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CANADA

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS

CENSUS OF INDUSTRY

MINING, METALLURGICAL & CHEMICAL BRANCH

THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY IN CANADA 1944

(including data on total production of Copper from all types of Canadian ores)

OTTAWA
1945

Price 25 cents

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THE NICKEL-COPPER MINING, NICKEL-COPPER SMELTING AND NICKEL-COPPER REFINING INDUSTRY IN CANADA, 1944

Statistics relating to the copper-nickel mining, smelting and refining industry, as shown in this report, include those pertaining to the mining of copper-nickel 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 Canadian industry, considered as a whole, was estimated at $121,493,774 in 1944 compared with $128,583,784 in 1943.

Two companies operated both mines and metallurgical plants in the Sudbury area in 1944. The International Nickel Co. of Canada, Limited, conducts smelting operations at Copper Cliff and Coniston, Ontario, while the Falconbridge Nickel Mines, Ltd., smelt their ores at the Falconbridge mine located a few miles east of the town of Sudbury. This last-named company treated their matte in a refinery located at Kristiansand, Norway, until the invasion of that country by Germany in 1940. Matte produced by the Falconbridge Nickel Mines Ltd. was treated since 1940 in the Canadian plants of the International Nickel Co. of Canada, Limited. Shipments of matte to Norway were resumed in July of 1945.

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 Co. of Canada, Limited is treated in plants located at Clydach, Wales; Huntington, West Virginia; and at Port Colborne and Copper Cliff, Ontario. Converter copper made by the International Nickel Co. is electrolytically refined at Copper Cliff, and refined nickel is produced by the company at Port Colborne. In 1944 the International Nickel Company of Canada Limited shipped ore from the Garson, Creighton, Levack, Frood, Stobie and Murray mines.

The nickel property of Harlin Nickel Mines Limited, located near Porquis Junction, Ontario, was operated from January 1 to August 31, 1944; crude ore produced by this company was shipped to the Copper Cliff smelter of the International Nickel Company of Canada. Mining operations were conducted during 1944 in Foy township, Ontario, by Nickel Offsets Limited; crude ore was consigned to the Copper Cliff smelter and work was suspended on October 31. Operations in Bowell township, Ontario, by North Range Nickel Mines Limited, were confined to diamond drilling.

In 1944 the industry, as a whole, provided employment for 15,457 persons and distributed $29,217,445 in salaries and wages. Fuel and electricity consumed totalled $12,795,637 and explosives, chemicals, drill steel and other process supplies used amounted to $18,449,774. Female wage-earners in 1944 numbered 792 compared with 641 in 1943 and 96 in 1942. The industry reported that $51,036 were spent on prospecting for new mineral deposits in 1944.

Copper recovered from the nickel-copper ores of Ontario totalled 280,790,592 pounds in 1944 compared with 276,032,919 pounds in 1943. Production in 1944 of nickel, in all forms, from these same ores amounted to 274,589,040 pounds against the all-time high record of 288,018,615 pounds in 1943.

A considerable tonnage of blister copper produced in Manitoba was also treated in 1944 at Copper Cliff, Ontario, by the International Nickel Company of Canada Limited; scrap copper is also refined at Copper Cliff.

Table 1 - PRINCIPAL STATISTICS OF THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY IN CANADA, 1942-1944 (x)

		1942	1943	1944
Number of firms		4(a)	6(a)	5(a)
Number of mines		8	10	9
Number of smelters		3	3	3
Number of copper refineries		1	1	1
Number of nickel refineries		1	1	1
Capital employed	$	159,777,493	167,097,138	(c)
Number of employees: On salary		1,098	1,230	1,282
On wages		12,680	13,420	14,175
Total		13,778	14,650	15,457
Salaries and wages: Salaries	$	3,184,248	3,414,557	3,661,427
Wages	$	25,171,893	26,781,415	25,556,018
Total	$	28,356,141	30,195,972	29,217,445
Fuel and purchased electricity used (2)	$	11,188,825	12,649,118	12,795,657
Process supplies used (1)	$	15,911,153	17,872,418	18,449,774
Cost of freight and treatment (3) (d)	$	...	130,321	118,108
Estimated gross value of matte exported and Canadian refinery products (b)	$	128,340,860	128,583,784	121,493,774
Value of production less items (1)(2) and (3)	$	101,240,882	97,951,927	90,130,255

(x) Does not include data for mines, power plants, etc., operated by subsidiary companies.
(a) All in Ontario.
(b) Includes value of customs material.
(c) Not recorded in 1944.
(d) Exclusive of data for International Nickel Company and Falconbridge Nickel Mines.

Table 2 - OUTPUT FROM ONTARIO NICKEL-COPPER MINES AND SMELTERS, 1942-1944 (Short tons)

	1942	1943	1944
Ore shipped from mines	12,072,485	12,920,917	12,955,208
Ore treated (x)	12,078,722	12,912,332	12,966,679
Converter copper produced in Ontario from Ontario ores(a)	146,362	130,905	133,879
Nickal produced in Ontario (b)	102,478	106,069	104,677
Matte exported (c)	61,226	56,833	48,287
Nickel content of matte exported	40,112	37,911	32,618
Copper content of matte exported (a)	7,582	7,532	6,516

(x) Represents the tonnage of crude ore smelted together with the tonnage of ore milled.
(a) Copper content, including copper content of Ontario ores purchased, less reverts.
(b) Includes nickel content of salts and oxides produced from nickel-copper ores only.
(c) Less a relatively small tonnage of matte returned to Canada for retreatment.

Table 3 - DIVIDENDS PAID BY SPECIFIED NICKEL-COPPER MINING COMPANIES, 1944

	Dividends 1944 $ (x)	Total Dividends Paid to End 1944 $ (x)
International Nickal Co. of Canada Ltd. only (/) ...	28,038,849	360,060,883.70
Falconbridge Nickal Mines Ltd.	500,637	9,137,234

(x) Canadian.
(/) Letters patent granted July 25, 1916.

Table 4 - NUMBER OF WAGE-EARNERS EMPLOYED BY MINES, SMELTERS AND REFINERIES, BY MONTHS, 1939-1944

Month	1939	1940	1941	1942	1943	1944
January	10,361	11,345	11,428	12,112	13,892	14,776
February	10,355	11,402	11,575	12,199	13,906	14,827
March	10,627	11,483	11,580	12,014	13,809	14,597
April	10,952	11,458	11,554	12,143	13,472	14,187
May	11,287	11,441	11,581	12,560	13,338	13,953
June	11,428	11,502	11,521	12,966	13,512	13,977
July	11,373	11,428	11,877	12,970	13,321	13,909
August	11,496	11,342	11,998	12,287	13,198	13,840
September	11,281	11,339	11,996	12,335	12,875	13,566
October	11,235	11,364	12,076	13,223	12,854	13,593
November	11,687	11,493	12,137	13,595	13,191	14,118
December	11,757	11,344	12,048	13,855	13,654	14,331

Table 5 - NUMBER OF WAGE-EARNERS BY SEX AND MONTHS, ENTIRE INDUSTRY, 1942-1944

Month	1942		1943		1944	
	Male	Female	Male	Female	Male	Female
January	12,112	...	13,381	511	14,006	770
February	12,199	...	13,379	527	14,048	779
March	12,014	...	13,210	599	13,843	754
April	12,143	...	12,844	628	13,447	740
May	12,560	...	12,690	648	13,171	782
June	12,966	...	12,844	668	13,186	791
July	12,970	...	12,648	673	13,095	814
August	12,287	...	12,510	688	13,012	828
September	12,234	101	12,167	708	12,751	855
October	12,961	262	12,159	695	12,771	822
November	13,216	379	12,521	670	13,319	799
December	13,444	411	12,978	676	13,543	788

Table 6 - NUMBER OF WAGE-EARNERS WHO WORKED THE NUMBER OF HOURS SPECIFIED, DURING ONE WEEK IN MONTH OF HIGHEST EMPLOYMENT, 1944 (Entire Industry)

Hours per Week	Male	Female	Hours per Week	Male	Female
30 hours or less	157	17	51-54 hours	115	1
31-43 hours	397	67	55 hours	51	1
44 hours	62	5	56-64 hours	630	15
45-47 hours	1,124	12	65 hours and over	95	...
48 hours	11,592	696	GRAND TOTAL	14,289	814
49-50 hours	68	...	Total wages paid in week to employees specified $	572,585	21,451

Table 7 - WAGE-EARNERS, BY MONTHS, IN NICKEL-COPPER MINES ONLY, 1944 (x)

Month	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female			
January	1,861	69	5,564	211	98
February	1,879	70	5,457	198	106
March	1,853	64	5,292	207	97
April	1,766	60	5,112	201	95
May	1,877	59	4,858	198	95
June	1,866	57	4,793	185	101
July	1,896	59	4,681	184	98
August	1,937	59	4,670	182	98
September	1,783	57	4,594	175	100
October	1,812	55	4,583	182	96
November	1,778	55	4,916	172	87
December	1,787	55	5,149	177	88

(x) Included in Tables 4 and 5.

Table 8 - WAGE-EARNERS, BY MONTHS, IN NICKEL-COPPER SMELTERS AND REFINERIES ONLY, 1944 (x)

Month	Male	Female	Month	Male	Female
January.....	6,570	603	July	6,334	657
February	6,514	603	August	6,325	671
March	6,491	593	September	6,179	678
April	6,368	585	October	6,194	671
May	6,258	628	November	6,453	657
June	6,342	653	December	6,430	645

(x) Included in Tables 4 and 5.

Table 9 - TOTAL EMPLOYEES AND SALARIES AND WAGES PAID BY MINES AND BY METALLURGICAL PLANTS, 1944

	Salaried Employees				Wage-Earners			
	Male No.	Female No.	Total No.	Total salaries	Male No.	Female No.	Total No.	Total wages
				$				$
Mines	445	50	495	1,431,118	6,977	156	7,133	13,247,577
Metallurgical plants	585	202	787	2,230,309	6,406	636	7,042	12,308,441
TOTAL	1,030	252	1,282	3,661,427	13,383	792	14,175	25,556,018

Table 10 - FUEL AND ELECTRICITY USED FOR LIGHT AND POWER, ENTIRE INDUSTRY, 1943 and 1944

Kind	Unit of measure	1943 Quantity	1943 Cost at works	1944 Quantity	1944 Cost at works
			$		$
Bituminous coal: Canadian	short ton	1,643	13,400	3,327	27,381
Imported	short ton	51,333	393,754	55,876	439,219
Anthracite coal: United States ..	short ton	155	2,352	184	2,759
Other	short ton	...	...	...	...
Coke	short ton	550	6,646	317	4,272
Gasoline	Imp. gal.	118,381	30,165	110,653	27,666
Kerosene	Imp. gal.	11,067	2,326	5,550	1,162
Fuel oil and diesel oil	Imp. gal.	997,969	105,764	1,425,579	150,285
Wood	cord	896	6,405	404	3,142
Electricity purchased	K.W.H.	709,182,881	2,164,086	710,727,596	2,144,255
TOTAL	...	...	2,724,898	...	2,800,121
Electricity generated for own use	K.W.H.	7,978,230	...	8,854,270	...
Electricity generated for sale ..	K.W.H.	1,110,600	6,023	596,077	3,134

Table 11 - FUEL AND ELECTRICITY USED FOR METALLURGICAL PURPOSES, ENTIRE INDUSTRY, 1943 and 1944

Kind	Unit of measure	1943 Quantity	1943 Cost at works	1944 Quantity	1944 Cost at works
			$		$
Bituminous coal: Canadian	short ton	809	6,600	...	...
Imported	short ton	569,201	4,332,026	552,625	4,474,224
Anthracite coal: United States ..	short ton	77	1,159	...	...
Charcoal	pound	942,000	14,668	1,186,600	19,811
Coke	short ton	294,640	3,578,506	277,051	3,511,073
Gasoline	Imp.gal.	36,380	10,085	25,733	6,953
Kerosene	Imp.gal.	85	18	6,770	1,401
Fuel oil and diesel oil	Imp.gal.	17,400,075	1,080,899	17,048,827	1,086,038
Wood	cord	184	1,560	35	276
Gas: Natural	M cu.ft.	333	362	519	387
Electricity purchased	K.W.H.	274,677,393	898,337	276,861,389	895,353
TOTAL	...	...	9,924,220	...	9,995,516

Table 12 - FUEL AND ELECTRICITY USED FOR LIGHT AND POWER, BY MINES ONLY, 1943 and 1944 (x)

Kind	Unit of measure	1945 Quantity	1945 Cost at works	1944 Quantity	1944 Cost at works
			$		$
Bituminous coal: Canadian	short ton	1,643	13,400	2,296	18,895
Imported	short ton	15,906	112,001	20,996	177,574
Anthracite coal: United States	short ton	155	2,552	127	1,890
Other	short ton	...	...	...	...
Coke	short ton	13	176	40	520
Gasoline	Imp. gal.	71,117	17,816	62,246	14,809
Kerosene	Imp. gal.	3,050	659	3,176	667
Fuel oil and diesel oil	Imp. gal.	996,267	105,545	1,226,686	129,494
Wood	cord	518	3,322	271	1,897
Electricity purchased	K.W.H.	161,326,077	541,426	166,328,143	544,174
TOTAL	...	...	796,675	...	889,918
Electricity generated for own use	K.W.H.	20,280	...	10,720	...

(x) Included in Table 10.

Table 13 - POWER EQUIPMENT (INCLUDING STAND-BY OR EMERGENCY EQUIPMENT) ENTIRE INDUSTRY, 1944

Description	Ordinarily in Use: Number of units	Ordinarily in Use: Total horse power (x)	In Reserve or Idle: Number of units	In Reserve or Idle: Total horse power (x)
Steam engines	20	920	1	1,074
Steam turbines	1	3,350	...	...
Diesel engines	3	240	...	...
Gasoline, gas and oil engines, other than Diesel engines	2	64	1	60
Electric motors (except motor-generator sets)				
(a) Operated by purchased power	4,752	181,623	276	11,966
Total	4,778	186,197	278	13,100
(b) Operated by above primary units	552	4,305	24	1,618
Stationary boilers	22	9,600	4	225
Motor-generator sets	151	77,431	10	6,205

(x) According to manufacturers' rating.

Table 14 - SPECIFIED TAXES PAID BY THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY, 1943 and 1944 (x)

	1943	1944
	$	$
Dominion income tax, including tax on non-operating revenue	5,845,697	5,517,058
Dominion excess profits tax	7,222,187	6,810,850
Total provincial taxes	1,179,576	999,048
Total municipal taxes	295,880	290,357
GRAND TOTAL TAXES PAID	14,541,340	13,617,273

(x) Includes data relating only to companies who conducted both mining and smelting operations.

Table 15 - OTHER EXPENDITURES (x) 1942-1944

	1942	1943	1944
	$	$	$
Workmen's compensation	254,196	296,284	377,501
Silicosis assessment	56,204	40,660	69,878
Unemployment insurance	154,749	175,389	182,478
Aggregate cost of all supplies purchased	25,463,212	28,445,891	28,378,357
Aggregate cost of plant and equipment purchased	11,925,016	5,018,845	4,017,251

(x) Includes data relating only to companies who conduct both mining and smelting operations.

Table 16 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF NICKEL, 1943 and 1944

	1943		1944	
	Quantity	Value	Quantity	Value
	lb.	$	lb.	$
Production -				
Nickel in matte exported .....)				
Refined and electrolytic nickel produced ...)	288,018,615	71,675,522	274,598,629	69,204,152
Nickel in oxides and salts sold or produced.)				
Imports -				
Nickel and nickel silver in ingots	60,423	17,620	16,029	4,355
Nickel rods for wire (90% nickel)	725	510	12,882	8,855
Nickel in bars and rods, strips and sheets..	976,516	529,517	755,147	391,555
Nickel silver bars, rods and strips	4,612	2,594	5,709	1,759
Nickel chromium in bars	47,785	44,966	65,215	54,975
Nickel, manufactures of, not plated	...	45,846	...	35,411
Nickel-plated household hollow-ware.....	...	1,906)		
Nickel household hollow-ware	...	44)	...	...
Nickel-plated ware, n.o.p.	...	524,455	...	424,247
TOTAL NICKEL AND ITS PRODUCTS	...	1,167,458	...	918,951
Exports: Total Metal in all Forms	271,094,400	68,346,346	265,197,100	68,400,654

Table 17 - PRODUCTION OF NICKEL (x) FROM CANADIAN ORES, 1926-1944

Year	Pounds	Value	Year	Pounds	Value
		$			$
1926	65,714,294	14,374,163	1936	169,739,393	43,876,525
1927	66,798,717	15,262,171	1937	224,905,046	59,507,176
1928	96,755,578	22,518,907	1938	210,572,758	55,914,494
1929	110,275,912	27,115,461	1939	226,105,865	50,920,305
1930	103,768,957	24,455,133	1940	245,557,871	59,822,591
1931	65,666,320	15,267,453	1941	282,258,235	68,656,795
1932	30,327,968	7,179,862	1942	285,211,805	69,998,427
1933	85,264,658	20,130,480	1943	288,018,615	71,675,522
1934	128,687,340	32,139,425	1944	274,598,629	69,204,152
1935	138,516,240	35,345,103			

(x) Usually includes a relatively small quantity of nickel recovered annually from silver-cobalt ores; Canadian nickel production comes entirely from Ontario ores with the exception of 1937 when a relatively small tonnage of nickel ore was exported from a property in British Columbia.

Table 18 - PRODUCTION OF NEW NICKEL IN CANADA, BY MONTHS (in all forms), 1943-1945

Month	1943	1944	1945(x)
		(Pounds)	
January	25,338,479	23,546,809	23,770,268
February	23,156,794	22,383,335	20,724,884
March	26,106,700	25,290,263	23,514,627
April	25,612,003	23,161,864	21,661,372
May	24,517,190	24,024,759	23,484,009
June	25,759,225	20,374,755	22,644,417
July	23,585,993	23,411,947	23,893,945
August	21,334,008	23,848,093	
September	22,524,474	22,710,286	
October	22,924,363	21,819,119	
November	23,175,838	22,259,195	
December	24,003,550	21,768,204	
TOTAL - CALENDAR YEAR	288,018,615	274,598,629	
Total Seven Months Ending July	174,056,382	162,195,732	159,693,522

(x) Subject to revision.

Table 19 - NICKEL PRODUCTION BY PRINCIPAL COUNTRIES, 1937-1959 (American Bureau of Metal Statistics)
(Tons of 2,000 pounds)

	1937	1958	1959
Canada (a)	112,455(e)	105,286	113,055
New Caledonia (b)	6,600	8,500	9,000
Burma (c)	1,345	1,050	860(g)
Greece (d)	1,160	1,330	(f)
Norway	968	1,373	1,295

(a) Production in all forms from Canadian ores, as reported by the Dominion Bureau of Statistics.
(b) Estimated content of ore and matte exported.
(c) Nickel content of speiss obtained as a by-product.
(d) Nickel and cobalt content.
(e) Not including production in British Columbia.
(f) Not yet reported.
(g) January-September only.

Note: World data since 1959 are not available.

Table 20 - PRODUCTION OF COPPER FROM ONTARIO ORES ONLY, 1926-1944

Year	Pounds	Value	Year	Pounds	Value
		$			$
1926	41,312,967	4,828,964	1936	287,914,078	26,898,920
1927	45,341,295	4,946,533	1937	322,039,208	41,716,364
1928	66,607,510	8,770,149	1938	309,050,106	30,405,500
1929	88,879,853	14,622,572	1939	328,429,665	32,637,305
1930	127,718,871	15,187,259	1940	347,931,013	34,742,229
1931	112,882,625	9,096,463	1941	333,829,767	33,192,644
1932	77,055,413	4,407,928	1942	308,282,414	30,625,404
1933	145,504,720	10,118,847	1943	277,840,560(a)	32,232,027
1934	205,059,539	14,822,704	1944	285,307,278(b)	33,845,632
1935	252,027,928	19,295,965			

Note: Almost entirely from nickel ores.
(a) Includes 276,032,919 pounds recovered from nickel-copper ores only.
(b) Includes 280,790,592 pounds recovered from nickel-copper ores only.

Table 21 - PRODUCTION (x) OF REFINED COPPER IN CANADA FOR YEARS SPECIFIED

Year	Tons	Year	Tons
1915	...	1938	227,240
1916 (f)	483	1939	231,684
1917	3,901	1940	261,878
1918	5,809	1941	278,224
1919	3,467	1942	268,447
1935	173,290	1943	251,495
1936	191,595	1944	256,244
1937	215,080		

(x) From all sources.
(f) First electrolytic copper produced commercially in Canada.

Table 22 - TOTAL PRODUCTION OF NEW COPPER IN CANADA, BY PROVINCES AND METHOD OF COMPUTATION, 1943 and 1944

	1943		1944	
	Pounds	Value	Pounds	Value
		$		$
By Provinces -				
Quebec	131,163,776	15,411,744	108,055,172	12,966,620
Ontario	277,840,560	32,232,027	285,307,278	33,845,632
Manitoba	38,014,872	4,466,747	43,878,639	5,265,437
Saskatchewan	85,948,719	10,098,974	73,514,499	8,821,740
British Columbia	42,222,205	4,961,109	36,302,628	4,356,315
Northwest Territories	...	...	11,302	1,428
TOTAL	575,190,132	67,170,601	547,070,118	65,257,172
By Sources (f) -				
In blister and anode copper produced	513,106,247	60,289,984	493,946,346	59,273,357
In ores, concentrates and copper matte exported (x)	47,020,656	5,524,926	40,090,591	4,810,849
In nickel-copper matte exported	15,063,229	1,355,691	13,033,181	1,172,986
TOTAL	575,190,132	67,170,601	547,070,118	65,257,172

(f) Where computed.
(x) Contains a relatively small quantity of copper contained in gold and silver ores shipped to Canadian smelters.

Table 23 - PRODUCTION OF NEW COPPER IN CANADA(/), BY MONTHS, 1943-1945

Month	1945	1944	1945(x)
		(Pounds)	
January	45,916,074	48,877,850	44,381,428
February	47,372,427	45,836,837	39,903,080
March	52,897,339	48,203,812	45,931,335
April	52,915,538	44,989,445	42,954,116
May	49,601,198	47,578,287	41,165,776
June	46,263,193	47,082,930	44,379,551
July	47,354,190	44,975,986	42,389,648
August	46,222,900	44,743,580	
September	42,540,896	43,106,124	
October	48,860,883	42,039,927	
November	47,505,267	43,811,150	
December	47,740,227	45,824,190	
TOTAL - CALENDAR YEAR	575,190,132	547,070,118	
Total Seven Months Ending July	342,519,959	327,545,147	301,104,954

(x) Subject to revision.
(/) From all types of ores.

Table 24 - PRODUCTION OF REFINED COPPER IN CANADA, BY MONTHS, 1944 and 1945

Month	Primary	Secondary	TOTAL
		(Pounds)	
1944			
January	36,095,063	237,148	36,332,211
February	43,289,123	252,333	43,541,456
March	49,958,569	338,477	50,297,046
April	42,807,533	339,063	43,146,596
May	45,573,308	218,474	45,791,782
June	42,839,276	219,861	43,059,137
July	42,605,294	144,190	42,749,484
August	38,665,890	303,659	38,969,549
September	37,906,329	256,725	38,163,054
October	47,250,234	202,662	47,452,896
November	40,757,745	408,103	41,165,848
December	41,421,832	396,363	41,818,695
TOTAL - CALENDAR YEAR	509,170,196	3,317,558	512,487,754
Total Seven Months Ending July	303,168,166	1,749,546	304,917,712
1945(x)			
January	41,022,595	142,000	41,164,595
February	36,967,900	192,000	37,159,900
March	40,867,269	126,419	40,993,688
April	38,305,094	140,000	38,445,094
May	40,512,078	113,988	40,626,066
June	42,195,147	80,000	42,275,147
July	38,495,181	452,125	38,947,306
Total Seven Months Ending July	278,365,264	1,246,532	279,611,796

(x) Subject to revision.

Table 25 - CANADIAN COPPER PRODUCTION RECOVERABLE ACCORDING TO ORIGIN OF ORES AND BY PROVINCES 1945 and 1944

Province	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	TOTAL
		(Pounds)		
1945				
Quebec	150,301,726	...	862,050	151,163,776
Ontario	1,786,171	276,052,919	21,470	277,840,560
Manitoba	58,014,872	...	...	58,014,872
Saskatchewan	85,948,719	...	...	85,948,719
British Columbia	42,121,563	...	100,642	42,222,205
Northwest Territories	...	...	...	...
CANADA	298,173,051	276,052,919	984,162	575,190,132

Table 25 - CANADIAN COPPER PRODUCTION RECOVERABLE ACCORDING TO ORIGIN OF ORES AND BY PROVINCES, 1943 and 1944 (Concluded)

Province	From copper-gold-silver ores	From nickel-copper ores	From gold and other ores	TOTAL
		(Pounds)		
1 9 4 4				
Quebec	107,150,904	...	904,268	108,055,172
Ontario	4,508,996	280,790,592	7,690	285,307,278
Manitoba	43,878,639	...	...	43,878,639
Saskatchewan	73,514,499	...	...	73,514,499
British Columbia	35,997,974	...	304,654	36,302,628
Northwest Territories	...	...	11,902	11,902
CANADA	265,051,012	280,790,592	1,228,514	547,070,118

Table 26 - IMPORTS AND EXPORTS OF COPPER, 1943 and 1944

	1 9 4 3		1 9 4 4	
	Pounds	$	Pounds	$
IMPORTS				
Copper in blocks, pigs and ingots	...	...	4,500	762
Copper, scrap	3,500	177	26,700	2,604
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables	1,356,300	205,738	578,400	87,325
Copper bars and rods for the manufacture of electrical conductors	9,300	1,126	(x)	(x)
Copper bars or rods, n.o.p.	330,300	76,062	193,300	41,581
Copper in strips, sheets or plates	64,000	16,416	165,400	49,657
Copper tubing, not manufactured	320,759	107,501	375,751	133,802
Copper rollers	...	176	...	1,289
Copper wire, n.o.p.	32,116	13,760	90,248	49,850
Copper wire cloth, woven	...	745	...	475
Copper manufactures, n.o.p.	...	489,807	...	274,771
Copper sub-acetate	420	132	440	140
Copper sulphate (blue vitriol)	6,448,817	365,695	8,259,600	491,475
TOTAL	...	1,277,335	...	1,133,729
EXPORTS				
Copper, fine, contained in ore, matte, regulus, etc.	72,419,400	5,069,358	55,978,500	3,918,495
Copper blister	8,548,600	846,896	...	...
Copper, old and scrap	1,133,500	48,844	1,927,400	116,899
Copper in ingots, bars, cakes, slabs and billets	128,665,800	12,751,158	270,466,200	29,049,257
Copper in rods, strips, sheets, plates and tubing	49,153,800	5,329,685	36,126,900	4,193,044
Copper wire and cable, insulated	...	1,438,161	...	2,200,550
Copper wire, bare	...	5,317,169	...	1,018,940
Copper wire, screen	...	8,668	...	8,352
Copper manufactures, n.o.p.	...	26,510	...	38,426
TOTAL	...	30,816,449	...	40,543,943

(x) Included with copper bars or rods, n.o.p.

Table 27 - WORLD PRODUCTION OF COPPER(a), 1937, 1938 and 1944, BY COUNTRIES ACCORDING TO ORIGIN OF THE ORE
(American Bureau of Metal Statistics)
(Tons of 2,000 pounds)

Country	1937	1938	1944
United States	834,835	556,673	997,027
Mexico	51,538	45,662	43,489
Canada	262,432	290,200	273,972
Cuba	13,800	14,800	6,256
Newfoundland	7,165	6,000	5,500
Bolivia	4,076	3,178	6,800
Chile	455,562	387,409	537,500
Peru	39,354	41,368	34,900
Ecuador	...	...	4,065
Total America	1,668,762	1,345,290	1,909,509
Austria	2,283	(b)	
Finland	13,812	14,458	
France	1,100(d)	1,100(d)	
Germany	32,518	33,069	
Norway	22,260	23,148	
Russia	101,963	108,000(d)	
Spain and Portugal	34,546	37,964	
Sweden	7,669	9,921	
Yugoslavia	43,442	46,288	
Other Europe	3,086	6,614	
Total Europe	262,679	280,562	(e)
Japan	85,665	84,900(d)	
India, including Burma	11,200	8,700	
Turkey	...	2,543	15,000(d)
Philippines	1,100	3,713	
Other Asia (c)	32,959	44,092	
Total Asia	128,924	143,948	(e)
Belgian Congo	165,993	136,622	180,000
Rhodesia	234,405	237,362	
Other Africa	15,930	21,353	
Total Africa	416,328	395,337	(e)
Australia	22,000	21,900	40,000(d)
GRAND TOTAL	2,498,693	2,187,037	(e)

(a) Production from ore excluding copper derived from junk.
(b) Included with Germany.
(c) Includes Cyprus.
(d) Conjectural.
(e) Data not available.

Table 28 - AVAILABLE STATISTICS ON THE CONSUMPTION OF COPPER IN SPECIFIED CANADIAN INDUSTRIES, 1940-1943

Industry		1940	1941	1942	1943
Brass and copper products (x) -					
Ingots, wire bars, slabs, etc. ..	lb.	208,302,644	176,679,478	335,793,693	339,895,762
Scrap	lb.	5,527,865	12,199,005	12,617,777	10,253,098
Pipe and tubing	lb.	115,778	188,074	191,106	183,822
Plates and sheets	lb.	570,036	971,838	846,308	804,125
Wire	lb.	351,269	384,929	348,000	213,906
Other	$	32,486	61,163	57,438	69,778
White metal alloys -					
Scrap, all kinds	lb.	4,098,077	10,200,476	9,699,325	9,250,095
Copper--ingots and slabs	lb.	290,498	590,178	4,470,119	5,297,447
Electrical apparatus and supplies -					
Castings	lb.	136,979	480,687	148,237	107,226
Ingots, slabs, wire bars, etc. ..	lb.	1,675,341	2,109,395	2,036,221	1,280,078
Rods	lb.	50,755,124	61,700,539	62,982,899	67,704,908
Scrap	lb.	93,356	91,353	149,731	55,598
Tubing and pipe	lb.	452,911	641,402	542,064	359,100
Sheets and plates	lb.	575,871	846,949	883,936	910,257
Wire, bare	lb.	6,606,563	8,607,762	7,862,294	6,826,654
Wire, enamelled	$	703,765	902,013	711,706	1,014,440
Wire, other insulated	$	1,232,526	1,577,960	1,551,529	1,317,370
Iron and steel and their products -					
Copper sheets, bars, etc.	lb.	10,841,787	17,400,122	18,629,920	15,804,341

(x) A relatively large part of the copper included under this industry is rolled into wire rods, which are sold to manufacturers of electrical cable, duplication to this extent results from the inclusion of these rods in the Electrical Apparatus Industry.

The peak Canadian production of copper for all time was in 1940, when the output stood at 643,516,715 pounds. From 1940 to 1943 all provinces showed a reduction in output with the exception of Saskatchewan. The Saskatchewan-Manitoba production is unique in Canadian mining history in that the ore body of the Flin Flon mine, the principal producer in these provinces, lies across the interprovincial boundary. In 1944 increases in copper output over 1943 were recorded only for Ontario and Manitoba.

The most important Canadian copper-bearing ore deposits are those of the Noranda, Waite-Amulet and Normetal mines in Quebec; the nickel-copper mines of Ontario; the Sherritt-Gordon in Manitoba; the Flin Flon on the Manitoba-Saskatchewan boundary, and the Britannia and Granby mines in British Columbia. Early in 1945 the Quemont Mining Corporation Limited located a new and important copper-gold-silver ore body on its property adjoining that of Noranda Mines Limited; the exploration and development of this deposit is now proceeding.

Canada has two copper refineries, one at Copper Cliff, Ontario, owned by the International Nickel Company, and one at Montreal East, Quebec, owned by the Canadian Copper Refiners Ltd. At the beginning of the first world war Canada had no copper refinery, whereas now she possesses excellent copper refinery facilities and large well-developed copper orebodies and smelters.

Curtailment during the war in brass and copper was instituted by the Canadian Metals Controller through the surveillance of export licenses and through informal understanding with principal producers and fabricators. More formal methods were adopted so that consumption of brass and copper for non-essential purposes would be reduced. Control was effected through primary fabricators. All controls on the domestic use of copper and brass in Canada were removed in September, 1945.

Table 29 - PRODUCTION OF METALS OF THE PLATINUM GROUP FROM ONTARIO COPPER-NICKEL ORES, 1927-1944

Year	Platinum (x)		Palladium (/)	
	Fine ounces	$	Fine ounces	$
1927	11,217	716,653	11,545	554,190
1928	10,485	706,090	13,607	627,833
1929	12,491	845,057	17,318	309,289
1930	34,007	1,542,490	34,092	896,867
1931	44,725	1,595,117	46,918	1,217,717
1932	27,284	1,097,021	37,613	901,890
1933	24,746	856,190	31,009	645,043
1934	116,177	4,488,712	83,932	1,699,228
1935	105,335	3,444,455	84,772	1,962,937
1936	131,551	5,319,922	103,671	2,483,075
1937	139,355	6,751,750	119,829	3,179,782
1938	161,310	5,196,279	130,893	3,677,342
1939	148,877	5,221,712	135,402	4,199,622
1940	108,464	4,239,424	91,522	3,520,746
1941	124,257	4,747,860	97,432	3,396,304
1942	285,188	10,897,033	222,575	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

(x) 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; nil in 1944.
(/) Includes other platinum metals except platinum and represents the entire Canadian production.

The London Mining Journal reviews the platinum metals in 1944 as follows:

"So far as available statistics go there was a marked decline in the output of metals of the platinum group in 1944 as compared with the previous year, but without knowledge of what the Russian output was, it is impossible to say categorically that the world's supply declined. Platinum supplies so essential for the war, especially in aircraft production, were adequate for the enormous expansion that took place in allied aircraft production. . . .Russian production is again conventionally reckoned by the trade at 200,000 ounces of platinum, but no data are available here to show whether production increased or the reverse during the year. No difficulty appears to have arisen in securing what supplies may have been needed by industry both in Great Britain and in the United States in excess of the production from fields within their respective spheres. Russia probably carries large stocks of platinum and the output is likely to have been regulated in accordance with wartime economy. On the assumption, however, that the Russian output amounted to 200,000 ounces of platinum, she would have regained her old position of the world's principal producer.

"Third in importance comes the Transvaal where the Rustenberg platinum mines produced about 7,000 ounces of the platinum metals monthly, or roughly 84,000 ounces for the whole year. As the percentage of platinum is given as 65 per cent, this would represent roughly 55,000 ounces, to which may be added about 500 ounces as a product from the osmiridium concentrates from the Rand mines, giving South Africa a total of 55,500 fine ounces.

"Production from Columbia is believed to have maintained its previous figure of 50,000 ounces. The only other producer of importance is the Goodnews district of Alaska, in which we can only repeat last year's estimate of 20,000 ounces; nothing has been heard of any production from Abyssinia, which at best was small.

"The adequacy of the supply of the platinum metals generally is indicated by the prices remaining unchanged during the year. United States figures were: Platinum $35 per ounce; palladium $24; rhodium $125 and ruthenium $35 per ounce. In the second half of the year the price of iridium was lowered from $165 to $120. . . .The reservation of platinum for war purposes has meant that in the industrial jewellery and dental fields increased recourse has been made to palladium; this metal is being increasingly used as a catalyst in the growing number of hydrogenation plants. . . .

Table 50 - PRODUCTION OF SELENIUM AND TELLURIUM FROM NICKEL-COPPER ORES, 1939-1944

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		$		$
1939	126,950	224,539	...	...
1940	136,350	260,429	3,491	5,607
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

Table 51 - PRODUCTION OF GOLD AND SILVER FROM NICKEL-COPPER ORES, 1939-1944

Year	Gold		Silver	
	Fine ounces	Value	Fine ounces	Value (x)
		$		$
1939	77,094	2,786,177	2,496,632	1,010,886
1940	90,863	3,498,225	2,803,052	1,072,167
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	2,147,576	1,648,888	746,122
1944	55,296	2,128,472	1,828,978	786,461

(x) Estimated.

The following information is taken from the 1944 annual report of the International Nickel Company of Canada Limited:

"Throughout the year 1944 our chief objective continued to be the production of sufficient strategic metals to meet the full war demands of the United Nations. This was attained notwithstanding that the output of nickel was lower than in 1943 due to continued labour shortage and to use of inexperienced labour. These unfavourable factors also had the effect of increasing the production costs. With sufficient man-power, our plants are equipped for record production.

"On September 19, 1944 an armistice agreement was entered into between Russia and Finland terminating hostilities. By the terms of the armistice the Petsamo district was ceded by Finland to the Soviet Government and the ownership of the nickel mines and installations passed to that Government.

"The Government of Canada has informed us that a protocol to the armistice agreement was signed in Moscow on October 8, 1944 by the Canadian and United Kingdom ambassadors and a representative of the Soviet Government whereby the Soviet Government has undertaken to pay $20,000,000 (U.S. currency) to the Canadian Government as full and final compensation to the company and its subsidiary, The Mond Nickel Company Limited. The payments are to be made in equal installments during the ensuing six years. The Canadian Government has confirmed that the payments will be received by it for the benefit of the company and its subsidiary."

Falconbridge Nickel Mines Limited annual report for 1944 contained the following particulars:

"With the greatest production of nickel and copper in the company's history--thanks to increased mechanization to overcome labour shortage, and to zealously improved metallurgy--increased costs for labour and supplies were contained and net earnings of $959,907 achieved. Ore reserves have been maintained as to tonnage but their average grade has dropped slightly, since new development areas have largely been confined to the eastern lower-grade edges of our Falconbridge orebody. Happily this does not apply to development at depth, where on the 2,625 and 2,800 levels very satisfactory ore is being opened up. Total ore reserves as of 31st December 1944 are calculated at 12,669,500 tons with a grade of 1.72% nickel and 0.95% copper.

"The plant of the company located at Kristiansand, Norway, was intact according to fairly recent information."

DIRECTORY

FIRMS IN THE NICKEL-COPPER MINING, SMELTING AND REFINING INDUSTRY IN CANADA, 1944

Note: (x) Active but not producing.

Name of Firm	Head Office Address	Location of Canadian Plant
Ontario -		
Falconbridge Nickel Mines, Ltd.	304 Bay St., Toronto	Falconbridge Tp.
Harlin Nickel Mines Ltd.	room 505 .. 357 Bay St., Toronto	Porquis Jct.
International Nickel Company of Canada, Limited	Copper Cliff	Mines: Tps. of Levack, Snider, McKim and Garson Smelters: Copper Cliff and Coniston Nickel refinery: Port Colborne Copper refinery: Copper Cliff
Nickel Offsets Ltd.	Room 1701 .. 372 Bay St., Toronto	Foy Tp.
North Range Nickel Mines Ltd. (x)	suite 501 .. 67 Yonge St., Toronto	Bowell Tp.