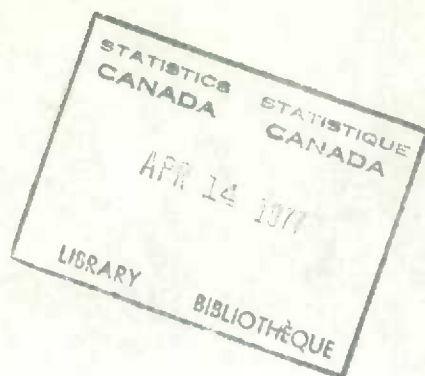


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NICKEL-COPPER MINES

1962

Formerly The Nickel-Copper Mining, Smelting and Refining Industry

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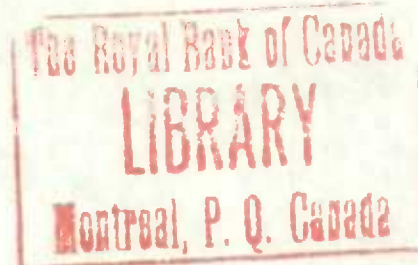


SYMBOLS

The following standard symbols are used in Dominion Bureau of Statistics publications:

- .. figures not available.
- ... figures not appropriate or not applicable.
- nil or zero.
- amount too small to be expressed.
- preliminary figures.
- * revised figures.

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EXPLANATORY NOTES

Establishment

The reporting unit in the Census of Mines, Quarries and Oil Wells is the **establishment**. Beginning with the 1961 Census, the establishment is defined as follows:

The smallest unit which is a separate operating entity capable of reporting all the following:

- Materials and supplies used,
- Goods purchased for resale as such,
- Fuel and power consumed,
- Number of employees and their pay,
- Inventories,
- Shipments or sales.

The establishment is to be distinguished from smaller subdivisions or departments which do not have records which permit them to report all items required of an establishment. Prior to 1961, some establishments were required to submit two or more separate reports when they were engaged in operations which were classifiable to different industries. Beginning with 1961, separate reports for such operations will be required only in cases where accounting records can provide all the elements of principal statistics enumerated above. Special reporting arrangements were made with respondents when the acceptance of combined reports would

have seriously affected the statistics for particular industries or areas. Where continuity of industry statistics was affected by this change in reporting procedures, adjustments to the data were made back to 1957 in order to maintain comparability of the series for recent years.

A mining establishment is typically a mine, mine/mill, quarry, pit or bog principally engaged in mining operations. Prior to 1961, the Census of Mines, Quarries and Oil Wells attempted to cover the mining activities of all establishments, whether or not they were principally engaged in mining operations. Beginning with the 1961 Census, establishments (accounting entities) which are not primarily engaged in mining are no longer included as mining establishments in the basic industry statistics. Again adjustments to the industry statistics were made to reflect the removal of such reporting units for the period 1957-1960. These reporting units are now listed as establishments in other Bureau industry surveys, such as Wholesale Trade, Construction, etc. In order, however, to maintain complete coverage of certain commodity items produced mainly in mining establishments, many non-mining establishments are now surveyed for commodity information only and the latter are included in the appropriate tables of industry reports.

NICKEL-COPPER MINES

1962

This report includes statistics for industry 054—Nickel-Copper Mines and the relevant part of industry 295—Smelting and Refining of the Standard Industrial Classification Manual (catalogue no. 12-501).

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 Ontario there were three firms producing nickel-copper ores in the Sudbury area. Two of these concerns also operated metallurgical plants. The International Nickel Company of Canada, Limited, has 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.

In addition to production of nickel, copper and the platinum metals, there is an important recovery from these ores of the associated metals—silver, cobalt, gold, selenium and tellurium—and of sulphur, in the form of sulphur dioxide, for the manufacture of sulphuric acid and liquid sulphur dioxide. Iron residue from the treatment of pyrite and pyrrhotite is included. The total gross value of the various primary products of this industry considered as a whole was estimated at \$742,241,756 in 1962 compared with \$752,499,279 in 1961.

The relatively small amount of nickel-cobalt sometimes produced at Cobalt Ontario, is recovered from silver-cobalt-nickel-arsenic ores mines 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 1961 the International Nickel Company of Canada Limited, shipped ores from the Garson, Creighton, Victor Levack, Frood-Stobie, Ellen Clarabelle and Murray mines. Falconbridge Mines Limited, operated the Falconbridge, East, McKim, Onaping, Hardy, Longvack, Fecunis Lake and Boundary mines. Norduna Mines Ltd. shipped ore to the Falconbridge processing plant.

The Sherritt-Gordon Mines Ltd., mined and milled nickel-copper ore at Lynn Lake, Manitoba. The nickel concentrates were shipped to the firm's refinery at Fort Saskatchewan, Alberta, and the copper concentrates were treated at the Noranda smelter and at the Flin Flon smelter of the Hudson Bay Mining & Smelting Co. Ltd. The International Nickel Co. of Canada Ltd. mined, milled, smelted and refined nickel-copper ore at Thompson, Manitoba.

Concentrates produced by North Rankin Nickel Mines at Rankin Inlet, Northwest Territories were shipped to the Sherritt-Gordon refinery for treatment. Giant Mascot Mines Ltd. in British Columbia shipped concentrates to Japan.

Employment data show an average of 24,787 persons to whom \$134,441,487 were paid as salaries and wages. Fuel cost \$14,163,997 and 2,155,305,286 kwh. of electricity were purchased for \$11,331,512. Process supplies and cost of ores amounted to \$290,413,289. Included in the above figures were the data relevant to the nickel-copper mines which used \$1,261,518 worth of fuel and 594,242,786 kwh. were purchased for \$3,217,396. Process supplies used by mines cost \$16,753,050.

**TABLE 1. Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry¹
Significant Years, 1929-1962**

Year	Estab- lish- ments	Em- ployees	Salaries and wages	Cost of fuel and electricity at works	Cost of process supplies, materials, ² containers at works	Gross selling value of products (f.o.b. works)	Net ³ value of production
	number			dollars			
1929	8	6,260	10,117,197	2,155,917	..	..	..
1931	10	4,300	7,004,403	2,472,510	..	27,709,234	..
1933	11	3,598	5,588,610	2,582,216	..	31,191,527	..
1937	16	10,758	18,752,727	7,454,717	11,210,353	111,353,066	92,687,996
1939	12	11,494	20,557,838	7,437,370	12,068,595	95,714,524	76,208,559
1941	11	12,759	25,270,497	10,213,183	13,991,741	117,287,713	93,082,789
1944	14	15,457	29,217,445	12,795,637	18,449,774	121,493,774	90,130,255
1946	20	10,181	22,240,671	8,552,300	11,065,124	88,444,103	68,826,679
1949	16	14,398	44,657,092	14,342,097	12,821,605	172,391,089	145,227,387
1951	16	18,546	64,543,280	16,500,093	179,164,037	410,677,639	215,013,509
1954	43	21,172	87,776,066	20,747,907	220,227,328	489,255,764	244,636,028
1956	61	22,684	103,619,044	22,103,753	270,122,772	614,096,947	318,652,627
1957	92	23,464	113,459,592	23,703,062	290,781,769	640,667,065	321,763,442
1958	54	17,784	88,929,124	17,230,033	184,064,905	435,443,727	229,680,771
1959	62	21,913	110,373,734	23,392,709	287,221,660	618,361,667	300,852,611
1960	46	24,052	124,723,533	26,673,053	318,697,106	698,439,362	350,100,056
1961	50	25,637	136,801,446	28,203,542	318,507,781	752,499,279	402,919,037
1962	46	24,787	134,441,487	25,495,509	290,413,289	742,241,756	422,958,099

¹ Does not include data for mines, power plants, etc., operated by subsidiary companies.² Cost of ores included from 1950 onwards.³ Gross value less fuel, electricity, process supplies, ores, treatment charges and freight.**TABLE 2. Output from Nickel-Copper Mines in Canada, 1960-62**

	1960	1961	1962
	tons (2,000 pounds)		
Ore hoisted	20,835,188	21,639,948	17,970,652
Ore smelted directly	1,363,550	1,082,057	980,631
Ore milled	19,489,760	20,403,259	17,025,971
Concentrates produced	4,656,814	5,142,293	4,425,698

TABLE 3. Production of Nickel¹ from Canadian Ores, 1953-62

Year	Tons	Value	Year	Tons	Value
		\$			\$
1953	143,693	160,430,098	1958	139,559	194,142,019
1954	161,279	180,173,392	1959	186,555	257,008,801
1955	174,928	215,866,007	1960	214,506	295,640,279
1956	178,515	222,204,860	1961	232,991	351,261,720
1957	187,958	258,977,309	1962	232,242	383,784,622

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

TABLE 4. Production of Nickel,¹ by Months, 1960-62

Month	1960	1961	1962	Month	1960	1961	1962
	tons (2,000 pounds)				tons (2,000 pounds)		
January	17,399	18,214	20,942	August	19,142	19,871	19,747
February	16,435	16,868	18,029	September	18,239	20,922	18,966
March	17,781	17,097	21,367	October	18,005	21,908	16,385
April	17,524	16,601	18,973	November	17,679	22,306	20,310
May	17,207	19,458	20,425	December	19,214	20,264	19,921
June	18,382	19,292	18,455				
July	17,499	20,190	18,722	Totals	214,506	232,991	232,242

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

TABLE 5. Imports and Exports of Nickel, 1961 and 1962

		1961		1962	
		Quantity	Value	Quantity	Value
Imports			\$		\$
Nickel in ingots, blocks, shot	lb.	24,402	27,807	213,380	105,861
Nickel rods for wire (90% nickel)	"	84,348	114,458	77,899	113,525
Nickel in bars and rods, strips and sheets ¹	"	8,427,290	8,245,161	14,556,014	14,384,118
Nickel-chromium in bars	"	68,755	112,065	58,806	104,973
Nickel, manufactures of, not plated .....	...	...	127,062	...	111,831
Nickel-plated ware, n.o.p. ....	...	...	2,175,366	...	1,018,431
Nickel-silver in ingots, blocks	lb.	3,320	5,340	82,833	55,319
Exports					
Nickel in ores, concentrates, matte	ton	92,938	128,057,056	77,410	117,356,387
Nickel in oxide	"	18,021	22,895,058	11,126	14,478,158
Nickel and nickel alloy scrap	"	618	426,740	969	473,833
Nickel anodes, cathodes, ingots	"	133,504	187,213,732	121,712	185,517,667
Nickel and alloy fabricated material, n.e.s.	"	2,851	4,433,606	3,511	6,038,791

¹ Includes some cathodes and anodes; data was incorrectly reported.

TABLE 6. Production, Consumption and Exports of Nickel, 1952-62

Year	Production in Canada (all forms, including content in oxide and in matte exported)	Producers' shipments to domestic consumers	Exports		
			Nickel contained in matte, ores, etc	Nickel contained in oxide	Refined nickel
			tons (2,000 pounds)		
1952	140,559	2,223	63,753	1,211	77,058
1953	143,693	2,275	63,909	1,299	79,909
1954	161,279	2,595	65,823	1,486	91,410
1955	174,928	5,020	65,954	1,453	106,473
1956	178,515	5,545	70,715	1,767	104,356
1957	187,958	4,532	73,694	1,706	103,258
1958	139,559	4,099	67,658	1,393	85,168
1959	186,555	4,059 ¹	65,657	4,157	102,111
1960	214,506	4,861 ¹	73,910	13,257	108,350
1961	232,991	4,935 ¹	92,938	18,021	133,504
1962	232,242	5,322	77,410	11,126	121,712

¹ After 1959, consumption of nickel, in all forms, as reported by consumers.

TABLE 7. World Production of Nickel

Country	1958	1959	1960	1961	1962
tons (2,000 pounds)					
Canada ¹	139,559	186,555	214,506	232,991	232,242
New Caledonia ²	13,400	28,810	43,325	48,600	32,400
United States ³	11,740	11,606	14,303	11,176	11,217
Cuba ⁴	19,782	19,858	12,547	8,000	16,400
Finland ⁵	125	416	2,495	2,377	2,310
Republic of South Africa ⁵	3,800	2,900	3,200	2,900	2,700
Russia ⁶	58,000	60,000	64,000	83,000	90,000
Total world (estimate)	249,000	314,000	359,000	394,000	401,000

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.⁵ Nickel content of matte.⁶ Conjectural.

Source: "Annual Report of The American Bureau of Metal Statistics".

TABLE 8. Production of New Copper, by Provinces and by Forms, 1961 and 1962

	1961		1962	
	Tons	Value	Tons	Value
		\$		\$
By provinces:				
Newfoundland	15,752	9,195,817	17,308	10,731,154
Nova Scotia	—	—	204	126,300
New Brunswick	—	—	3,674	2,277,864
Quebec	149,007	86,990,202	147,431	91,407,164
Ontario	211,647	122,421,860	188,995	116,347,723
Manitoba	12,454	7,271,252	12,738	7,897,714
Saskatchewan	33,479	19,545,019	32,017	19,850,465
British Columbia	15,846	9,205,938	54,490	33,766,394
Yukon	440	257,098	214	132,990
Northwest Territories	463	270,440	314	194,928
Canada	439,088	255,157,626	457,385	282,732,696
By forms (where computed):				
In blister and anode copper produced ¹	396,866	231,690,694	370,923	229,972,836
In ores, concentrates and copper matte exported	23,200	13,499,310	69,874	43,304,801
In nickel-copper matte exported	19,022	9,967,622	16,588	9,455,059
Total accounted for	439,088	255,157,626	457,385	282,732,696

¹ Includes a quantity of copper contained in gold-silver and nickel-copper ores shipped to Canadian smelters.TABLE 9. Production of Copper,¹ by Months, 1960-62

Month	1960	1961	1962	Month	1960	1961	1962
tons (2,000 pounds)				tons (2,000 pounds)			
January	36,104	35,996	34,113	August	37,706	37,186	43,155
February	35,524	32,421	32,852	September	34,269	37,317	40,852
March	38,604	34,795	37,321	October	35,762	40,332	38,572
April	34,667	34,263	34,330	November	37,521	39,581	41,482
May	37,261	35,836	37,555	December	37,345	36,311	38,726
June	37,345	37,692	38,254				
July	37,152	37,358	40,173	Year	439,262	439,088	457,385

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

TABLE 10. Production of Copper, by Kinds of Ores and by Provinces, 1961 and 1962

Province	From copper-gold- silver ores	From nickel-copper ores	From other ores	Total
tons				
1961				
Newfoundland	12, 585	—	3, 167	15, 752
Nova Scotia	—	—	—	—
New Brunswick	—	—	—	—
Quebec	145, 583	—	3, 424	149, 007
Ontario	34, 269	172, 506	4, 872	211, 647
Manitoba	5, 981	6, 473	—	12, 454
Saskatchewan	33, 479	—	—	33, 479
British Columbia	13, 485	737	1, 624	15, 846
Yukon	440	—	—	440
Northwest Territories	—	463	—	463
Canada	245, 822	180, 179	13, 087	439, 088
1962				
Newfoundland	14, 331	—	2, 977	17, 308
Nova Scotia	—	—	204	204
New Brunswick	3, 343	—	331	3, 674
Quebec	144, 568	87	2, 776	147, 431
Ontario	42, 270	139, 629	7, 096	188, 995
Manitoba	5, 033	7, 705	—	12, 738
Saskatchewan	32, 017	—	—	32, 017
British Columbia	53, 342	768	380	54, 490
Yukon	214	—	—	214
Northwest Territories	—	314	—	314
Canada	295, 118	148, 503	13, 764	457, 385

TABLE 11. Production of Refined Copper, 1953-62

Year	Tons	Year	Tons
1953	236, 966	1958	329, 239
1954	253, 365	1959	365, 366
1955	288, 997	1960	417, 029
1956	328, 458	1961	406, 359
1957	323, 540	1962	382, 868

TABLE 12. Production of Refined Copper, by Months, 1960-62

Month	1960	1961	1962	Month	1960	1961	1962
tons				tons			
January	31, 171	32, 867	34, 360	August	36, 839	34, 958	32, 265
February	32, 257	30, 738	30, 064	September	35, 997	33, 433	30, 637
March	36, 809	34, 605	31, 135	October	37, 313	33, 993	33, 109
April	34, 861	33, 690	30, 731	November	33, 508	35, 100	31, 459
May	34, 118	35, 842	33, 669	December	34, 375	35, 456	31, 722
June	35, 301	32, 657	30, 732	Year	417, 029	406, 359	382, 868
July	34, 480	33, 020	32, 985				

TABLE 13. Imports and Exports of Copper, 1961 and 1962

		1961		1962	
		Quantity	Value	Quantity	Value
			\$		\$
Imports					
Copper in blocks, pigs and ingots	lb.	5,700	3,844	294,100	89,737
Copper scrap	"	7,916,200	2,220,336	908,000	262,599
Copper in bars or rods for the manufacture of trolley, telegraph and telephones wires, electric wires and electric cables ..	"	2,363,300	883,528	1,712,500	688,015
Copper bars or rods, n.o.p.	"	128,800	54,663	278,400	103,391
Copper in strips, sheets or plates	"	260,500	168,416	345,600	241,202
Copper tubing, not manufacturing	"	1,816,300	885,960	400,200	302,872
Copper rollers for wall paper .....		...	104,345	...	197,301
Copper wire, n.o.p.	lb.	39,189	42,556	40,281	41,711
Copper wire cloth, woven .....		...	19,977	...	45,892
Copper manufactures, n.o.p. ....		...	1,714,358	...	1,244,833
Copper sulphate (blue vitriol)	lb.	773,309	113,183	873,989	158,513
Copper oxide	"	197,978	78,783	285,702	123,469
Exports					
Copper in ore, matte, regulus etc.	ton.	42,894	18,635,983	95,544	41,260,344
Copper in slag, skimmings, sludge	"	290	124,291	132	74,704
Copper scrap	"	7,794	3,763,503	8,135	3,991,744
Brass and bronze scrap	"	9,079	3,846,339	7,105	2,876,905
Copper alloy scrap n.e.s.	"	382	153,900	515	199,029
Copper refinery shapes	"	266,247	154,409,513	223,043	139,701,127
Copper bars, rods, shapes, n.e.s.	"	18,694	10,770,685	19,668	12,279,672
Copper plates, sheet, strip	"	2,450	1,993,877	2,495	2,207,163
Copper pipe and tubing	"	6,570	6,540,182	5,492	5,594,401
Copper wire, cable, not insulated	"	408	303,027	457	324,548
Copper alloy refinery shapes	"	3,091	2,643,934	2,840	2,521,495
Copper alloy pipe and tubing	"	913	1,101,458	831	913,333
Copper alloy wire, not insulated	"	249	313,695	202	252,486
Copper and alloy fabricated materials, n.e.s.	"	146	243,366	98	136,859
Insulated wire and cable	"	6,994	5,261,798	5,435	5,535,879

TABLE 14. Production of Primary Copper, Exports and Imports, 1953-62

Year	Production in Canada ¹	Exports			Imports refined copper
		Copper in ore, matte, etc.	Blister copper	Refined copper, ingots, bars, etc.	
tons (2,000 pounds)					
1953	253,252	51,158	3,527	131,994	5,515
1954	302,732	47,411	4,712	156,130	1,703
1955	325,994	41,565	—	153,199	35
1956	354,860	40,994	—	174,844	...
1957	359,109	46,548	—	198,794	...
1958	345,114	30,316	—	224,638	2
1959	395,269	32,070	—	222,437	105
1960	439,262	47,633	—	278,066	25
1961	439,088	42,894	—	266,247	3
1962	457,385	89,374	—	223,043	147

¹ Blister copper, plus recoverable copper in matte and concentrates exported.² Includes blister and anode copper exported for refining.

TABLE 15. Production of Refined Copper, Consumption, Imports and Exports, 1952 - 62

Year	Production	Shipments to domestic consumers	Exports	Imports
tons (2,000 pounds)				
1952	196,320	130,347	85,701 ¹	12,973
1953	236,966	105,482	128,467 ¹	5,515
1954	253,365	102,432	151,418 ¹	1,703
1955	288,997	138,559	153,199	35
1956	328,458	145,286	174,844	
1957	323,540	118,225	198,794	
1958	329,239	122,893	224,638	...
1959	365,366	129,973	222,437	...
1960	417,029	117,637	278,066	...
1961	406,359	141,808	266,247	...
1962	382,862	151,525	223,043	...

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

TABLE 16. World Production of Copper by Countries of Origin of Ore¹

Country	1958	1959	1960	1961	1962
tons (2,000 pounds)					
United States	990,253	840,000	1,092,500	1,159,556	1,223,978
Mexico	71,609	63,133	66,502	54,359	51,945
Canada	345,114	395,269	439,262	439,088	465,446
Cuba	13,992	9,942	13,058	10,000	7,500
Bolivia ²	3,168	2,460	2,503	2,292	2,646
Chile	509,541	600,571	586,643	603,424	646,064
Peru	59,104	55,871	200,311	218,313	182,875
Total America	1,992,781	1,967,246	2,400,779	2,487,032	2,580,454
Austria	2,695	2,726	2,188	2,105	2,186
Finland	31,569	33,132	31,580	35,745	37,657
France	794	672	772	551	441
Germany, Federal Republic	1,156	2,256	2,454	2,389	2,073
Italy	761	665	561	691	1,001
Norway	17,501	15,828	16,965	15,379	16,094
Spain ³	7,466	12,137	8,786	20,029	20,580
Sweden	19,836	18,838	18,396	18,629	21,034
Yugoslavia	38,840	38,141	36,681	41,787	57,008
Total Europe	120,618	124,395	118,383	137,305	158,074
Japan	89,836	93,969	98,036	106,272	113,645
India	8,782	8,459	9,822	9,190	10,914
Korea, Republic of	842	529	649	584	700
Turkey	24,676	27,385	26,928	20,525	28,127
Philippines	51,841	54,587	48,512	57,182	60,327
Cyprus ³	36,614	39,978	39,096	31,585	27,735
Total Asia	212,591	224,907	223,043	225,338	241,448
Israel	-	4,723	6,143	6,969	5,768
Katanga, State of	261,865	310,952	332,900	324,422	322,974
Northern Rhodesia	441,072	598,834	635,326	633,534	619,856
Southern Rhodesia	8,430	12,016	15,128	14,979	15,146
South West Africa	32,065	31,695	21,692	23,377	25,873
Uganda	12,130	13,362	16,265	14,720	17,173
Republic of South Africa	53,375	53,575	52,041	55,464	50,396
Total Africa	808,937	1,025,157	1,079,495	1,073,465	1,057,186
Australia	78,867	101,102	117,741	96,823	108,696
U.S.S.R. ⁵	463,000	485,000	507,000	523,600	550,000
Bulgaria ³	8,600	11,000	12,100	13,200	14,000
Germany, East ⁴	19,300	20,800	27,500	27,500	27,500
Poland ⁵	8,800	9,900	11,600	12,900	13,000
China ⁵	33,000	44,000	44,000	50,000	50,000
Soviet sphere total	532,700	570,700	602,200	627,200	654,500
World total,⁴ as reported	3,746,494	4,013,507	4,541,641	4,647,163	4,800,358

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 Exports.

³ Excludes copper content of iron pyrites which may or may not have been recovered.

⁴ In addition, there is production in Brazil, Burma, Ecuador, Haiti, Ireland, Nicaragua, Portugal, Taiwan, Algeria, Angola, Southern Zone Morocco, and Tanganyika; the total of all these countries is estimated to be about 25,000 tons in 1962.

⁵ Conjectural.

Source: "Annual Report of The American Bureau of Metal Statistics".

TABLE 17. Canadian Copper Ore Reserves, as Officially Reported

	Year	Province	Ore short tons	Average grade %	Copper content short tons
Sullico Mines	1962	Quebec	2,100,000	0.89	18,690
Falconbridge	1962	Ontario	48,263,000	0.80	386,000
Hudson Bay	1962	Manitoba	15,286,100	2.67	408,100
International Nickel	1962	Ontario and Manitoba	299,416,000	...	9,006,300 ¹
Noranda (Horne) Sulphide ore	1962	Quebec	7,066,000	2.32	163,900
Normetal	1962	Quebec	1,132,000	3.53	40,000
Queмонт	1962	Quebec	4,140,000	1.26	51,300
Sherritt-Gordon (Lynn Lake)	1962	Manitoba	14,000,000	...	208,600 ¹
Waite Amulet	1960	Quebec	327,500	5.10	16,700
Geco Mines Ltd.	1962	Ontario	22,046,000	2.00	440,900
Manitou-Barvue	1962	Quebec	756,267	1.15	8,697

¹ Copper-nickel content.

Source: "Annual Report of The American Bureau of Metal Statistics".

TABLE 18. Production of Metals of the Platinum Group Copper-Nickel Ores, 1953 - 62

Year	Platinum ¹		Palladium ²	
	Fine ounces	Value \$	Fine ounces	Value \$
1953	137,545	12,550,981	166,018	7,495,409
1954	154,356	12,950,469	189,350	7,956,087
1955	170,494	14,747,732	214,252	8,321,633
1956	151,357	15,725,992	163,461	6,681,098
1957	199,565	17,835,124	216,582	7,896,209
1958	146,092	9,481,371	154,366	4,840,072
1959	150,378	11,015,189	177,713	5,916,989
1960	483,585 ³	28,871,955	..	..
1961	418,278 ³	24,534,349	..	..
1962	470,787 ³	28,848,637	..	..

¹ In addition, a relatively small quantity of alluvial platinum is usually recovered annually in British Columbia; such recovery in 1952, 2 ounces; 1953-58, nil; 1959, 4 ounces; 1962, 5 ounces. Recovered 19 ounces in Yukon in 1960.² Includes other platinum metals except platinum, and represents the entire Canadian production.³ Includes platinum, palladium, rhodium, ruthenium and iridium.

TABLE 19. Production of Selenium and Tellurium from Nickel-Copper Ores, 1953 - 62

Year	Selenium		Tellurium	
	Pounds	Value \$	Pounds	Value \$
1953	92,698	389,332	4,525	7,919
1954	94,826	474,130	7,195	12,591
1955	94,465	708,488	6,455	11,296
1956	109,156	1,473,606	6,305	11,034
1957	86,459	951,049	6,915	12,101
1958	90,295	677,213	6,692	11,376
1959	101,400	709,800	6,900	14,835
1960	144,500	1,011,500	7,450	26,075
1961	164,800	1,071,200	8,050	39,043
1962	142,915	821,961	7,011	42,066

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

TABLE 20. Production of Gold and Silver from Nickel-Copper Ores, 1952-62

Year	Gold		Silver	
	Troy ounces	Value	Troy ounces	Value ¹
		\$		\$
1953	39,726	1,367,369	1,254,637	1,054,020
1954	46,408	1,580,221	1,292,300	1,075,930
1955	46,896	1,618,850	1,497,191	1,320,223
1956	44,752	1,541,706	1,404,032	1,259,136
1957	43,993	1,475,965	1,589,881	1,389,079
1958	48,249	1,639,501	1,236,118	1,073,074
1959	43,295	1,453,413	1,402,273	1,230,915
1960	57,508	1,952,397	1,686,162	1,499,167
1961	59,976	2,126,749	1,803,941	1,700,395
1962	55,922	2,092,042	1,757,848	2,047,893

¹ Estimated.

TABLE 21. Employees and their Earnings in Nickel-Copper Mines, Smelters and Refineries, 1957-62

Year	Employees					Man- hours worked	Earnings		
	Administration		Workmen		Total em- ployees		Adminis- tration	Workmen	Total
	Male	Female	Male	Female					
	number						dollars		
1958	2,545	240	14,983	16	17,784	33,908,166	18,756,334	70,172,790	88,929,124
1959	2,504	245	19,149	15	21,913	42,781,529	18,529,344	91,844,390	110,373,734
1960	2,886	270	20,879	17	24,052	47,046,976	21,440,927	103,282,606	124,723,533
1961	3,170	262	22,188	17	25,637	50,935,868	23,963,822	112,837,624	136,801,446
1962	3,172	303	21,297	15	24,787	48,891,879	24,452,291	109,989,196	134,441,487

TABLE 22. Workmen, by Sex and Months, Entire Industry, 1961 and 1962

Month	1961		1962	
	Male	Female	Male	Female
	number			
January	21,608	16	22,329	16
February	21,629	16	22,292	16
March	21,753	16	22,340	16
April	21,915	18	22,361	17
May	22,174	19	22,313	16
June	22,559	17	22,353	16
July	22,917	17	22,168	14
August	22,814	17	21,935	15
September	22,222	16	20,528	16
October	22,233	17	19,027	15
November	22,222	15	19,017	15
December	22,192	15	18,894	15
Averages	22,188	17	21,297	15
Total man-hours worked	43,715,576		41,521,228	

TABLE 26. Fuel and Electricity Used in the Nickel-Copper Mines, 1962

Kind	Quantity	Cost at plant
		\$
Bituminous coal (a) From Canadian mines short ton	6,852	94,734
(b) Imported "	353	6,655
Sub-bituminous coal (from Alberta mines only) "	1,630	13,324
Anthracite coal	—	—
Lignite coal	—	—
Coke (for fuel only)	—	—
Gasoline, (includes gasoline used in cars and trucks) Imp. gal.	198,375	89,882
Kerosene or coal oil	6,254	1,860
Fuel oil	5,726,018	744,082
Wood (cords of 128 cubic feet of piled wood) cord	15	144
Gas (a) Liquefied petroleum gases (propane, etc.) Imp. gal.	575,418	125,968
(b) Other manufactured gas	—	—
(c) Natural gas M. cu. ft.	398,692	184,869
Other fuel	—	—
Electricity purchased for motors and lighting kwh.	591,576,386	3,212,063
Electricity purchased for other purposes "	2,666,400	5,333
Total .....	...	4,478,914
Electricity generated (a) For own use kwh.	51,857,000	...
(b) For sale "	2,826,000	65,019

TABLE 27. Fuel and Electricity Used in the Nickel-Copper Smelters and Refineries, 1962

Kind	Quantity	Cost at plant
		\$
Bituminous coal (a) From Canadian mines short ton	106,880	1,326,392
(b) Imported "	181,565	2,246,733
Sub-bituminous coal (from Alberta mines only) "	6,527	51,895
Anthracite coal	—	—
Lignite coal	—	—
Coke (for fuel only) short ton	178,443	4,143,301
Gasoline, (includes gasoline used in cars and trucks) Imp. gal.	165,801	49,748
Kerosene or coal oil	6,564	1,679
Fuel oil	14,523,553	1,434,784
Wood (cords of 128 cubic feet of piled wood)	—	—
Gas (a) Liquefied petroleum gases (propane, etc.) Imp. gal.	17,233	9,668
(b) Other manufactured gas	—	—
(c) Natural gas M cu. ft.	11,283,618	3,625,366
Other fuel .....	...	12,913
Electricity purchased for motors and lighting kwh.	1,492,711,065	7,728,806
Electricity purchased for other purposes "	68,351,435	385,310
Total .....	...	21,016,595
Electricity generated (a) For own use kwh.	6,621,100	...
(b) For sale	—	—

TABLE 28. Specified Taxes Paid by the Nickel-Copper Mining, Smelting and Refining Industry, 1960-62

	1960	1961	1962
	dollars		
Dominion income tax, including tax on non-operating revenue.....	26,287,815	22,691,226	32,149,991
Total provincial taxes	12,812,195	13,508,237	17,195,307
Total municipal taxes	1,930,472	1,972,620	2,198,886
Grand total taxes paid	41,030,482	38,172,083	51,544,184

TABLE 29. Miscellaneous Expenditures by the Nickel-Copper Mining, Smelting and Refining Industry, 1962

	1962
	\$
(a) Workmen's compensation.....	2,299,981
(b) Silicosis assessment	141,350
(c) Unemployment insurance.....	1,032,891
(d) Aggregate cost of structures, roads, machinery, equipment, etc., built by or purchased from outside contractors or suppliers and chargeable to Fixed Assets Account	3,979,257
(e) Book value of fixed assets (new structures, roads, machinery, equipment, etc., including major repairs and alterations) produced by own employees and chargeable to Fixed Assets Account. Does not include value of work done by outside contractors	44,414,912
(f) Other capital expenditures not reported in (d) and (e)	1,184,880
(g) Materials and supplies used in the construction or production of above fixed assets (e). Does not include the value of work done by outside contractors nor purchases of machinery and equipment	3,046,417
(h) Cost of all other goods, materials and supplies (including office, medical, laboratory, cafeteria and store supplies) purchased and not chargeable to Fixed Assets Account	65,968,346

Directory of Nickel-Copper Mines, Smelters and Refineries, 1962

Name of firm	Head office address	Location of Canadian plant
Quebec:		
Alrose Mining Co., Ltd.	137 Wellington St. W., Toronto, Ontario	Beauchastel Twp.
Aqua Mining Corp. Ltd.	1117 St. Catherine St. W., Montreal	La Motte Twp.
Asarco Exploration Co. of Can. Ltd.	2 King St. East, Toronto, Ontario	Guillet Twp.
Bachelor King Mines Ltd.	550 Sherbrooke St. W., Montreal	Montbray Twp.
Bilson Quebec Mines Ltd.	100 d'Youville St., Quebec	Ungava
Canadian Nickel Co., Ltd.	Copper Cliff, Ontario	Frotet Lake
Dumont Nickel Corp.	715-3rd Ave., Val d'Or	Duvernay Twp.
Fontbrune Nickel Mines Ltd.	491 Victoria Square, Montreal	Spalding Twp.
Jacmar Explorations Ltd.	100 Adelaide St. W., Toronto, Ontario	Desmeloizes Twp.
Marbridge Mines Ltd. ¹	100 d'Youville St., Quebec	La Motte Twp.
Marchant Mining Co., Ltd.	100 d'Youville St., Quebec	La Motte Twp.
Marlowe Mines Ltd.	2157 Mackay St., Montreal	Lacoste Twp.
Mid-North Engineering Services Ltd.	25 Adelaide St. W., Toronto, Ont.	Dunphy Lake
Raglan Quebec Mines Ltd.	200 Bay St., Toronto	Wakeham Bay
Saguenay Exploration & Mining Inc.	753 Avenue Wilder, Outremont	Jonquière
Saguenay Mining & Smelting Co. Ltd.	2144 Mackay St., Montreal	Pied des Monts
Space Age Metals Corp.	1117 St. Catherine St. W., Montreal	La Motte Twp.
Territory Mining Co., Ltd.	25 Adelaide St. W., Toronto, Ont.	St Fabien de Panet

Directory of Nickel-Copper Mines, Smelters and Refineries, 1962 - Concluded

Name of firm	Head office address	Location of Canadian plant
Ontario:		
Falconbridge Nickel Mines, Ltd. ¹	44 King St. W., Toronto	Twps. of Falconbridge, Blezard, McKim, Levack
International Nickel Company of Canada, Limited ¹	Copper Cliff	Mines: Twps. of Levack, Denison, Garson, Snider, McKim Smelters: Copper Cliff, Coniston Refineries: Copper Cliff, Port Colborne
Fatima Mining Co., Ltd.	25 Adelaide St. W., Toronto	Bartlett
Jacobus Mining Corp. Ltd.	25 Adelaide St. W., Toronto	Elmhurst Twp.
Jonsmith Mines Ltd.	357 Bay St., Toronto	Sewell Twp.
Mirado Nickel Mines Ltd.	220 Bay St., Toronto	Jackfish
Nickel Rim Mines Ltd.	100 Adelaide St. W., Toronto	MacLennan Twp.
Nickel Mining & Smelting Corp.	100 Adelaide St. W., Toronto	Gordon Lake
Norpax Nickel Mines Ltd.	85 Richmond St. W., Toronto	Werner Lake
Norduna Mines Ltd. ¹	44 King St. W., Toronto	Falconbridge
Ryanor Mining Co. Ltd.	11 Adelaide St. W., Toronto 1	Wisner Twp.
Manitoba:		
Sherritt-Gordon Mines, Ltd. ¹	25 King St. West, Toronto, Ontario ...	Lynn Lake
Canadian Nickel Co., Ltd.	Copper Cliff, Ontario	Cross Lake
Consolidated Marbenor Mines Ltd.	8 King St. E., Toronto 1, Ontario	Cross Lake
International Nickel Co. of Canada, Ltd. ¹ ..	Copper Cliff, Ontario	Mine: Thompson Smelter: Thompson Refinery: Thompson
Starratt Nickel Mines Ltd.	62 Richmond St. W., Toronto, Ontario	Paint Lake
Jacmar Explorations Ltd.	100 Adelaide St. W., Toronto	Mystery Lake
Alberta:		
Sherritt-Gordon Mines Ltd. ¹	25 King St. W., Toronto, Ontario	Refinery: Fort Saskatchewan
British Columbia:		
Giant Mascot Mines Ltd. ¹	Box 820 Hope	Hope
Northwest Territories:		
North Rankin Nickel Mines Ltd. ¹	25 Adelaide St. W., Toronto, Ontario.	Rankin Inlet
Yukon:		
Hudson Bay Exploration & Development Co. Ltd.	504 Main St., Winnipeg, Manitoba	Kluane Lake
Northwest Canals Nickel Mines Ltd.	100 Adelaide St. W., Toronto, Ontario	Mile 1167 Alcan Highway

¹ Producing—Other firms doing development work only or holding dormant properties.

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