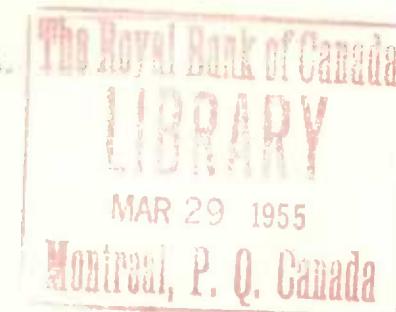


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# THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY

1953



*Published by Authority of*  
The Right Honourable C. D. Howe, Minister of Trade and Commerce

DOMINION BUREAU OF STATISTICS  
Industry and Merchandising Division  
Mineral Statistics Section

6502-572  
2-2-55

Price 25 cents

Vol. I—Part I—D-1

EDMOND Cloutier, C.M.G., O.A., D.S.P., Queen's Printer and Controller of Stationery, Ottawa, 1955.

## NOTICE

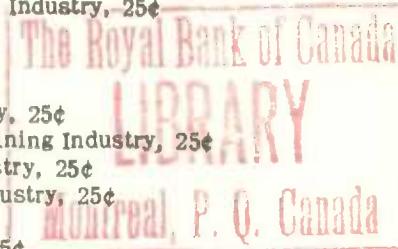
The annual reports prepared by the Industry and Merchandising Division of the Bureau of Statistics are divided into 3 volumes, as follows: Volume I — The Primary Industries, including mining, forestry and fisheries; Volume II—Manufacturing; Volume III—Merchandising and Services. The volumes are made 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

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- 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¢
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## THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY, 1953

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 \$420,562,436 in 1953 compared with \$410,682,721 in 1952.

In Ontario there were five firms producing nickel-copper ores in the Sudbury area. 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, Milnet Mines Limited, and Nickel Offsets, Limited, shipped nickel-copper ores and concentrates 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 1953 the International Nickel Company of Canada Limited, shipped ores from the Garson, Creighton, Levack, Frood and Murray mines. Falconbridge Mines Limited, operated the Falconbridge, East, McKim, Mount Nickel, and Hardy Mines.

The railway to Lynn Lake, Manitoba, was completed and Sherritt-Gordon Mines Ltd., began shipments of copper concentrates to the International Nickel smelter and nickel concentrates to the firm's own refinery at Fort Saskatchewan, Alberta. This refinery had not started production at the year-end.

In 1953 the industry employed 20,887 persons to whom \$84,074,041 were distributed as salaries and wages. Fuel cost \$13,300,426 and 1,177,144,476 kwh of electricity were purchased for \$5,192,637. Process supplies used were valued at \$21,991,611.

TABLE I. Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry<sup>1</sup>, 1951-1953

		1951	1952	1953
Number of firms .....		5	17	23
Number of mines producing or doing development work.....		11	32	37
Number of producing mines .....		7	9	14
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 .....	No.	1,900	2,029	2,218
Workmen .....	No.	16,646	17,947	18,689
Total .....	No.	18,546	19,976	20,887
Earnings:				
Administrative and office .....	\$	8,671,313	10,356,840	11,577,414
Workmen .....	\$	55,871,967	66,088,612	72,496,627
Total .....	\$	64,543,280	76,445,452	84,074,041
Fuel and purchased electricity used .....	\$	16,500,093	17,923,269	18,493,063
Process supplies used .....	\$	17,319,120	19,718,017	21,991,611
Cost of ores, concentrates, matte, etc. ....	\$	161,844,917	164,546,445	181,370,610
Estimated gross value of matte exported and Canadian refinery products <sup>2</sup> ....	\$	410,677,639	410,682,721	420,562,436
Net value of production <sup>3</sup> .....	\$	215,013,509	208,466,961	197,280,197

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, 1951-1953

-	1951	1952	1953
(Tons of 2,000 pounds)			
Ore hoisted.....	12,885,445	14,380,684	15,004,102
Ore treated <sup>1</sup> .....	12,870,547	14,348,126	14,948,901
Converter copper produced in Ontario from Ontario ores <sup>2</sup> .....	120,677	115,684	119,856
Nickel produced in Ontario <sup>3</sup> .....	83,070	88,886	93,873
Matte and residues exported <sup>4</sup> .....	71,963	78,305	77,045
Nickel content of matte exported.....	48,259	51,673	49,779
Copper content of matte exported.....	8,301	9,416	10,294

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, 1944-1953

Year	Tons	Value	Year	Tons	Value
		\$			\$
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
1948 .....	131,740	86,904,235	1953 .....	143,693	160,430,098

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

TABLE 4. Production of Nickel<sup>1</sup>, by Months, 1951-1953

Month	1951	1952	1953	Month	1951	1952	1953
(Tons of 2,000 pounds)							
January.....	10,993	11,813	12,517	August.....	12,304	11,975	11,911
February.....	9,702	10,719	10,662	September.....	11,682	10,982	12,031
March.....	11,676	12,381	12,268	October.....	11,758	11,773	12,469
April.....	10,603	12,318	11,841	November.....	11,570	11,381	12,764
May.....	12,523	12,413	11,610	December.....	11,370	11,815	12,122
June.....	11,889	12,563	11,697	Total .....	137,903	140,559	143,693
July.....	11,828	10,426	11,801				

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

TABLE 5. Imports and Exports of Nickel, 1952 and 1953

-	-	1952		1953	
		Quantity	Value	Quantity	Value
<b>IMPORTS</b>					
Nickel and nickel-silver in ingots.....	lb.	63,448	35,960	900,533	387,335
Nickel rods for wire (90% nickel).....	"	79,557	75,863	59,883	62,406
Nickel in bars and rods, strips and sheets.....	"	3,131,723	2,602,817	5,137,198	3,959,511
Nickel-silver bars, rods and strips.....	"	6,603	4,244	2,050	1,777
Nickel-chromium in bars.....	"	17,003	22,367	66,439	86,771
Nickel, manufactures of, not plated.....		-	146,614	--	202,551
Nickel-plated household hollow-ware.....		}	3,732	--	11,578
Nickel household hollow-ware.....		-	2,590,400	--	2,700,760
Nickel-plated ware, n.o.p.....					
<b>EXPORTS</b>					
Nickel in matte or speiss.....	tons	63,753	70,248,850	63,909	70,312,715
Nickel in oxide.....	"	1,211	1,060,737	1,299	1,328,993
Nickel, fine.....	"	77,059	79,672,175	79,909	90,900,597

TABLE 6. Production, Consumption and Exports of Nickel, 1944-1953

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)					
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	39,787	6,535	70,755
1948 .....	131,740	1,887	50,801	9,792	71,247
1949 .....	128,689	1,749	56,902	1,151	89,088
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
1953 .....	143,693		63,909	1,299	79,909

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

Country	1949	1950	1951	1952	1953
(Tons of 2,000 pounds)					
Canada <sup>1</sup> .....	128,689	123,659	137,903	140,559	143,016
New Caledonia <sup>2</sup> .....	2,728	4,685	7,385	11,575	—
Norway .....	—	—	—	—	—
United States <sup>3</sup> .....	790	913	756	633	602
Cuba <sup>4</sup> .....	—	—	—	8,924	13,844
Finland .....	—	—	—	446	—
Union of South Africa .....	626	929	1,254	1,444	1,891

1. Production in all forms from Canadian ores.

2. Nickel content of ore.

3. By-product in electrolytic refining of copper.

4. Nickel content and small fraction of cobalt in oxide.

TABLE 8. Total Production of New Copper, by Provinces and by Forms, 1952 and 1953

	1952		1953	
	Tons	Value	Tons	Value
			\$	\$
<b>By provinces:</b>				
Newfoundland .....	2,959	1,689,079	2,814	1,684,862
Nova Scotia .....	383	218,663	788	471,962
Quebec .....	63,846	39,297,212	54,920	32,886,057
Ontario .....	125,343	70,973,056	130,582	77,587,439
Manitoba .....	9,374	5,350,804	9,412	5,635,573
Saskatchewan .....	30,344	17,320,154	30,588	18,316,355
British Columbia .....	20,786	11,828,103	24,148	14,371,494
Northwest Territories .....	3	1,969	—	—
<b>Total</b> .....	<b>258,038</b>	<b>146,679,040</b>	<b>253,252</b>	<b>150,983,742</b>
<b>By forms (where computed):</b>				
In blister and anode copper produced <sup>1</sup> .....	223,394	127,512,951	206,848	123,860,140
In ores, concentrates and 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
<b>Total</b> .....	<b>258,038</b>	<b>146,678,040</b>	<b>253,252</b>	<b>150,983,742</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, 1951-1953

Month	1951	1952	1953	Month	1951	1952	1953
	(Tons)				(Tons)		
January .....	22,850	22,432	23,824	August .....	22,701	21,016	21,437
February .....	20,352	20,422	20,897	September .....	21,825	21,606	19,601
March .....	24,347	22,421	24,039	October .....	20,972	21,108	19,023
April .....	22,913	22,053	22,198	November .....	22,149	21,340	17,256
May .....	23,549	22,697	22,300	December .....	22,123	22,318	17,766
June .....	22,653	20,724	22,110	Total .....	269,971	258,038	253,252

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

TABLE 10. Production of Copper from Ontario Ores Only, 1944-1953

Year	Tons	Value	Year	Tons	Value
		\$			\$
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
1948 .....	120,383	53,384,560	1953 .....	130,582	77,587,439

Note. Almost entirely from nickel ores.

TABLE 11. Production of Copper, by Kinds of Ores and by Provinces, 1952 and 1953

Province	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	Total
(Tons)				
<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>
<b>1953</b>				
Newfoundland .....	—	—	2,814	2,814
Nova Scotia .....	—	—	788	788
Quebec .....	53,663	—	1,257	54,920
Ontario .....	409	130,149	24	130,582
Manitoba .....	9,362	50	—	9,412
Saskatchewan .....	30,588	—	—	30,588
British Columbia .....	20,923	—	3,225	24,148
<b>Canada</b> .....	<b>114,945</b>	<b>130,199</b>	<b>8,108</b>	<b>253,252</b>

TABLE 12. Production of Refined Copper, 1944-1953

Year	Tons	Year	Tons
1944 .....	256,244	1949 .....	226,083
1945 .....	228,861	1950 .....	238,204
1946 .....	167,221	1951 .....	245,466
1947 .....	202,427	1952 .....	196,320
1948 .....	221,275	1953 .....	236,966

TABLE 13. Production of Refined Copper, by Months, 1951-1953

Month	1951	1952	1953	Month	1951	1952	1953
January .....	20,870	20,364	21,831	August .....	21,740	9,396	19,886
February .....	18,342	18,901	21,075	September .....	18,624	10,323	16,877
March .....	20,564	20,480	22,432	October .....	21,260	12,761	17,975
April .....	20,347	20,363	21,747	November .....	19,195	11,282	17,501
May .....	22,731	20,548	20,179	December .....	20,336	17,432	19,082
June .....	21,315	20,274	18,384	Total .....	245,466	196,320	236,966
July .....	20,142	14,196	19,997				

TABLE 14. Imports and Exports of Copper, 1952 and 1953

		1952		1953	
		Quantity	\$	Quantity	\$
<b>IMPORTS</b>					
Copper in blocks, pigs and ingots .....	lb.	25,945,100	8,100,435	11,030,700	2,970,226
Copper scrap .....	"	4,097,800	849,331	18,165,400	4,619,223
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables .....	"	1,831,300	418,073	2,498,400	647,824
Copper bars or rods, n.o.p. ....	"	228,900	62,818	150,400	40,601
Copper in strips, sheets or plates .....	"	229,200	116,956	333,400	151,802
Copper tubing, not manufactured .....	"	710,600	454,689	647,100	423,847
Copper rollers for wall paper .....		—	122,496	—	86,160
Copper wire, n.o.p. ....	lb.	207,482	92,120	583,008	190,467
Copper wire cloth, woven .....		—	14,006	—	14,808
Copper manufactures, n.o.p. ....		—	695,058	—	783,085
Copper sub-acetate, copper precipitate .....	lb.	4,183,782	602,306	400	174
Copper sulphate (blue vitriol) .....	"	3,073,265	293,331	3,991,666	467,757
Total .....		—	11,821,619	—	10,395,974
<b>EXPORTS</b>					
Copper, fine, contained in ore, matte, regulus, etc. ....	tons	34,437	15,387,824	51,158	27,625,485
Copper, old and scrap, slag skimmings .....	"	1,736	575,187	10,647	5,051,376
Copper in ingots, bars, cakes, slabs and billets .....	"	113,675	71,406,317	131,994	80,939,921
Copper in rods, strips, sheets and plates .....	"	18,627	13,436,505	5,768	3,734,309
Copper tubing .....	lb.	8,399,700	4,130,342	2,174,600	1,132,689
Copper wire and cable, insulated .....		—	8,744,749	—	4,156,306
Copper wire, bare .....		—	5,619,034	—	1,952,616
Copper wire, screen .....		—	65,521	—	42,448
Copper manufactures, n.o.p. ....		—	125,048	—	41,764
Total .....		—	119,490,527	—	124,676,914

TABLE 15. Production of Primary Copper, Exports and Imports, 1944-1953

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)					
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 .....	269,971	36,853	—	101,832	1,511
1952 .....	258,038	34,437	27,974	113,675 <sup>2</sup>	12,973
1953 .....	253,252	51,158	3,527	131,994	5,515

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

2. Includes blister and anode copper exported for refining.

TABLE 16. Production of Refined Copper, Consumption, Imports and Exports, 1944-1953

Year	Production in Canada	Domestic consumption	Exports	Imports	Stocks at end of period
(Tons of 2,000 pounds)					
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	9,844
1950 .....	238,204	106,376	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	17,935
1953 .....	236,966	108,526	128,467 <sup>1</sup>	5,515	15,032

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	1950	1951	1952	1953
(Tons of 2,000 pounds)				
United States .....	915,446	938,133	932,629	948,509
Mexico .....	65,266	60,875	61,166	69,800
Canada .....	264,209	269,971	258,868	253,652
Cuba .....	22,663	21,529	19,106	17,006
Bolivia .....	5,185	5,342	5,184	4,920
Chile .....	399,867	419,626	446,144	400,284
Peru .....	33,372	35,609	32,826	37,896
Ecuador .....	580	2	-	-
Total America .....	1,706,588	1,751,087	1,755,630	1,732,067
Austria .....	1,808	2,026	2,914	3,279
Finland .....	18,993	19,517	25,023	20,700
Germany <sup>2</sup> .....	1,500	1,851	2,599	2,362
Italy .....	20	204	193	313
Norway .....	17,219	15,436	15,027	14,440
Spain .....	6,802	8,333	9,896	9,406
Sweden .....	17,746	15,925	17,500	14,555
Yugoslavia .....	47,722	39,628	40,752	38,930
Other Europe .....	16,600	15,000	15,000	15,500
Total Europe .....	128,410	117,920	128,904	119,385
Japan .....	43,466	47,134	58,025	64,294
India .....	7,408	7,933	6,808	5,510
Korea (South) .....	30	6	500	500
Turkey .....	12,768	19,126	25,460	25,641
Philippines .....	11,446	14,012	14,596	14,016
Cyprus .....	25,685	25,145	29,564	23,937
Other Asia .....	9,900	10,000 <sup>3</sup>	10,000 <sup>3</sup>	10,000
Total Asia .....	110,703	123,356	145,533	143,898
Belgian Congo .....	193,917	211,596	226,797	236,055
Rhodesia .....	327,923	352,048	363,188	410,810
South West Africa .....	10,678	12,161	14,610	12,486
Union of South Africa .....	36,755	36,364	37,758	38,656
Other Africa .....	1,690	1,630	2,190	2,200
Total Africa .....	570,963	613,799	644,543	700,207
Australia .....	18,659	18,172	21,802	38,123
Russia .....	240,000	280,000	325,000	334,500
Total world as reported .....	2,775,323	2,904,334	3,021,632	3,068,180

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 .....	1953	Quebec .....	612,000	6.50	39,800
East Sullivan .....	1953	Quebec .....	3,421,000	1.49	51,000
Falconbridge .....	1953	Ontario .....	34,571,100	0.83	286,900
Granby Consolidated (Ailenby) .....	1953	British Columbia .....	2,948,000	0.92	27,100
Hudson Bay .....	1953	Manitoba .....	17,028,000	3.21	546,600
International Nickel .....	1953	Ontario .....	261,541,259	...	7,816,669 <sup>1</sup>
Noranda .....	1953	Quebec .....	14,856,000	2.14	317,900
Normetal .....	1953	Quebec .....	2,416,100	2.61	63,000
Quemont .....	1953	Quebec .....	9,528,000	1.47	140,100
Sherritt-Gordon (Lynn Lake) .....	1953	Manitoba .....	14,055,000	0.62	86,900
Waite Amulet, East and "A" ore bodies .....	1953	Quebec .....	1,010,000	4.61	46,600

1. Copper-nickel content.

TABLE 19. Production of Metals of the Platinum Group<sup>1</sup> from Ontario Copper-Nickel Ores, 1944-1953

Year	Platinum <sup>2</sup>		Palladium <sup>3</sup>	
	Fine ounces	\$	Fine ounces	\$
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	10,246,215	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
1953 .....	137,545	12,550,981	166,018	7,495,409

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, 1944-1953

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		\$		\$
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
1953 .....	92,698	389,332	4,525	7,919

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, 1944-1953

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value <sup>1</sup>
	\$		\$	
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	1,202,389	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 <sup>3</sup> .....	43,689	1,497,222	1,231,047	1,028,170
1953 .....	39,726	1,367,369	1,254,637	1,054,020

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.

3. Includes revised data — 1947-1951 — of unreported content of platinum metal concentrates.

TABLE 22. Employees and Their Earnings in Nickel-Copper Mines, Smelters and Refineries, 1953

	Administrative and office employees				Workmen			
	Male	Female	Total	Total salaries	Male	Female	Total	Total wages
	(Number)		\$		(Number)		\$	
Mines .....	879	34	913	5,235,335	10,588	10	10,598	42,361,335
Smelters and refineries .....	1,149	156	1,305	6,342,079	8,067	4	8,071	30,135,289
Total .....	2,028	190	2,218	11,577,414	18,655	14	18,669	72,496,627
Total man-hours worked .....				5,527,523				36,108,038

TABLE 23. Workmen, by Sex and Months, Entire Industry, 1952 and 1953

Month	1952		1953	
	Male	Female	Male	Female
	(Number)			
January .....	17,614	12	18,188	13
February .....	17,705	13	18,239	13
March .....	17,629	13	18,272	13
April .....	17,575	11	18,328	13
May .....	17,852	11	18,517	13
June .....	18,004	11	18,801	13
July .....	18,109	12	19,085	13
August .....	18,164	13	19,034	14
September .....	18,039	12	18,841	15
October .....	18,198	13	18,818	15
November .....	18,170	14	18,830	15
December .....	18,103	14	18,883	15
Average .....	17,934	13	18,635	14
Total man-hours worked .....			24,468,676	36,108,038

TABLE 24. Workmen, by Months, in Nickel-Copper Mines Only<sup>1</sup>, 1952 and 1953

Month	1952						1953					
	Mine			Mill	Total	Mine			Mill	Total		
	Surface		Underground			Male	Surface					
	Male	Female		Male	Number	Male	Female	Underground	Male	Total		
January .....	2,194	8	7,087	412	9,701	2,429	9		7,430	374	10,242	
February .....	2,223	9	7,204	417	9,853	2,469	9		7,469	378	10,325	
March .....	2,225	9	7,176	399	9,809	2,458	9		7,534	380	10,381	
April .....	2,293	7	7,081	404	9,785	2,459	9		7,596	399	10,463	
May .....	2,329	7	7,201	397	9,934	2,535	9		7,626	407	10,577	
June .....	2,368	7	7,245	401	10,020	2,584	9		7,759	432	10,784	
July .....	2,375	8	7,240	402	10,025	2,565	9		7,954	445	10,973	
August .....	2,454	9	7,218	386	10,067	2,552	10		7,863	445	10,870	
September .....	2,413	8	7,236	381	10,038	2,471	11		7,778	442	10,702	
October .....	2,443	9	7,351	384	10,187	2,419	11		7,742	455	10,627	
November .....	2,395	10	7,442	389	10,236	2,381	11		7,767	438	10,597	
December .....	2,443	10	7,352	382	10,187	2,465	11		7,703	439	10,618	
Average .....	2,347	9	7,239	396	9,991	2,484	10		7,686	418	10,598	
Total man-hours worked .....			19,114,497						20,303,903			

<sup>1</sup>. Included in Table 23.TABLE 25. Workmen, by Months, in Nickel-Copper Smelters and Refineries Only<sup>1</sup>, 1952 and 1953

Month	1952		1953		Month	1952		1953	
	Male	Female	Male	Female		Male	Female	Male	Female
	Number					Number			
January .....	7,921	4	7,955	4	September .....	8,009	4	8,150	4
February .....	7,861	4	7,923	4	October .....	8,020	4	8,202	4
March .....	7,829	4	7,901	4	November .....	7,944	4	8,244	4
April .....	7,797	4	7,874	4	December .....	7,928	4	8,276	4
May .....	7,925	4	7,949	4	Average .....	7,952	4	8,067	4
June .....	7,990	4	8,026	4	Total man-hours worked .....			15,354,178	15,804,135
July .....	8,092	4	8,121	4					
August .....	8,106	4	8,173	4					

TABLE 26. Specified Taxes Paid by the Nickel-Copper Mining, Smelting and Refining Industry, 1951-1953

—	1951	1952	1953
Dominion income tax, including tax on non-operating revenue .....	23,340,308	29,929,507	26,216,027
Total provincial taxes .....	6,724,858	5,986,531	3,233,678
Total municipal taxes .....	718,814	831,634	904,827
Grand total taxes paid .....	30,783,980	36,747,672	30,354,532

TABLE 27. Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1951-1953

—	1951	1952	1953
Workmen's compensation .....	560,910	677,954	879,637
Silicosis assessment .....	112,355	4,299	3,710
Unemployment insurance .....	434,496	500,894	532,804
Aggregate cost of all supplies purchased .....	82,443,540	61,396,496	62,354,305
Aggregate cost of plant and equipment purchased .....	2,992,706	4,337,999	9,533,093

TABLE 28. Fuel and Electricity Used in Nickel-Copper Mines, 1953

Kind	Unit of measure	Quantity	Cost at plant \$
Bituminous coal (a) From Canadian mines .....	short ton	202	3,437
(b) Imported.....	"	16,634	197,096
Sub-bituminous coal (from Alberta mines only).....	"	-	-
Anthracite coal .....	short ton	70	1,605
Lignite coal.....	"	-	-
Coke (for fuel only).....	"	-	-
Gasoline, (includes gasoline used in cars and trucks).....	Imp. gal.	160,830	59,763
Kerosene or coal oil.....	"	4,371	1,211
Fuel oil (does not include lubricating oil) .....	"	2,559,328	389,368
Wood (cords of 128 cubic feet of piled wood).....	cord	2,910	49,277
Gas (a) Liquefied petroleum gases (propane, etc.) .....	M cu. ft.	5,000	815
(b) Other manufactured gas.....	"	-	-
(c) Natural gas.....	"	-	-
Other fuel.....	"	-	-
Electricity purchased for power and lighting (includes service charge).....	k.w.h.	336,528,134	1,656,920
Electricity purchased for other purposes (includes service charge).....	"	-	-
<b>Total (cost only)</b> .....	"	-	<b>2,359,492</b>
Electricity generated (a) For own use.....	k.w.h.	7,806,000	-
(b) For sale .....	"	-	-

TABLE 29. Power Equipment (Including stand-by or emergency equipment) in Nickel-Copper Mines, 1953

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.....	-	-	-	-
2. Steam turbines .....	-	-	-	-
3. Diesel engines .....	2	310	4	915
4. Gasoline, gas and oil engines, other than Diesel engines .....	-	-	-	-
5. Hydraulic turbines or water-wheels.....	2	7,000	-	-
6. Electric motors—(except those reported under item 10):				
(a) Operated by purchased power.....	2,581	106,244	188	7,988
7. Total (1), (2), (3), (4), (5) and (6a).....	<b>2,585</b>	<b>113,554</b>	<b>182</b>	<b>8,588</b>
8. (b) Operated by power generated by (1), (2), (3), (4) and (5).....	304	7,381	-	-
9. Stationary boilers for power purposes only .....	-	-	-	-
10. Motor-generator sets .....	120	47,143	6	1,395

TABLE 30. Fuel and Electricity Used in Nickel-Copper Mines, Smelters and Refineries, 1953

Kind	Unit of measure	Quantity	Cost at plant \$
Bituminous coal (a) From Canadian mines .....	-	-	-
(b) Imported.....	short ton	568,385	6,394,642
Sub-bituminous coal (from Alberta mines only).....	"	-	-
Anthracite coal .....	short ton	3	40
Lignite coal.....	"	-	-
Coke (for fuel only).....	short ton	195,628	3,973,348
Gasoline, (includes gasoline used in cars and trucks).....	Imp. gal.	103,363	29,942
Kerosene or coal oil.....	"	162,577	44,756
Fuel oil (does not include lubricating oil) .....	"	19,621,493	2,144,328
Wood (cords of 128 cubic feet of piled wood).....	"	-	-
Gas (a) Liquefied petroleum gases (propane, etc.) .....	M cu. ft.	1,400	95
(b) Other manufactured gas.....	"	-	-
(c) Natural gas.....	M cu. ft.	271	387
Other fuel.....	"	-	-
Electricity purchased for power and lighting (includes service charge).....	k.w.h.	777,031,262	3,358,654
Electricity purchased for other purposes (includes service charge).....	"	63,585,080	177,068
<b>Total (cost only)</b> .....	"	-	<b>16,133,571</b>
Electricity generated (a) For own use.....	k.w.h.	6,085,300	-
(b) For sale .....	"	-	-

TABLE 31. Power Equipment in Nickel-Copper Mines, Smelters and Refineries, 1953

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 .....	1	3,350	—	—
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 .....	5,282	150,698	346	14,257
7.     Total (1), (2), (3), (4), (5), and (6a) .....	5,304	154,975	347	15,756
8.     (b) Operated by power generated by (1), (2), (3), (4) and (5) .....	242	2,631	39	314
9. Stationary boilers for power purposes only .....	—	—	—	—
10. Motor-generator sets .....	76	45,521	13	9,970

Directory of Firms in the Nickel-Copper Mining, Smelting and Refining Industry, 1953

Name of firm	Head office address	Location of Canadian plant
<b>Quebec:</b>		
Bellechasse metals Ltd. ....	212 St. Sacrement, Montreal .....	Bellechasse
Canadian Nickel Co. Ltd. ....	Copper Cliff, Ontario .....	Duprat Twp.
Eastern Metals Corporation Ltd. ....	137 Wellington St. W., Toronto, Ontario .....	St. Fabien de Panet
Maralgo Mines Ltd. ....	7 King St. West, Toronto, Ontario .....	Rolette Twp.
Mining Corp. of Canada, Ltd. ....	44 King St. West, Toronto, Ontario .....	Broadback River
Panet Metals Corp. ....	1200 St. Alexandre St., Montreal .....	St. Magloir
National Nickel Corporation Ltd. ....	437, ouest rue St-Jacques, Montréal .....	Talon
Quebec Copper Corporation Ltd. ....	100 Adelaide St. W., Toronto, Ontario.....	Rolette Twp.
Seraphim Bolduc ....	Beauceville Est .....	Beauceville
<b>Ontario:</b>		
Falconbridge Nickel Mines, Ltd. <sup>1</sup> ....	21 Dundas Square, Toronto .....	Twp. of Falconbridge, Blizard, McKim, Levack,
International Nickel Company of Canada, Limited <sup>1</sup> ....	Copper Cliff .....	Mines: Twp. of Levack, Denison, Garson, Snider, McKim
East Rim Nickel Mines Ltd. <sup>1</sup> ....	350 Bay St., Toronto .....	MacLennan Twp.
Levack Nickel Mines ....	7 King St. W., Toronto .....	Levack 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
<b>Manitoba:</b>		
Sherid-Gordon Mines, Ltd. ....	25 King St. West, Toronto, Ontario .....	Lynn Lake
Maskwa Nickel Chrome Mines Ltd. ....	900 Hamilton Bldg., Winnipeg .....	Bird River
Gods Lake Gold Mines Ltd. ....	395 Main St., Winnipeg .....	Lynn Lake
<b>British Columbia:</b>		
Western Nickel Ltd. ....	744 W. Hastings St., Vancouver .....	Hope
<b>Northwest Territories:</b>		
North Rankin Nickel Mines Ltd. ....	173 Portage Ave., Winnipeg, Manitoba .....	Rankin Inlet
Goldcrest Mines Ltd. ....	1201-80 King St. W., Toronto, Ontario .....	Easter Island
<b>Yukon:</b>		
Canalask Nickel Mines Ltd. ....	100 Adelaide St. W., Toronto, Ontario .....	Donjiek River

<sup>1</sup>. Producing—Other concerns doing development work only.

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