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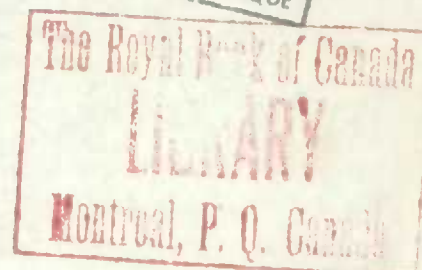
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# THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY

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¢
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(Nov. 9 '53)

# THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY

1952

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-and of sulphur, in the form of sulphur dioxide, for the manufacture of sulphuric acid and liquid sulphur dioxide. The total gross value of the various primary products of this industry considered as a whole was estimated at \$410,682,721 in 1952 compared with \$410,677,639 in 1951.

All of the producing mines in 1952 were in the Sudbury area where four companies operated 9 mines. Two of these concerns also operated metallurgical plants. The International Nickel Company of Canada Limited had 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 exported its matte to a refinery located at Kristiansand, Norway. East Rim Nickel Mines Limited and Milnet Mines Limited shipped nickel-copper ore to the Falconbridge smelter.

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 and Copper Cliff in 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 1952 the International Nickel Company of Canada Limited shipped ores from the Garson, Creighton, Levack, Frood and Murray mines. Ore was mined at the Falconbridge and McKim mines by the Falconbridge Nickel Mines Limited.

In the Lynn Lake area in Manitoba, the Sherritt-Gordon Mines Ltd. continued with mine development and with the construction of a concentrator. Work on the railway from Sherridon to Lynn Lake proceeded satisfactorily. A start was made on the refinery at Fort Saskatchewan, Alberta, where the concentrates from Lynn Lake will be treated.

In 1952 the industry employed 19,976 persons to whom \$76,445,452 were distributed as salaries and wages. Fuel cost \$13,597,481 and 1,106,854,160 k.w.h. of electricity were purchased for \$4,325,788. Process supplies used were valued at \$19,718,017.

TABLE 1. Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry<sup>1</sup>, 1950-1952

	1950	1951	1952
Number of firms.....	5	5	17
Number of mines producing or doing development work .....	10	11	32
Number of producing mines .....	7	7	9
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 .....	1,617	1,900	2,029
Workmen .....	13,731	16,646	17,947
<b>Total</b> .....	<b>15,348</b>	<b>18,546</b>	<b>19,976</b>
Earnings:			
Administrative and office .....	\$ 7,022,331	\$ 8,671,313	\$ 10,356,840
Workmen .....	\$ 42,152,287	\$ 55,871,967	\$ 66,088,612
<b>Total</b> .....	<b>\$ 49,174,618</b>	<b>\$ 64,543,280</b>	<b>\$ 76,445,452</b>
Fuel and purchased electricity used .....	\$ 14,330,174	\$ 16,500,093	\$ 17,923,269
Process supplies used .....	\$ 14,016,729	\$ 17,319,120	\$ 19,718,017
Cost of ores, concentrates, matte, etc. ....	\$ 126,924,515	\$ 161,844,917	\$ 164,546,445
Estimated gross value of matte exported and Canadian refinery products <sup>2</sup> .....	\$ 314,765,914	\$ 410,677,639	\$ 410,682,721
Net value of production <sup>3</sup> .....	\$ 159,494,496	\$ 215,013,509	\$ 208,466,961

1. Does not include data for mines, power plants, etc., operated by subsidiary companies.

2. Includes value of customs material.

3. Gross value of production less cost of fuel, electricity, process supplies, ores, concentrates, matte, etc.



TABLE 2. Output from Nickel-Copper Mines and Smelters in Ontario, 1950-1952

	1950	1951	1952
	(Tons of 2,000 pounds)		
Ore shipped from mines .....	10,777,859	12,885,445	14,380,684
Ore treated <sup>1</sup> .....	10,788,506	12,870,547	14,348,126
Converter copper produced in Ontario from Ontario ores <sup>2</sup> .....	108,802	120,677	115,684
Nickel produced in Ontario <sup>3</sup> .....	82,816	83,070	88,886
Matte and residues exported <sup>4</sup> .....	60,399	71,963	78,305
Nickel content of matte exported .....	40,775	48,259	51,673
Copper content of matte exported .....	8,395	8,301	9,416

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 Nickel<sup>1</sup> from Canadian Ores, 1943-1952

Year	Tons	Value	Year	Tons	Value
		\$			\$
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
1946 .....	96,062	45,385,155	1951 .....	137,903	151,269,994
1947 .....	118,626	70,650,764	1952 .....	140,559	151,349,438

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

TABLE 4. Production of Nickel<sup>1</sup>, by Months, 1951 and 1952

Month	1951	1952	Month	1951	1952
	(Tons of 2,000 pounds)			(Tons of 2,000 pounds)	
January .....	10,993	11,813	August .....	12,304	11,975
February .....	9,702	10,719	September .....	11,682	10,982
March .....	11,676	12,381	October .....	11,758	11,773
April .....	10,603	12,318	November .....	11,570	11,381
May .....	12,523	12,413	December .....	11,370	11,815
June .....	11,889	12,563			
July .....	11,828	10,426	<b>Total</b> .....	<b>137,903</b>	<b>140,559</b>

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

TABLE 5. Imports and Exports of Nickel, 1951 and 1952

	1951		1952		
	Quantity	Value	Quantity	Value	
		\$		\$	
IMPORTS					
Nickel and nickel-silver in ingots .....	lb.	95,543	47,862	63,448	35,960
Nickel rods for wire (90% nickel) .....	"	65,797	64,648	79,557	75,863
Nickel in bars and rods, strips and sheets .....	"	2,326,859	2,105,139	3,131,723	2,602,817
Nickel-silver bars, rods and strips .....	"	13,829	11,170	6,603	4,244
Nickel-chromium in bars .....	"	109,897	139,865	17,003	22,367
Nickel, manufactures of, not plated .....		—	244,111	—	146,614
Nickel-plated household hollow-ware .....			10,094		3,732
Nickel household hollow-ware .....	}	—	3,475,765	—	2,590,400
Nickel-plated ware, n.o.p. ....					
EXPORTS					
Nickel in matte or speiss .....	tons	57,882	60,286,680	63,753	70,248,850
Nickel in oxide .....	"	944	802,064	1,211	1,060,737
Nickel, fine .....	"	72,357	75,600,713	77,059	79,672,175

**TABLE 6. Production, Consumption and Exports of Nickel, 1943-1952**

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 spels	Nickel contained in oxide	Refined nickel
			(Tons of 2,000 pounds)		
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
1951 .....	137,903	2,744	57,882	944	72,357
1952 .....	140,559	2,223	63,753	1,211	77,058

TABLE 7. World Production of Nickel, 1948-1952 (From the "Annual Report of the American Bureau of Metal Statistics")

Country	1948	1949	1950	1951	1952
	(Tons of 2,000 pounds)				
Canada <sup>1</sup> .....	131,740	128,689	123,659	137,903	139,812
New Caledonia <sup>2</sup> .....	5,381	3,716	6,944	10,141	14,300
Norway.....	—	—	—	—	—
United States <sup>3</sup> .....	883	790	913	756	683
Cuba <sup>4</sup> .....	—	—	—	—	8,957
Finland.....	—	—	—	—	—
Union of South Africa.....	505	626	929	1,254	1,444

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 Forms, 1951 and 1952**

	1951		1952	
	Tons	Value	Tons	Value
		\$		\$
By provinces:				
Newfoundland .....	2,899	1,606,233	2,959	1,689,079
Nova Scotia.....	—	—	383	218,663
Quebec.....	68,866	38,151,738	63,846	39,297,212
Ontario.....	128,809	70,861,789	125,343	70,973,056
Manitoba .....	15,839	8,774,768	9,374	5,350,804
Saskatchewan .....	31,625	17,520,373	30,344	17,320,154
British Columbia .....	21,932	12,110,779	20,786	11,828,103
Northwest Territories .....	1	536	3	1,969
<b>Total .....</b>	<b>269,971</b>	<b>149,026,216</b>	<b>258,038</b>	<b>146,679,040</b>
By forms (where computed):				
In blister and anode copper produced <sup>1</sup> .....	236,036	130,763,621	223,394	127,512,951
In ores, concentrates and copper matte exported .....	25,634	14,161,852	25,228	14,363,928
In nickel-copper matte exported.....	8,801	4,100,743	9,416	4,802,161
<b>Total .....</b>	<b>269,971</b>	<b>149,026,216</b>	<b>258,038</b>	<b>146,678,040</b>

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

TABLE 9. Production of Copper<sup>1</sup>, by Months, 1951 and 1952

Month	1951	1952	Month	1951	1952
	(Tons)			(Tons)	
January .....	22,850	22,432	August .....	22,701	21,016
February .....	20,352	20,422	September .....	21,825	21,606
March .....	24,347	22,421	October .....	20,972	21,108
April .....	23,913	22,053	November .....	22,149	21,340
May .....	23,549	22,697	December .....	22,123	22,318
June .....	22,653	20,724			
July .....	22,537	19,901	<b>Total</b> .....	<b>269,971</b>	<b>258,038</b>

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

TABLE 10. Production of Copper from Ontario Ores Only, 1943-1952

Year	Tons	Value	Year	Tons	Value
		\$			\$
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
1946 .....	89,712	22,502,528	1951 .....	128,809	70,861,789
1947 .....	113,933	46,018,544	1952 .....	125,346	70,973,056

Note. Almost entirely from nickel ores.

TABLE 11. Production of Copper, by Kinds of Ores and by Provinces, 1951 and 1952

Province	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	Total
	(Tons)			
<b>1951</b>				
Newfoundland .....	—	—	2,899	2,899
Quebec .....	68,064	—	802	68,866
Ontario .....	—	128,640	169	128,809
Manitoba .....	15,839	—	—	15,839
Saskatchewan .....	31,625	—	—	31,625
British Columbia .....	13,287	—	8,645	21,932
Northwest Territories .....	—	—	1	1
<b>Canada</b> .....	<b>128,813</b>	<b>128,640</b>	<b>12,516</b>	<b>269,971</b>
<b>1952</b>				
Newfoundland .....	—	—	2,959	2,959
Nova Scotia .....	—	—	383	383
Quebec .....	67,749	—	1,097	68,846
Ontario .....	214	125,100	29	125,343
Manitoba .....	9,374	—	—	9,374
Saskatchewan .....	30,344	—	—	30,344
British Columbia .....	19,138	—	1,648	20,786
Northwest Territories .....	—	—	3	3
<b>Canada</b> .....	<b>126,819</b>	<b>125,100</b>	<b>6,119</b>	<b>258,038</b>

TABLE 12. Production of Refined Copper, 1943-1952

Year	Tons	Year	Tons
1943 .....	251,495	1948 .....	221,275
1944 .....	256,244	1949 .....	226,083
1945 .....	228,861	1950 .....	238,204
1946 .....	167,221	1951 .....	245,466
1947 .....	202,427	1952 .....	196,320



TABLE 13. Production of Refined Copper, by Months, 1951 and 1952

Month	1951	1952	Month	1951	1952
	Tons			Tons	
January .....	20,870	20,364	August .....	21,740	9,396
February .....	18,342	18,901	September .....	18,624	10,323
March .....	20,564	20,480	October .....	21,260	12,761
April .....	20,347	20,363	November .....	19,195	11,282
May .....	22,731	20,548	December .....	20,336	17,432
June .....	21,315	20,274			
July .....	20,142	14,196	<b>Total .....</b>	<b>245,466</b>	<b>196,320</b>

TABLE 14. Imports and Exports of Copper, 1951 and 1952

	1951		1952	
	Quantity	\$	Quantity	\$
<b>IMPORTS</b>				
Copper in blocks, pigs and ingots .....	3,021,700	680,222	25,945,100	8,100,435
Copper scrap .....	2,528,200	300,924	4,097,800	849,331
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables .....	2,841,700	676,121	1,831,300	418,073
Copper bars or rods, n.o.p. ....	192,600	55,187	228,900	62,818
Copper in strips, sheets or plates .....	760,500	356,540	229,200	116,956
Copper tubing, not manufactured .....	1,302,400	975,671	710,600	454,689
Copper rollers for wall paper .....	—	178,912	—	122,496
Copper wire, n.o.p. ....	262,164	148,858	207,482	92,120
Copper wire cloth, woven .....	—	24,150	—	14,006
Copper manufactures, n.o.p. ....	—	656,292	—	695,058
Copper sub-acetate, copper precipitate .....	800	371	4,183,782	602,306
Copper sulphate (blue vitriol) .....	74,731	16,291	3,073,265	293,331
<b>Total .....</b>	<b>—</b>	<b>4,069,539</b>	<b>—</b>	<b>11,821,619</b>
<b>EXPORTS</b>				
Copper, fine, contained in ore, matte, regulus, etc. ....	36,853	14,740,460	34,437	15,387,824
Copper, old and scrap, slag skimmings .....	994	549,532	1,736	575,187
Copper in ingots, bars, cakes, slabs and billets .....	101,832	59,022,855	113,675	71,406,317
Copper in rods, strips, sheets and plates .....	12,418	7,378,396	18,627	13,438,505
Copper tubing .....	1,745,300	820,032	8,399,700	4,130,342
Copper wire and cable, insulated .....	—	3,048,794	—	8,744,749
Copper wire, bare .....	—	1,462,336	—	5,619,034
Copper wire, screen .....	—	54,336	—	65,521
Copper manufactures, n.o.p. ....	—	111,330	—	125,048
<b>Total .....</b>	<b>—</b>	<b>87,188,071</b>	<b>—</b>	<b>119,490,527</b>

TABLE 15. Production of Primary Copper, Exports and Imports, 1943-1952

Year	Production in Canada <sup>1</sup>	Exports			Imports refined copper
		Copper in ore, matte, etc.	Blister copper	Refined copper, ingots, bars, etc.	
(Tons of 2,000 pounds)					
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
1951 .....	289,971	36,853	—	101,832	1,511
1952 .....	258,038	34,437	27,974	113,675 <sup>2</sup>	12,973

<sup>1</sup> Blister copper plus recoverable copper in matte and concentrates exported.<sup>2</sup> Includes blister and anode copper exported for refining.

TABLE 16. Production of Refined Copper, Consumption, Imports and Exports, 1943-1952

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
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	67,478	—	10,931
1948	221,275	109,844	116,169	—	13,956
1949	226,083	100,905	127,160	9	9,844
1950	238,204	106,876	134,244	122	11,598
1951	245,466	134,174	101,832	1,511	19,590
1952	196,320	130,347	85,701 <sup>1</sup>	12,973	11,326

1. Excludes blister and anode copper which was included in export figures shown in the trade of Canada reports.

TABLE 17. World Production of Copper by Countries of Origin of Ore<sup>1</sup>

(From the "Annual Report of The American Bureau of Metal Statistics")

Country	1949	1950	1951	1952
(Tons of 2,000 pounds)				
United States	761,904	915,448	938,133	932,629
Mexico	70,662	65,266	60,875	61,166
Canada	263,457	264,209	269,971	258,868
Newfoundland	19,178	22,663	21,529	19,106
Cuba	5,593	5,185	5,342	5,184
Bolivia	409,206	399,867	418,572	446,144
Chile	30,819	33,372	35,609	32,826
Peru	776	580	—	—
Ecuador	—	—	—	—
<b>Total America</b>	<b>1,561,595</b>	<b>1,706,588</b>	<b>1,750,031</b>	<b>1,755,923</b>
Austria	1,429	1,808	2,026	2,914
Finland	26,811	18,993	19,517	25,023
Germany <sup>2</sup>	962	1,500	1,851	2,599
Italy	33	20	204	209
Norway	16,398	17,219	15,436	16,094
Spain	7,388	6,802	8,333	9,896
Sweden	17,938	17,746	15,925	17,500
Yugoslavia	41,559	47,722	39,628	40,752
Other Europe	17,000	16,600	15,000	15,000
<b>Total Europe</b>	<b>129,518</b>	<b>128,410</b>	<b>117,920</b>	<b>129,987</b>
Japan	36,244	43,466	47,134	58,625
India	7,157	7,408	7,933	6,808
Korea (South)	31	30	6	100
Turkey	11,889	12,793	17,884	25,460
Philippines	7,724	11,446	14,012	14,596
Cyprus	26,385	25,685	25,145	29,564
Other Asia	9,800	9,900	10,000 <sup>3</sup>	10,000 <sup>3</sup>
<b>Total Asia</b>	<b>99,230</b>	<b>110,728</b>	<b>122,114</b>	<b>145,153</b>
Belgian Congo	155,864	193,917	211,596	226,797
Rhodesia	289,946	314,589	349,667	327,191
South West Africa	9,514	10,678	12,161	14,610
Union of South Africa	33,060	36,755	36,364	37,744
Other Africa	1,300	1,750	1,500 <sup>3</sup>	1,500 <sup>3</sup>
<b>Total Africa</b>	<b>489,684</b>	<b>557,689</b>	<b>611,288</b>	<b>607,842</b>
Australia	15,079	18,659	18,172	21,802
Russia	220,500	240,000	280,000	325,000
<b>Total world as reported</b>	<b>2,515,606</b>	<b>2,762,074</b>	<b>2,899,525</b>	<b>2,985,707</b>

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. Federal Republic of Germany, Soviet Zone is estimated and included under "Other Europe". Russia, Yugoslavia and to some extent countries grouped under "Other" have been estimated.

3. Conjectural.



TABLE 18. Canadian Copper Ore Reserves as Officially Reported

(From the "Annual Report of the American Bureau of Metal Statistics")

	Year	Province	Ore	Average grade	Copper content
			Short tons	%	Short tons
Amulet Dufault .....	1952	Quebec .....	650,000	6.12	39,800
East Sullivan .....	1952	Quebec .....	3,826,577	1.58	60,500
Falconbridge .....	1952	Ontario .....	32,987,000	0.93	306,800
Granby Consolidated (Allenby) .....	1952	British Columbia .....	3,824,000	0.95	35,300
Hudson Bay .....	1952	Manitoba .....	17,028,000	3.21	546,600
International Nickel .....	1952	Ontario .....	256,355,906	—	7,795,326 <sup>1</sup>
Noranda .....	1952	Quebec .....	15,579,933	2.12	330,300
Normetal .....	1952	Quebec .....	2,637,400	2.63	69,400
Queumont .....	1952	Quebec .....	9,574,000	1.39	133,100
Sherritt-Gordon (Lynn Lake) .....	1952	Manitoba .....	14,055,000	0.62	86,900
Waite Amulet "F" and "C" ore bodies .....	1952	Quebec .....	1,025,000	4.39	45,000

1. Copper-nickel content.

TABLE 19. Production of Metals of the Platinum Group<sup>1</sup> from Ontario Copper-Nickel Ores, 1943-1952

Year	Platinum <sup>2</sup>		Palladium <sup>3</sup>	
	Fine ounces	\$	Fine ounces	\$
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	6,289,063
1950 .....	124,453	10,246,215	148,741	7,578,144
1951 .....	153,461	14,540,430	164,905	7,950,107
1952 .....	122,315	10,916,614	157,407	7,559,109

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; 1950, 129 ounces; 1951, 22 ounces and 1952, 2 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, 1943-1952

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		\$		\$
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
1951 .....	82,409	267,005	6,301	11,594
1952 .....	81,578	265,129	5,710	9,707

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, 1943-1952

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value <sup>1</sup>
		\$		\$
1943.....	55,776	2,147,376	1,648,888	746,122
1944.....	55,286	2,128,472	1,828,978	786,461
1945 <sup>2</sup> .....	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
1951.....	40,394	1,488,519	1,128,205	1,066,718
1952.....	43,689	1,497,222	1,231,047	1,028,170

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, 1952

	Administrative and office employees				Workmen			
	Male	Female	Total	Total salaries	Male	Female	Total	Total wages
	(Number)			\$	(Number)			\$
Mines.....	796	33	829	4,556,855	9,982	9	9,991	37,595,100
Smelters and refineries.....	1,040	160	1,200	5,799,985	7,952	4	7,956	28,493,512
<b>Total.....</b>	<b>1,836</b>	<b>193</b>	<b>2,029</b>	<b>10,356,840</b>	<b>17,934</b>	<b>13</b>	<b>17,947</b>	<b>66,088,612</b>
Total man-hours worked.....	5,690,746				34,468,676			

TABLE 23. Workmen, by Sex and Months, Entire Industry, 1951 and 1952

Month	1951		1952	
	Male	Female	Male	Female
	(Number)			
January.....	14,845	7	17,614	12
February.....	15,209	7	17,705	13
March.....	15,324	7	17,629	13
April.....	15,607	8	17,575	11
May.....	15,945	8	17,852	11
June.....	17,159	8	18,004	11
July.....	17,504	9	18,109	12
August.....	17,510	9	18,164	13
September.....	17,422	9	18,039	12
October.....	17,606	8	18,198	13
November.....	17,807	8	18,170	14
December.....	17,719	8	18,103	14
<b>Average.....</b>	<b>16,638</b>	<b>8</b>	<b>17,934</b>	<b>13</b>
Total man-hours worked.....	33,072,725		34,468,676	

TABLE 24. Workmen, by Months, in Nickel-Copper Mines Only<sup>1</sup>, 1951 and 1952

Month	1951						1952				
	Mine			Mill	Total	Mine			Mill	Total	
	Surface		Underground	Male		Surface		Underground	Male		
	Male	Female				Male	Female				
	(Number)										
January .....	1,852	3	5,831	261	7,947	2,194	8	7,087	412	9,701	
February .....	1,905	3	6,015	330	8,253	2,223	9	7,204	417	9,853	
March .....	1,927	3	6,089	342	8,361	2,225	9	7,176	399	9,809	
April .....	2,011	4	6,219	347	8,581	2,293	7	7,081	404	9,785	
May .....	2,118	4	6,263	349	8,734	2,329	7	7,201	397	9,934	
June .....	2,220	4	6,607	380	9,211	2,368	7	7,245	401	10,020	
July .....	2,314	5	6,845	406	9,570	2,375	8	7,240	402	10,025	
August .....	2,373	5	6,780	419	9,577	2,454	9	7,218	386	10,067	
September .....	2,270	5	6,661	408	9,544	2,413	8	7,236	381	10,038	
October .....	2,298	4	7,028	423	8,753	2,443	9	7,351	384	10,187	
November .....	2,335	4	7,110	416	9,865	2,395	10	7,442	389	10,236	
December .....	2,282	4	7,082	413	9,781	2,443	10	7,352	382	10,187	
Average .....	2,162	4	6,558	373	9,097	2,347	9	7,239	396	9,991	
Total man-hours worked .....			17,911,960					19,114,497			

1. Included in Table 23.

TABLE 25. Workmen, by Months, in Nickel-Copper Smelters and Refineries Only<sup>1</sup>, 1951 and 1952

Month	1951		1952		Month	1951		1952	
	Male	Female	Male	Female		Male	Female	Male	Female
(Number)					(Number)				
January .....	6,901	4	7,921	4	September .....	7,883	4	8,009	4
February .....	6,959	4	7,861	4	October .....	7,857	4	8,020	4
March .....	6,966	4	7,829	4	November .....	7,946	4	7,944	4
April .....	7,030	4	7,797	4	December .....	7,942	4	7,926	4
May .....	7,215	4	7,925	4	Average .....	7,545	4	7,952	4
June .....	7,952	4	7,990	4	Total man-hours worked .....	15,160,765		15,354,179	
July .....	7,939	4	8,092	4					
August .....	7,938	4	8,106	4					

1. Included in Table 23.

TABLE 26. Specified Taxes Paid by the Nickel-Copper Mining, Smelting and Refining Industry, 1950-1952

	1950	1951	1952
	\$	\$	\$
Dominion income tax, including tax on non-operating revenue .....	12,577,327	23,340,308	29,929,507
Dominion excess profits tax .....	2,789	—	—
Total provincial taxes .....	3,886,099	6,724,858	5,986,531
Total municipal taxes .....	553,595	718,814	831,634
Grand total taxes paid .....	17,019,810	30,783,980	36,747,672

TABLE 27. Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1950-1952

	1950	1951	1952
	\$	\$	\$
Workmen's compensation .....	561,751	560,310	677,954
Silicosis assessment .....	91,059	112,355	4,299
Unemployment insurance .....	338,179	434,496	500,894
Aggregate cost of all supplies purchased .....	47,142,159	62,443,540	61,396,496
Aggregate cost of plant and equipment purchased .....	798,318	2,992,706	4,337,999





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## Directory of Firms in the Nickel-Copper Mining, Smelting and Refining Industry, 1952

Name of firm	Head office address	Location of Canadian plant
<b>Quebec:</b>		
Eastern Metals Corporation Ltd. ....	Box 492, Sherbrooke .....	St. Fabien de Panet
Miller Copper Mines Ltd. ....	414 St. James St. W., Montreal .....	Gaspe
National Nickel Corporation Ltd. ....	437, Ouest rue St-Jacques, Montréal .....	Talon
Quebec Copper Corporation Ltd. ....	100 Adelaide St. W., Toronto, Ontario .....	McKim and Garson
<b>Ontario:</b>		
Falconbridge Nickel Mines, Ltd. <sup>1</sup> .....	21 Dundas Square, Toronto .....	Tps. of Falconbridge, McKim, Levack.
International Nickel Company of Canada, Limited <sup>1</sup> ....	Copper Cliff .....	Mines: Tps. of Levack, Snider, McKim
Coldstream Copper Mines .....	200 Bay St., Toronto .....	Kashabavie
East Rim Nickel Mines Ltd. <sup>1</sup> .....	350 Bay St., Toronto .....	MacLennan Twp.
Milnet Mines Ltd. <sup>1</sup> .....	320 Bay St., Toronto .....	Parkin Twp.
Nickel Offsets Ltd. ....	50 King St. W., Toronto .....	Chelmsford
Quebec Nickel Corporation Ltd. ....	Box 492, Sherbrooke, Quebec .....	Gordon-Werner Lake
Sudbury Northrim Exploration Co. Ltd. ....	707 Dominion Bank Bldg., Toronto .....	Sudbury Basin
<b>Manitoba:</b>		
Sherritt-Gordon Mines, Ltd. ....	25 King St. West, Toronto, Ontario .....	Lynn Lake
Lynswain Nickel Copper Ltd. ....	85 Richmond St. W., Toronto, Ontario .....	Granville Lake
Maskwa Nickel Chrome Mines Ltd. ....	900 Hamilton Bldg., Winnipeg .....	Bird River
<b>British Columbia:</b>		
Western Nickel Ltd. ....	744 W. Hastings St., Vancouver .....	Hope
<b>Northwest Territories:</b>		
Rankin Inlet Nickel Mines Ltd. ....	320 Bay St., Toronto, Ontario .....	Rankin Inlet

1. Producing—Other concerns doing development work only.