4,551 | 227 |
| March..... | 2,043 | 3 | 4,872 | 264 | 1,832 | 4 | 4,686 | 231 |
| April..... | 1,969 | 3 | 4,699 | 261 | 1,857 | 4 | 4,787 | 238 |
| May..... | 1,867 | 3 | 4,393 | 237 | 1,936 | 3 | 4,986 | 248 |
| June..... | 1,796 | 2 | 4,148 | 220 | 1,944 | 3 | 4,883 | 257 |
| July..... | 1,763 | 2 | 4,051 | 209 | 1,952 | 3 | 5,002 | 258 |
| August..... | 1,816 | 3 | 4,180 | 217 | 1,941 | 3 | 5,000 | 258 |
| September..... | 1,797 | 3 | 3,968 | 214 | 1,955 | 4 | 5,044 | 256 |
| October..... | 1,789 | 3 | 4,339 | 212 | 2,028 | 4 | 5,298 | 259 |
| November..... | 1,779 | 3 | 4,336 | 211 | 2,033 | 4 | 5,383 | 261 |
| December..... | 1,837 | 2 | 4,309 | 208 | 2,037 | 4 | 5,377 | 270 |
| Average..... | 1,874 | 3 | 4,391 | 232 | 1,921 | 4 | 4,956 | 248 |

1. Included in Table 23.

TABLE 25. Workmen, by Months, in Nickel-Copper Smelters and Refineries Only, 1949¹ and 1950

| Month | 1949 | | 1950 | | Month | 1949 | | 1950 | |
|---------------|----------|--------|----------|--------|-----------------|----------|--------|----------|--------|
| | Male | Female | Male | Female | | Male | Female | Male | Female |
| | (Number) | | (Number) | | | (Number) | | (Number) | |
| January | 6,638 | 4 | 6,059 | 4 | August..... | 6,318 | 4 | 6,813 | 4 |
| February..... | 6,625 | 4 | 6,048 | 4 | September | 6,244 | 4 | 6,867 | 4 |
| March | 6,609 | 4 | 6,165 | 4 | October | 6,177 | 4 | 6,855 | 4 |
| April | 6,536 | 4 | 6,248 | 4 | November | 6,162 | 4 | 6,896 | 4 |
| May | 6,508 | 4 | 6,876 | 4 | December | 6,159 | 4 | 6,886 | 4 |
| June | 6,283 | 4 | 6,760 | 4 | Average | 6,378 | 4 | 6,598 | 4 |
| July | 6,282 | 4 | 6,879 | 4 | | | | | |

1. Included in Table 23.

TABLE 26. Specified Taxes Paid by the Nickel-Copper Mining, Smelting and Refining Industry, 1948-1950

| | 1948 | 1949 | 1950 |
|---|------------|------------|------------|
| | \$ | \$ | \$ |
| Dominion income tax, including tax on non-operating revenue | 9,187,811 | 10,575,729 | 12,577,327 |
| Dominion excess profits tax | 51,361 | — | 2,789 |
| Total provincial taxes | 2,890,101 | 4,046,328 | 3,886,099 |
| Total municipal taxes | 426,484 | 486,903 | 553,595 |
| Grand Total Taxes Paid | 12,555,757 | 15,108,960 | 17,019,810 |

TABLE 27. Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1948-1950

| | 1948 | 1949 | 1950 |
|---|------------|------------|------------|
| | \$ | \$ | \$ |
| Workmen's Compensation | 628,455 | 534,018 | 561,751 |
| Silicosis assessment | 73,552 | 87,989 | 91,059 |
| Unemployment insurance | 203,916 | 270,604 | 338,179 |
| Aggregate cost of all supplies purchased | 39,217,376 | 42,787,211 | 47,142,159 |
| Aggregate cost of plant and equipment purchased | 1,053,194 | 133,405 | 798,318 |

Directory of Firms in the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1950

| Name of Firm | Head Office Address | Location of Canadian Plant |
|--|---|--|
| ONTARIO: | | |
| Falconbridge Nickel Mines, Ltd. ¹ | 21 Dundas Square, Toronto | Falconbridge Township |
| International Nickel Company of Canada, Limited ¹ | Copper Cliff | Mines: Tps. of Levack, Saldar, McKim and Garson Smelters: Copper Cliff and Conle- ton |
| Nickel Offsets, Ltd. | 1202-50 King St. West, Toronto | Chelmsford |
| North Denison Mines, Ltd. | 310-62 Richmond St. West, Toronto | Echo Township |
| MANITOBA: | | |
| Sherritt-Gordon Mines, Ltd. | 25 King St. West, Toronto | Lynn Lake |

1. Producing - Other concerns doing development work only.

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