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NICKEL-COPPER MINES

1964

For statistical purposes the industry titled Nickel-Copper Mines (S.I.C. Industry 054 in the revised Standard Industrial Classification) covers establishments primarily engaged in mining nickel-copper ores in dressing and beneficiating such ores.

Data presented in this report under the heading of Nickel-Copper Mines (Tables 1-7) reflect the full implementation of the revised Standard Industrial Classification (S.I.C.) and the New Establishment Concept including an extension of the latter to cover total activities of mining establishments—see Explanatory Notes section of this report. Commodity statistics (Table 8 *et seq.*) are presented along the same general lines as in earlier issues of this report.

The introduction of the final stage of the establishment concept in the annual Census of Mining resulted in many changes as evidenced in the comparative series of statistics shown in Tables 1 and 2—see Explanatory Notes and particularly the section dealing specifically with Metal Mines. The latter explains in detail the reasons for the changes reflected in Tables 1 and 2 as a result of the general application of the establishment concept and the effect of the change in the conceptual treatment of the Smelting and Refining Industry; however, in addition, the tables reflect a reduction in the number of establishments because of the exclusion of non-producers. These latter are no longer being included as “establishments” under the new definition.

In Ontario the International Nickel Company of Canada, Limited operated seven mines in the Sudbury area. These were Frood-Stobie, Creighton, Levack, Garson, Murray, Clarabelle, Crean Hill and Ellen. Also in the Sudbury area there were eight mines operated by Falconbridge Nickel Mines Limited which were, Falconbridge, East, Hardy, Boundary, Cnaping, Fecunis Lake, North and Strathcona. Metal Mines Ltd. (Gordon Lake Division) shipped nickel-copper concentrates from their mine northeast of Kenora to the smelter at Copper Cliff.

The ore mined by Marbridge Mines Limited in La Matte township, Quebec is trucked to the mill of Canadian Malartic Gold Mines. After milling, the concentrates are sent to the smelter at Falconbridge, Ontario. The nickel-copper concentrates which are produced by Lorraine Mining Co. Ltd. at Belleterre, Quebec are further processed at the Inco smelter at Copper Cliff, Ontario.

At Thompson, Manitoba the nickel-copper ores are mined, milled, smelted and refined by the International Nickel Co. Ltd. In the northwest portion of Manitoba at Lynn Lake, the Sherritt-Gordon Mines Ltd. mines and mills nickel-copper ores. The nickel concentrates are shipped to the firm's refinery at Fort Saskatchewan and the copper concentrates are treated at the smelter at Flin Flon, Manitoba.

Concentrates produced by the Giant Mascot Mines Ltd. are shipped to smelters in Japan.

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.
- x confidential to meet secrecy requirements of the Statistics Act.

TABLE 1. Principal Statistics, Nickel-Copper Mines, 1957-63

Basis: Revised Standard Industrial Classification

Year	Estab- lish- ments	Em- ployees	Salaries and wages	Cost of fuel and electricity	Cost of materials and supplies	Value of production	Value added ¹
	number		dollars				
1957	77	12,124	59,807,695	3,810,592	18,049,861	110,427,956	84,148,771
1958	47	9,243	47,190,007	2,990,800	11,190,722	79,814,539	61,164,999
1959	55	11,025	57,210,303	3,456,926	15,234,554	110,332,077	84,745,910
1960	39	12,709	67,504,099	6,334,892	18,746,564	127,212,418	99,161,815
1961	50	13,697	74,754,694	4,636,241	17,876,804	134,732,176	109,350,212
1962	37	13,342	74,049,980	4,478,914	16,753,050	115,549,381	90,942,558
1963	26	12,007	67,575,821	4,219,792	17,414,590	112,121,434	85,523,703

¹ Value of production, less value of fuel, electricity, process supplies and freight.

TABLE 2. Principal Statistics, Nickel-Copper Mines, 1961-64

Basis: Revised Standard Industrial Classification and New Establishment Concept

Year	Estab- lish- ments	Mining activity							Total activity				
		Production and related workers			Cost of fuel and elec- tricity	Cost of materials and supplies	Value of pro- duc- tion	Value added	Working owners and partners		Employees		Value added
		Number	Man- hours paid	Wages					Number	With- drawals	Number	Salaries and wages	
	No.		'000		\$'000					\$'000		\$'000	
1961	7	12,160	23,925	63,675	4,545	151,626	449,419	293,248	—	—	13,622	74,431	294,494
1962	9	11,750	22,832	62,670	4,419	145,812	439,160	288,929	—	—	13,194	73,164	290,441
1963	7	10,425	21,202	55,863	4,146	147,504	435,159	283,508	—	—	11,949	67,291	285,340
1964	8	11,546	23,126	61,375	4,366	158,431	528,879	366,082	—	—	13,134	73,599	367,997

¹ Refer to Explanatory Notes for description of concepts and definitions and an explanation of differences in Tables 1 and 2. See also text page 3.

TABLE 3. Employment and Payroll, Nickel-Copper Mines, 1961-63

Basis: Revised Standard Industrial Classification

Year	Employees										Salaries and wages				
	Production and related workers				Adminis- trative and office		Sales and distribution		Total		Production and related workers		Admin- istra- tive and office	Sales and distrib- ution	Total
	Mining		Other												
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Mining	Other			
number										\$'000					
1961	12,206	17	—	—	1,407	67	—	—	13,613	84	63,969	—	10,785	—	74,755
1962	11,891	15	—	—	1,353	83	—	—	13,244	98	63,484	—	10,566	—	74,050
1963	10,631	18	—	—	1,357	104	—	—	11,988	122	56,885	—	11,195	—	68,080

TABLE 4. Employment and Payroll, Nickel-Copper Mines, 1961-64

Basis: Revised Standard Industrial Classification and New Establishment Concept

Year	Employees										Salaries and wages					
	Production and related workers				Adminis- trative and office		Sales and distribution		Total		Production and related workers		Adminis- trative and office	Sales and distrib- ution	Total	
	Mining		Other													
	Male	Female	Male	Female												Male	Female	Male	Female	Mining	Other
	number										\$'000					
1961	12,143	17	—	—	1,395	67	—	—	13,538	84	63,675	—	10,757	—	74,431	
1962	11,750	15	—	—	1,346	83	—	—	13,096	98	62,670	—	10,494	—	73,164	
1963	10,408	17	79	—	1,341	104	—	—	11,828	121	55,863	376	11,051	—	67,291	
1964	11,529	17	—	—	1,473	115	—	—	13,002	132	61,375	—	12,224	—	73,599	

TABLE 5. Production and Related Workers, Nickel-Copper Mines, 1963 and 1964

Basis: Revised Standard Industrial Classification and New Establishment Concept

Month and year	Mine			Mill	
	Surface		Underground	Male	Female
	Male	Female	Male		
1963	number				
January	2,232	15	7,501	764	—
February	2,228	15	7,502	766	—
March	2,250	15	7,476	764	—
April	2,263	15	7,450	785	—
May	2,307	15	7,434	805	—
June	2,303	16	7,472	805	—
July	2,262	19	7,503	808	—
August	2,226	19	7,517	799	—
September	2,241	19	7,425	786	—
October	2,231	19	7,087	757	—
November	2,202	18	7,112	764	—
December	2,206	18	7,093	769	—
Averages	2,246	17	7,381	781	—
1964					
January	2,175	19	7,140	780	—
February	2,655	18	7,191	808	—
March	2,684	17	7,531	809	—
April	2,708	17	7,684	830	—
May	2,767	20	7,897	844	—
June	2,825	20	8,048	864	—
July	2,835	19	8,139	884	—
August	2,865	14	8,071	861	—
September	2,737	17	8,211	833	—
October	2,757	15	8,415	824	—
November	2,810	14	8,645	848	—
December	2,778	16	8,746	855	—
Averages	2,716	17	7,976	837	—

TABLE 6. Purchased Fuel and Electricity Used in Nickel-Copper Mines, 1963 and 1964

Basis: Revised Standard Industrial Classification and New Establishment Concept

Description	1963		1964	
	Quantity	Cost	Quantity	Cost
		\$'000		\$'000
Bituminous coal:				
(a) From Canadian mines	ton 103	2	—	—
(b) Imported	6,186	89	5,535	81
Sub-bituminous coal (from Alberta mines only)	—	—	—	—
Anthracite coal	—	—	—	—
Lignite coal	—	—	—	—
Coke	—	—	—	—
Gasoline (including gasoline used in cars and trucks)	Imp. gal. 173,070	61	212,433	80
Fuel oil including kerosene or coal oil	5,200,340	646	5,250,414	742
Wood	cord —	—	—	—
Gas:				
(a) Liquefied petroleum gases	Imp. gal. 5,479	1	14,817	4
(b) Other manufactured gas	M cu. ft. —	—	—	—
(c) Natural gas	445,215	211	388,015	185
Other fuel	—	—	—	—
Electricity purchased	kwh. 553,422,287	3,137	590,940,071	3,274
Steam purchased	—	—	—	—
Total fuel and electricity used .....	...	4,146	...	4,366
Electricity generated:				
(a) For own use	kwh. 57,634,794	..	67,389,476	..
(b) For sale	3,361,206	..	5,717,924	..

TABLE 7. Materials and Supplies,¹ Nickel-Copper Mines, 1963 and 1964

Basis: Revised Standard Industrial Classification and New Establishment Concept

Description	Cost	
	1963	1964
	\$'000	
Ore or other semi-processed materials purchased and used in mine/mill operations	6,801	8,105
Containers, shipping materials and supplies used	1,775	1,819
Operating, maintenance and repair supplies used (excluding fuel)	24,110	28,641
Amount paid out to others for work done on materials owned by establishments:		
To smelters and/or refineries	106,036	112,583
To others (mining, milling, etc.)	8,781	7,383
Totals	147,504	158,431

¹ Refer to Explanatory Notes for explanation of differences in Tables 7 and 8 with data published in earlier years.**TABLE 8. Value of Production, Nickel-Copper Mines, 1963 and 1964**

Basis: Revised Standard Industrial Classification and New Establishment Concept

Description	1963	1964
	\$'000	
Value of production	430,758	524,036
Amount received in payment for work done on materials and products owned by others	4,401	4,843
Total value of production and work done	435,159	528,879

TABLE 9. Output from Nickel-Copper Mines in Canada, 1963 and 1964

	1963	1964
	tons (2,000 pounds)	
Ore hoisted	17,624,435	20,419,111
Ore smelted directly	674,328	716,390
Ore milled	16,873,731	19,704,708
Concentrates produced (nickel-copper)	4,412,207	5,146,892

TABLE 10. Production of Nickel¹ from Canadian Ores, 1955-64

Year	Tons	Value	Year	Tons	Value
		\$			\$
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
1958	139,559	194,142,019	1963	217,030	360,392,658
1959	186,555	257,008,801	1964	228,496	379,320,510

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

Note: The above and subsequent tables contain data on commodities produced by operators which are classified to other industries. As an example; copper is produced by firms classified as, Gold Quartz, Copper-Gold-Silver, Nickel-Copper, Silver-Cobalt, Silver-Lead-Zinc, Iron, Other Metal Mines and Other Non-metal Mines.

TABLE 11. Production of Nickel,¹ by Months, 1963 and 1964

Month	1963	1964	Month	1963	1964
	tons (2,000 pounds)			tons (2,000 pounds)	
January	17,939	17,509	August	18,202	17,604
February	17,260	18,594	September	18,037	16,352
March	19,083	18,361	October	18,399	19,504
April	19,644	19,335	November	17,747	20,551
May	19,892	20,777	December	18,945	21,886
June	17,461	18,965			
July	14,421	19,058	Totals	217,030	228,496

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

See Note Table 10.

TABLE 12. Imports and Exports of Nickel, by Commodities, 1963 and 1964

		1963		1964	
		Quantity	Value	Quantity	Value
			\$		\$
Imports					
Nickel in ingots, blocks, shot	lb.	18,356,450	16,226,571	..	..
Nickel rods for wire (90% nickel)	"	83,108	127,613	..	..
Nickel in bars and rods, strips and sheets	"	3,409,047	4,674,707	..	..
Nickel-chromium in bars	"	60,555	100,125	..	..
Nickel, manufactures of, not plated .....	..	..	172,187	..	..
Nickel-plated ware, n.o.p. ....	..	..	492,639	..	..
Nickel-silver in ingots, blocks	lb.	37,886	37,813	..	..
Nickel anodes, cathodes, and rods .....	"	..	..	20,887,600	17,985,525
Nickel alloy, ingots, blocks, rods etc. ....	"	..	..	1,216,300	1,526,075
Nickel and alloy fabricated materials, n.e.s. ....	"	..	..	3,111,400	4,669,433
Exports					
Nickel in ores, concentrates, matte	ton	83,392	126,733,328	74,766	114,248,806
Nickel in oxide	"	15,208	22,008,249	35,800	51,225,562
Nickel and nickel alloy scrap	"	957	494,338	1,081	561,198
Nickel anodes, cathodes, ingots	"	109,156	169,236,925	128,330	192,293,746
Nickel and alloy fabricated material, n.e.s.	"	4,012	6,131,436	2,558	4,851,524

See Note Table 10.

Source: "Imports by Commodities", DBS Catalogue No. 65-007; "Exports by Commodities", DBS Catalogue No. 65-004.

TABLE 13. Production, Consumption and Exports of Nickel, 1955-64

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)		
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 ¹	77,410	11,126	121,712
1963	217,030	5,869 ¹	83,392	15,208	109,156
1964	228,496	6,899 ¹	74,766	35,800	128,330

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

See Note Table 10.

TABLE 14. World Production of Nickel, 1960 - 64

Country	1960	1961	1962	1963	1964
	tons (2,000 pounds)				
Canada ¹	214,506	232,991	232,242	219,941	228,496
New Caledonia ²	43,325	48,600	32,400	32,200	51,130
United States ³	12,530	11,176	11,217	11,432	12,185
Cuba ⁴	12,547	16,320	16,222	16,200	16,300
Finland	2,495	2,377	2,310	3,231	3,490
Republic of South Africa ⁵	3,200	2,900	2,700	2,700	2,700
U.S.S.R. ⁶	58,000	77,000	90,000	90,000	90,000
Total world (estimate)	346,600	391,400	387,100	375,700	409,200

¹ Production in all forms from Canadian ores.² Nickel in matte and ferronickel produced plus estimated recoverable nickel in ore exported.³ By-product in electrolytic refining of copper and recovered nickel in domestic ore refined.⁴ Nickel content and small fraction of cobalt in oxide.⁵ Nickel content of matte and refined nickel.⁶ Conjectural.

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

TABLE 15. Production of Copper, by Provinces and by Forms, 1963 and 1964

	1963		1964	
	Tons	Value	Tons	Value
		\$		\$
By provinces:				
Newfoundland	14,012	8,827,797	13,615	9,095,013
Nova Scotia	237	149,394	204	136,075
New Brunswick	8,964	5,647,307	9,296	6,209,736
Quebec	141,400	89,081,976	158,088	105,602,844
Ontario	178,960	112,048,454	197,917	131,458,795
Manitoba	16,980	10,697,506	29,777	19,891,109
Saskatchewan	29,772	18,756,028	20,442	13,655,333
British Columbia	62,218	39,184,967	57,561	38,418,929
Yukon	—	—	—	—
Northwest Territories	16	10,281	—	—
Canada	452,559	284,403,710	486,900	324,467,834
By forms (where computed):				
In blister and anode copper produced ¹	361,484	227,735,086	397,952	265,831,609
In ores, concentrates and copper matte exported	77,151	48,592,702	76,456	51,040,914
In nickel-copper matte exported	13,924	8,075,922	12,492	7,595,311
Total accounted for	452,559	284,403,710	486,900	324,467,834

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

See Note Table 10.

TABLE 16. Production of Copper,¹ by Months, 1963 and 1964

Month	1963	1964	Month	1963	1964
	tons (2,000 pounds)			tons (2,000 pounds)	
January	35,010	39,073	August	39,550	43,654
February	31,665	35,429	September	40,929	38,801
March	37,091	39,726	October	42,043	42,488
April	36,220	37,900	November	41,875	45,008
May	36,536	40,489	December	36,148	41,178
June	39,688	42,470			
July	35,804	40,684	Year	452,559	486,900

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

See Note Table 10.

TABLE 17. Production of Copper, by Kinds of Ores and by Provinces, 1963 and 1964

Province	From copper-gold- silver ores	From nickel-copper ores	From other ores	Total
1963				
Newfoundland	11,004	—	3,008	14,012
Nova Scotia	—	—	237	237
New Brunswick	8,964	—	—	8,964
Quebec	137,915	129	3,356	141,400
Ontario	44,973	123,483	10,504	178,960
Manitoba	7,530	9,450	—	16,980
Saskatchewan	29,772	—	—	29,772
British Columbia	61,103	871	244	62,218
Yukon	—	—	—	—
Northwest Territories	16	—	—	16
Canada	301,277	133,933	17,349	452,559
1964				
Newfoundland	10,738	—	2,877	13,615
Nova Scotia	—	—	204	204
New Brunswick	8,713	—	583	9,296
Quebec	140,623	5,850	11,615	158,088
Ontario	51,750	142,947	3,220	197,917
Manitoba	19,975	9,802	—	29,777
Saskatchewan	20,442	—	—	20,442
British Columbia	55,040	830	1,691	57,561
Yukon	—	—	—	—
Northwest Territories	—	—	—	—
Canada	307,281	159,429	20,190	486,900

See Note Table 10.

TABLE 18. Production of Refined Copper, 1955-64

Year	Tons	Year	Tons
1955	288,997	1960	417,029
1956	328,458	1961	406,359
1957	323,540	1962	382,868
1958	329,239	1963	380,075
1959	365,366	1964	407,942

See Note Table 10.

TABLE 19. Production of Refined Copper, by Months, 1963 and 1964

Month	1963	1964	Month	1963	1964
tons (2,000 pounds)			tons (2,000 pounds)		
January	32,533	32,096	August	32,048	32,034
February	29,436	30,982	September	30,856	35,586
March	29,736	33,147	October	34,308	36,931
April	31,255	33,949	November	32,873	33,575
May	32,095	33,610	December	33,660	38,428
June	29,278	33,608			
July	31,997	33,996	Year	380,075	407,942

See Note Table 10.

TABLE 20. Imports and Exports of Copper, by Commodities, 1963 and 1964

	1963		1964	
	Quantity	Value \$	Quantity	Value \$
Imports				
Copper in blocks, pigs and ingots.....lb.	13,097,200	3,817,125	..	..
Copper scrap	6,508,300	1,983,494	..	..
Copper in bars or rods for the manufacture of trolley, telegraph and telephone wires, electric wires and electric cables	2,123,600	890,804	..	..
Copper bars or rods, n.o.p.	430,200	171,205	..	..
Copper in strips, sheets or plates	165,200	144,362	..	..
Copper tubing, not manufacturing	630,200	433,346	..	..
Copper rollers for wall paper .....	..	249,920	..	..
Copper wire, n.o.p. ....lb.	44,440	42,651	..	..
Copper wire cloth, woven .....	..	..	..	..
Copper manufactures, n.o.p. ....	..	1,049,151	..	..
Copper sulphate (blue vitriol) ....lb.	732,690	111,998	..	..
Copper oxide	541,852	224,073	..	..
Copper, refinery shapes .....	..	..	13,541,600	4,444,817
Copper bars, rods and shapes, n.e.s. ....	..	..	1,849,500	816,588
Copper plates, sheet and flat products .....	..	..	243,700	200,648
Copper pipe and tubing .....	..	..	861,900	617,189
Copper wire and cable excluding insulated .....	..	..	519,000	312,125
Copper and alloy fabricated materials, n.e.s. ....	..	..	..	3,089,153
Copper oxides and hydroxides .....	..	..	320,100	166,648
Copper in ores, concentrates and scrap .....	..	..	4,429,900	1,370,558
Copper sulphate .....	..	..	434,800	69,014
Exports				
Copper in ore, matte, regulus, etc.....ton	92,930	44,630,977	104,550	51,869,503
Copper in slag, skimmings, sludge	100	52,154	337	183,390
Copper scrap	10,584	5,603,458	13,147	9,048,675
Brass and bronze scrap	8,074	3,268,122	8,369	4,279,261
Copper alloy scrap, n.e.s.	660	242,195	449	192,219
Copper refinery shapes	214,987	136,798,100	222,273	148,808,892
Copper bars, rods, shapes, n.e.s.	23,609	14,943,375	30,854	21,200,179
Copper plates, sheet, strip	2,760	2,546,955	4,113	3,922,164
Copper pipe and tubing	7,515	7,345,035	8,933	9,209,536
Copper wire, cable, not insulated	376	330,619	848	726,760
Copper alloy refinery shapes	2,782	2,482,377	3,336	3,952,835
Copper alloy pipe and tubing	1,428	1,525,981	2,509	2,712,603
Copper alloy wire, not insulated	320	436,749	411	608,187
Copper and alloy fabricated materials, n.e.s.	65	108,097	127	221,971
Insulated wire and cable	6,869	6,762,006	11,362	14,322,218

See Note Table 10.

Source: "Imports by Commodities", DBS Catalogue No. 65-007, "Exports by Commodities", DBS Catalogue No. 65-004.

TABLE 21. Production of Copper, Exports and Imports, 1955-64

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)					
1955	323,994	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	...
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	95,544	—	223,043	147
1963	452,559	92,930	—	214,987	6,549
1964	486,900	104,550	—	224,273	6,771

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

See Note Table 10.

TABLE 22. Production of Refined Copper, Consumption, Exports, 1955 - 64

Year	Production	Shipments to domestic consumers	Exports
tons (2,000 pounds)			
1955	288,997	138,559	153,199
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
1963	380,075	169,750	214,987
1964	407,942	202,225	224,273

TABLE 23. World Production of Copper by Countries of Origin of Ore¹

Country	1960	1961	1962	1963	1964
tons (2,000 pounds)					
United States	1,092,500	1,159,556	1,223,978	1,208,197	1,251,216
Canada	439,262	439,088	465,446	461,823	486,900
Mexico	66,502	54,359	51,945	61,576	57,877
Cuba	13,058	5,500	6,100	6,600	6,600
Haiti	1,000	3,832	6,738	6,553	6,208
Nicaragua	5,398	6,919	8,016	8,028	10,185
Bolivia ¹	2,503	2,292	2,646	3,300	5,160
Brazil	1,200	1,900	1,800	1,700	2,000
Chile	586,643	603,424	646,064	662,126	685,259
Peru	200,311	218,313	183,853	195,608	192,328
Totals, America	2,408,377	2,495,183	2,596,586	2,615,511	2,703,733
Austria	2,188	2,105	2,186	2,078	1,725
Finland	31,580	35,745	37,657	36,777	34,379
France	772	551	441	441	331
Germany, Federal Republic	2,454	2,389	2,202	2,515	1,759
Italy	561	691	973	1,100	887
Norway	16,965	15,379	17,124	15,724	16,439
Portugal	3,767	3,351	3,742	3,627	4,812
Spain ²	8,786	20,029	20,580	26,275	28,698
Sweden	18,396	18,629	21,034	19,029	22,000
Yugoslavia	36,681	41,787	57,008	68,446	69,648
Totals, Europe	122,150	140,656	162,947	176,012	180,678
Japan	98,036	106,272	114,198	118,185	117,036
India	9,822	9,190	10,914	11,034	10,740
Israel	6,143	6,969	5,768	6,087	10,948
Korea, Republic of	649	584	473	542	536
Turkey	26,928	20,525	28,127	32,189	34,925
Philippines	48,512	57,182	60,327	70,201	66,654
Cyprus ³	39,096	31,585	27,735	29,000	18,514
Totals, Asia	229,186	232,307	247,542	267,238	259,353
Congo, Republic of	332,900	325,440	322,974	297,537	304,877
Rhodesia	15,128	14,979	15,146	18,489	18,341
South West Africa	21,692	23,377	25,873	30,709	35,887
Uganda	16,265	14,720	17,173	17,875	20,129
Republic of South Africa	52,041	55,464	50,396	59,421	64,305
Zambia	635,326	633,534	619,856	648,238	709,754
Totals, Africa	1,073,352	1,067,514	1,051,418	1,072,269	1,153,293

See footnotes at end of table.

TABLE 23. World Production of Copper by Countries of Origin of Ore¹ - Concluded

Country	1960	1961	1962	1963	1964
	tons (2,000 pounds)				
Australia	117,741	96,823	118,646	119,470	110,350
U.S.S.R. ⁴	507,000	523,600	550,000	600,000	675,000
Bulgaria ⁴	12,100	13,200	14,000	18,000	20,200
Germany, East ⁴	27,500	27,500	27,500	30,000	30,900
Poland ⁴	11,600	12,900	15,100	14,600	16,000
China ⁴	44,000	50,000	50,000	60,000	80,000
Totals, Soviet Sphere	602,200	627,200	656,600	722,600	822,100
World totals, ⁵ as reported	4,553,006	4,659,683	4,833,739	4,973,100	5,229,507

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 Conjectural.

⁵ In addition there is production in Burma, Ecuador, Taiwan, Algeria, Angola, Kenya and Morocco; the total of all these countries is estimated to be about 6,000 tons in 1964.

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

TABLE 24. Production of Metals of the Platinum Group from Nickel-Copper Ores, 1955-64

Year	Platinum ¹		Palladium ²	
	Fine ounces	Value	Fine ounces	Value
		\$		\$
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	..	..
1963	357,651 ³	22,585,205	..	..
1964	376,238 ³	25,404,117	..	..

¹ In addition, a relatively small quantity of alluvial platinum is usually recovered annually in British Columbia; such recovery in 1955-58, nil; 1959, 4 ounces; 1962, 5 ounces; 1963, 2 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 25. Production of Selenium and Tellurium from Nickel-Copper Ores, 1955-64

Year	Selenium		Tellurium	
	Pounds	Value	Pounds	Value
		\$		\$
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
1963	95,100	461,235	7,705	50,082
1964	104,905	508,789	7,900	51,350

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

TABLE 26. Production of Gold and Silver from Nickel-Copper Ores, 1955-64

Year	Gold		Silver	
	Troy ounces	Value ¹	Troy ounces	Value ¹
		\$		\$
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	57,082	2,135,438	1,779,619	2,073,256
1963	53,751	2,029,100	1,397,936	1,934,743
1964	52,856	1,995,314	1,508,884	2,112,438

¹ Estimated.**TABLE 27. Drilling Completed on Nickel-Copper Deposits, 1964**

	Footage drilled
Diamond drilling for exploration and testing:	
By mining companies with their own personnel and equipment	45,439
By diamond drilling contractors	449,823
Other diamond drilling:	
Blast hole diamond drilling:	
By mining companies with their own personnel and equipment	373,193
By diamond drilling contractors	—
Drilling by percussion or other machines ¹	23,618,209

¹ Not complete as records are unavailable at certain mines.**TABLE 28. Specified Taxes Paid by Companies Engaged in Nickel-Copper Operations,¹ 1962-64**

	1962	1963	1964
	dollars		
Dominion income tax, including tax on non-operating revenue	32,149,991	21,887,052	30,684,922
Total provincial taxes	17,195,307	11,663,488	14,701,774
Total municipal taxes	2,198,886	2,307,357	2,370,337
Grand total taxes paid	51,544,184	35,857,897	47,757,033

¹ Includes smelting and refining operations and other related corporate activities associated with Canadian operations of nickel-copper mines.

TABLE 29. Miscellaneous Expenditures by Companies Engaged in Nickel-Copper Operations,¹ 1964

	1964
	\$
(a) Workmen's compensation	2,169,694
(b) Silicosis assessment	64,866
(c) Unemployment insurance	995,283
(d) Aggregate cost of structures, roads, machinery, equipment, etc., built by or purchased from outside contractors or suppliers and chargeable to Fixed Assets Account	19,463,854
(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	1,149,872
(f) Other capital expenditures not reported in (d) and (e)	1,433,720
(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	420,084
(h) Cost of office supplies used during the year, not chargeable to Fixed Assets Account. Excludes cost of stamps and meter expenses	359,045

¹ Includes smelting and refining operations and other related corporate activities associated with Canadian operations of nickel-copper mines not allocable separately elsewhere.

Directory of Nickel-Copper Mines, 1964

Name of firm	Head office address	Location of Canadian plant
Quebec:		
Lorraine Mining Co. Ltd.	Belleterre	Gaboury - Blondeau Twps.
Marbridge Mines Ltd.	100 d'Youville St., Quebec	La Motte Twp.
Ontario:		
Falconbridge Nickel Mines, Ltd.	44 King St. W., Toronto	Twps. of Falconbridge, Blezard, McKim, Levack
International Nickel Company of Canada, Limited	Copper Cliff	Mines: Twps. of Levack, Denison, Garson, Snider, McKim Smelters: Copper Cliff, Coniston Refineries: Copper Cliff, Port Colborne
Metal Mines Ltd. (Gordon Lake Division)	100 Adelaide St. W., Toronto	Kenora
Manitoba:		
Sherritt-Gordon Mines, Ltd.	25 King St. West, Toronto, Ontario	Lynn Lake
International Nickel Co. of Canada, Ltd.	Copper Cliff, Ontario	Mine: Thompson Smelter: Thompson Refinery: Thompson
British Columbia:		
Giant Mascot Mines Ltd.	Box 820 Hope	Hope

Note: In addition to these producing mines, there are firms which are doing development work only or holding dormant properties.

EXPLANATORY NOTES

(Including Concepts and Definitions)

INTRODUCTION

The Census of Mines, Quarries and Oil Wells is an annual mail survey covering Canada's Mineral Industries based on the Standard Classification of Industries. While principal statistics are collected and compiled for all mineral industries not all can be published separately by province because of the confidential nature of the data in certain provinces.

The reporting unit for the Census is designated as the establishment (see definition of Establishment in following section) and a return is requested from every establishment classified to a mineral industry. When an establishment is operated for only part of a year a report is required covering the period of operation.

There are four different questionnaires used in this Census: (a) short form (introduced in 1965) (b) long form (c) head office questionnaire and (d) commodity questionnaire. The short and long forms are used to obtain principal statistics and commodities shipped from establishments classified to mineral industries and differ only in the amount of detail requested.

The head office questionnaire is generally used for company head offices and/or auxiliary units separately located from the mineral establishment(s), (see following notes on Head offices and auxiliary units). The Commodity questionnaire is used to survey certain establishments to collect information on the quantity and value of goods of own production shipped or used by such establishments in order to achieve full coverage of domestically produced commodities. (See the following note under Value of production).

General

This report is one in a series of 18 publications which relate to the operations of industries comprising Major Groups 1, 3, and 4 of Division 4, Mines (including Milling) Quarries and Oil Wells of the revised Standard Industrial Classification (S.I.C.). These groups are respectively Metal Mines, Non-metal Mines and Quarries and Sand Pits. Industries comprising Major Group 2 (Mineral Fuels) are covered in a separate series of reports. The industries included in Major Group 5, Services Incidental to Mining are not covered by separate reports. However, certain relevant statistics are published in various publications, for example, "Contract Drilling for the Mining Industry" (Catalogue No. 26-207), "Construction in Canada" (Catalogue No. 64-201) and a special report "Private and Public Investment in Canada" (available on request from the Bureau or the Queen's Printer). The Bureau has also developed a new survey "Annual Survey of Mining and Exploration Companies". This survey is being introduced for the 1967 reporting period and will attempt to bring together details on exploration, development and capital and repair expenditures for the mining universe (excluding oil and gas).

The publication of this series of 18 reports constitutes the final phase of the implementation of the revised Standard Classification for these three Major Groups (see above). Because of its size and complexity, this project has to be carried out in several stages and over a period of years. These stages were as follows: (a) reclassification of establishments according to the revised S.I.C. (b) implementation of a new establishment definition (c) an extension of the establishment definition to cover the non-mining activities of mining establishments. The first stage was completed with the 1960 Census of Mines, etc. and the results were published in the 1960 and 1961 reports on the basis of the revised Standard Industrial Classification. This part of the project was confined entirely to a re-coding of existing reporting units. Under the revised Standard Industrial Classification reporting establishments are classified or allotted to specific industries in the classification system on the basis of the value of principal products made or shipped. Full details concerning the revised classification system are contained in the "Standard Industrial Classification Manual", Catalogue No. 12-501, which is available from either the Queen's Printer or the Dominion Bureau of Statistics.

The second stage in the project consisted of the implementation of the new definition of the reporting unit i.e. "establishment" as it applied to **mining activities** of mining establishments (see following note on Establishment). Results of the 1962 Census of Mining reflected this change in concept and, in order to provide comparability of data for previous years, the 1962 reports contained principal statistics on the basis of the new establishment definition for years back to 1957. This naturally included the projection of stage one.

The third stage in the project which was the extension of the definition of the establishment to cover **total activities** of mining establishment, is reflected in the 1964 data presented in the present report. By definition "total activity" relates to all operational data and excludes such non-operational items as rent, interest and dividends. Statistics on man-hours included in the earlier publications for the mining industry will continue to be included as part of the regular series but will be confined to production and related workers as in the reports for the Census of Manufactures. Adjustments and revisions made in the statistics for mining activities covering the period 1961-63 and carried in the mining series of publications for this period were further revised in the course of the final stage of the programme to bring them in line with reporting procedures followed in the 1964 Census of Mining which reflect the final application of the new concept. The 1961-63 statistics on mining statistics on the new basis are thus not comparable with those published in earlier issues in this series. However, the 1961-63 statistics are shown in this publication in both their previously published and revised forms in order to provide a link with the immediate past.

Reference has already been made to changes implemented and in the course of implementation in the mining industries in reports published in this series prior to the 1964 issues; however a more complete account of the changes and additions and brief descriptions of the principal industry statistics are given in the following sections of those notes. This latter includes as well a special section dealing specifically with the impact of a new concept in the treatment of the Smelting and Refining industry on the metal mines industries. A description of conceptual and definitional changes appropriate to the statistics for Major Group 4, Mineral Fuels will be included in the relevant industry reports for this group.

Metal Mines

The effect of the application of a special concept to the reporting procedures followed by plants carrying on integrated mining/smeltering/refining operations will be evident in the comparison of the 1961-64 data particularly for the items Materials and supplies and Value of production shown in the publications on Metal Mines and the data published in reports prior to 1964. The industries in which the application of this concept had a major effect are those included in S.I.C. Major Group 1 - Metal Mines of the Annual Census of Mining (Mines (including Milling) Quarries and Oil Wells) but more particularly the following:

Copper-Gold-Silver Mines
Nickel-Copper Mines
Silver-Lead-Zinc Mines

These industries which are dominated by a sector of vertically integrated companies involved in mining and manufacturing (smelting and refining) operations have historically created significant distortions in the statistics for these industries. These were caused, for the most part, as a result of applying a value to the ores, concentrates, etc. which were part of the materials (inputs) of the Smelting and Refining industry. The method of valuation used was based on the recoverable metal content of these materials, that is, ores, concentrates, etc. A similar procedure was followed in valuing the output portion of these mines. Since the major output of the mines served as an input to the Smelting and

Refining industry and in turn became a part of the output of the Smelting and Refining industry there was, in effect, a duplication of values for recoverable metal content in the mining and manufacturing sector (smelting and refining). The procedure followed also tended to understate the total output value of the mines sector because the recoverable metal content was valued at a lower level in the processing operations than is, as ores, concentrates, etc. before smelting and/or refining.

Prior to the full implementation of the establishment concept to include total activities, the "Materials and supplies" section included primarily a limited number of consumable materials such as explosives, drill steel, lubricants, etc. Many kinds of supplies, for example, maintenance and repair supplies were not reported. The extension of the Materials and supplies section in accordance with the total activities concept to provide for a more complete coverage of materials and supplies accounts for a major part of the increase in the total cost of Materials and supplies used. In the case of the vertically integrated companies the procedure followed omitted treatment charges such as milling, smelting refining, etc. from the input side of the mines sector involving these companies as well as from the output side of the Smelting and Refining industry. As a result the cost of materials (inputs) reported, particularly for the industries in the mines sector mentioned above was considerably understated.

As a result of the foregoing it was necessary to find some statistical device which would eliminate the above practices and permit the derivation of more meaningful principal statistics - for both the metal mines and for the smelting and refining industry.

While it has been suggested that smelting and refining should be treated as part of the metal mines, and that the statistics should be compiled on this basis, this would be difficult to justify from the statistical viewpoint. Smelting and refining by the nature of its operations constitutes a

manufacturing activity and is considered such, not only in the Canadian and International classification systems but also in the systems of most foreign countries. To include it as part of the mining universe would not only make international comparisons virtually impossible but would affect the importance of Canada's manufacturing industries even more drastically than the changes which resulted from the approach adopted.

After a thorough study of these problems and consultations with the firms involved, it was found that the only satisfactory solution was to continue to consider smelting and refining as a manufacturing industry and to treat such operations of vertically integrated companies as "custom" operations regardless of whether or not the smelting and refining plants (establishments) of such companies were concerned solely with the smelting and refining of ore, concentrates, etc. of their own company. This procedure eliminated the need to arbitrarily value the ores, concentrates, etc. transferred to the smelter and to value the output of the smelter and refinery in terms of commodities produced. Although, for the purpose of commodity statistics, these are still valued on the basis of recoverable metal content, the revenue from integrated operations accrues to the mines concerned and is not duplicated, as in the past, in both the mining and the smelting and refining industries. Thus the revenue from smelting and refining in such integrated operations now consists primarily of treatment costs of own ores, etc. plus any revenue from toll charges of non-company ores, by-products, etc.

The effects of allocating the final revenues of the vertically integrated companies included in this industry to the metal mining industries and the broadening of coverage for materials used, as well as any changes resulting from the implementation of the revised Standard Industrial Classification and the New Establishment Concept, are reflected in the tables of principal statistics for the years 1961 to 1964. Additionally, these tables reflect the inclusion of the non-mining activities, i.e. the total activity concept.

CONCEPTS AND DEFINITIONS

Establishment

A mining establishment is typically a mine, mine/mill (concentrator), quarry, pit, bog, or plant principally engaged in commercial production activities. In many cases a mining company consists of a single establishment but it is not uncommon for a company to consist of a number of establishments some of which may be in mining i.e. mine/mill and others in manufacturing i.e. smelter, cement plant, etc. In addition a number of locations may be involved. Such firms are requested to submit a separate Census of Mining report for each mineral establishment which can meet the reporting requirements embodied in the following definition of the "establishment".

"The smallest unit which is a separate operating entity capable of reporting the following principal statistics:

- Materials and supplies used
- Goods purchased for resale as such
- Fuel and power consumed
- Number of employees and salaries and wages
- Man-hours worked and paid
- Inventories
- Shipments or sales."

Each establishment is required to report on all the activities carried out within its accounting boundaries (except non-operating revenues such as rent, interest and dividends) and data on the different activities (mining etc., trading in goods not of own manufacture, construction by own labour force, revenue from services, etc.) are requested to be reported separately. It should be noted that the statistics for separate activities are not completed consistent since some respondents cannot distinguish, in their records, materials, shipments and inventories relating solely to their own mining activities. For example, inventory of commodities purchased

for re-sale may not be distinguishable from inventory of own mineral commodities. Complete consistency, therefore, can be obtained only at the "all operations" (total activity) level and for studies or statistical measures requiring accurate co-ordinated data, the "total activity" statistics should be used.

The number of establishments represents the number of operating units that are principally engaged in the activities of the mineral industries to which they have been classified. These units do not necessarily represent the total number engaged in the production of a commodity mainly produced in a certain industry. Some commodities are produced as secondary products in other mineral and non-mineral industries. It should be noted that head offices and auxiliary units which are surveyed separately are not included in the establishment count, (see following notes on Head offices and auxiliary units).

Head Offices and Auxiliary Units

Head offices and auxiliary units of companies classified to the mineral industries such as sales offices, administrative offices, warehouses, laboratories, etc. are now surveyed as part of the Census of Mining.

These head offices and auxiliary units are either included in an establishment report or are surveyed by means of the head office questionnaire. The former is the most common case where a single establishment firm has its executive personnel, sales office, etc. located at the site of the mine (establishment). The special head office questionnaire is generally used where a firm, regardless of the number of establishments, has separately located offices or auxiliary units. Such offices or units do not constitute establishments within the Census of Mining as they do not normally generate operational revenues, but give rise only to cost of operations

(mainly salaries and wages) which are automatically included in the value of shipments or sales. Although not considered as establishments, and hence, not included in the "establishment" count for an industry, the operational costs are reflected in either the "Industry" statistics (3 or 4 digit level) or the "Major group" statistics (2 digit level) according to the following rules:

- (a) In the case of single establishment firms, statistics of offices and units located in a different municipality to the mining establishment are classified to the same industry (3 or 4 digit) as the mining establishment;
- (b) In the case of multi-establishment firms, the statistics for such offices and units are coded to the same industry as the establishments of the firm, when all establishments are in the same industry (3 or 4 digits). When establishments of such firms are coded (1) to different industries within a major group, (2) to industries in different major groups or (3) to industries in different divisions of the Standard Industrial Classification, then the statistics are included in the major group totals (2 digit level) in which the major part of the company's operations are classified. Although this may result in some distortion of major group statistics in the case of (2) and (3) the statistics at the industry (3 or 4 digit) level in all cases will be left free of these company-wide data.

Employees

(a) Production and related workers — Mining activities

In addition to those engaged directly in mining production activities, they include those employed in storing, inspecting handling, packing, warehousing, etc. They also include employees engaged in maintenance, repair, janitorial and watchman services and line supervisors (working foremen) engaged in similar work to that of the employees they supervise. For those establishments reporting on the "long" form, production and related workers engaged in mining activity are reported as those receiving pay during the last pay period of each month, an average for the year being obtained by summing the monthly figures and dividing by 12. This procedure is followed even though the establishment did not operate in all months in order to arrive at equivalent annual full-time employment. The numbers are somewhat affected by turnover, in that employment is overstated when an employee changes employment during a pay period. The man-hours of production and related workers in mining activity represent total man-hours paid (total hours at work during the calendar year plus hours not worked but nevertheless paid for, such as paid vacations, sick leave, statutory holidays, etc.). In reporting overtime hours, respondents are requested to report only hours actually at work. It should be noted that the division of hours paid into production and related workers payrolls results in average hourly earnings and does not represent hourly wage rates which are collected and published by the Department of Labour and which are based on selected occupations.

(b) Production and related workers — Non-mining activities

Such employees include those on mining establishments' payrolls engaged in activities such as construction undertaken for the use of these establishments and any other production workers who are not engaged directly in the production of ore and/or concentrates.

(c) Administrative and office employees

This category includes all executive and supervisory officials such as presidents, vice-presidents, comptrollers, secretaries, treasurers, etc., together with managers, professional, technical and research employees, superintendents and plant supervisors above the line supervisor or working foreman level, and clerical staff. Also included are employees in activities such as advertising, credit collections, purchasing, personnel, legal, medical, etc. It should be noted that prior to 1961 this category also included working owners and partners. Also included in this category are employees located at head offices or auxiliary units separately located from the establishment; in accordance to the rules outlined under "Head offices and auxiliary units" above.

(d) Sales and distribution workers

This category includes office personnel whose salaries are charged to selling expense, e.g. travelling salesmen. It may also include some sales employees who are reported as part of a mining establishment but are not working at the establishment. These are generally broken down by location in cases where more than 15 employees are involved in any one location. The figures exclude persons working on a commission basis who are not considered regular employees of the establishment.

(e) Total employees

This total comprises the foregoing categories including employees located at separately located head offices and auxiliary units. The numbers of employees included under categories (b), (c) and (d) are reported in the form of annual averages and represent as closely as possible full time employment; adjustments are made when reported figures indicate the existence of part-time or seasonal employment.

Working Owners or Partners

These are not now included in the statistics of employees and salaries and wages. There is some duplication in numbers when a person owns more than one establishment and is reported as a working owner on each Census return. Withdrawals of working owners are defined as amounts withdrawn by owners or partners for normal living expenses excluding withdrawals for payment of income tax.

Salaries and Wages

Salaries and wages refer to gross earnings of employees before deductions for income tax and employees contributions to social services such as sickness, accident and unemployment insurance, pensions, etc. They include all salaries, wages, bonuses, profits shared with employees, the value of room and board where provided, commissions (paid to regular employees only) as well as any other allowance forming part of the worker's earnings. Payments for overtime are included.

Fuel and Electricity

Figures for fuel refer to amounts actually used (including fuel used in cars, trucks, locomotives, etc.), not to purchases unless the quantities are substantially the same. Any fuel and electricity produced by establishments for internal consumption are not included in the total cost. Values represent laid down cost at the establishment including freight, duty, etc. Although fuel and electricity used is considered part of mining activity it should be noted that it also includes relatively small amounts used in non-mining activities since these cannot be reported separately.

Materials and Supplies

(a) Mining activities

Figures represent quantities and laid down cost values, at the establishment, of materials, supplies and purchased components owned and used during the year in mining activities and related processes. These statistics represent only commodity items or physical goods (cost of services or overhead charges such as advertising, insurance, depreciation, etc. are not included) whether purchased from others or received as transfers (in the form of materials, components or semi-processed goods) from other establishments of the reporting company. Included are maintenance and repair supplies not chargeable to fixed assets accounts and any amounts charged by other establishments for work done on materials owned by the reporting establishment. Cost of repairs or maintenance done by outside contractors and cost of returnable containers are not included.

(b) Non-mining activities

1. Purchases for re-sale as such

Figures represent cost of materials or products purchased from others by the reporting establishment (or received as transfers from other establishments of the reporting company) for re-sale as such in the same condition as purchased. Included are any finished products received on consignment from other countries.

2. Other materials and supplies used

Figures represent the cost of materials and supplies, if any, used in new construction and in the production of machinery and equipment (for the use of the reporting establishment) by the establishment's own employees. Included are materials used for any capital repairs and alterations carried out by the establishment's employees. Amounts paid to outside contractors for construction and repair work are not included nor is the cost of purchased machinery and equipment. Also included is the cost of office supplies not chargeable to fixed assets accounts and the cost of such other items of materials and supplies used as food, beverages and supplies for establishment-operated cafeterias and lunch counters, first aid and medical supplies, laboratory supplies, etc.

Value of Production

(a) Value of production of goods produced in the establishment

These figures represent the values in Canadian dollars of products shipped by the reporting establishments adjusted by changes in value between closing and opening inventory values of goods-in-process and finished products on hand. Included are revenues from repairs and custom work performed for other establishments and the cost (book value) of any goods produced by the mining establishment and shipped on a rental basis.

All products and by-products of own production shipped from the establishment are covered, including transfer shipments to sales outlets, distributing warehouses or to other processing plants of the reporting firm, when such units are treated as separate establishments. Production values are net of returned goods, discounts, returns, allowances, sales tax, excise taxes and duties, returnable containers and charges for outward transportation by common or contract carriers. Transportation or delivery expense incurred by the reporting establishment's own carriers are included.

Shipments of goods of own production of establishments which are coded to some other division of the Standard Industrial Classification (on the basis of principal activity) but which are engaged in mining as a subsidiary activity are collected by means of the Commodity questionnaire referred to earlier. Such shipments together with shipments of goods of own production of establishments forming the universe of mineral industries are compiled and recorded under appropriate headings in the various mineral industry publications; however, operational details relating to the production of such commodities are **not** included in the **principal** statistics shown in the reports for individual mineral industries.

(b) Shipments of goods not of own manufacture

These figures represent the net selling value at establishment (net of discounts, returns, allowances, sales

taxes and excise duties and taxes and transportation charges by common or contract carriers) of all products or materials (including products transferred from other establishments of the reporting firm) sold as such in the same condition as purchased or received as transfers. All sales of consignment goods from other countries are included.

(c) Other revenue

Figures represent the book value of fixed assets, if any, (new construction and machinery and equipment including major repairs, alterations, additions, modifications, installation and assembly work) produced during the year for the use of reporting establishments by the establishment's own employees and for which depreciation accounts are maintained. Included also are any revenues from the sale of electricity, servicing revenues, commissions on sales (when not included in value of sales), revenue for company-operated cafeterias and lunch counters and revenue from outside installation or construction work not related to the establishment's own products, sale of used materials (excluding sale of used fixed assets) research and development work, etc. As mentioned previously the figures do not include non-operating revenue such as rent, dividends, interest, etc.

Value Added

(a) By mining activities

Figures are compiled by deducting the cost of operating materials, supplies, etc. and fuel and electricity consumed from the value of production.

(b) By non-mining activities

The figures are compiled by deducting the cost of goods purchased for re-sale (adjusted for changes in the value of inventories of goods purchased for re-sale) and the cost of non-mining materials and supplies used from the value of shipments of goods not of own manufacture, plus other revenue.

(c) By total activities

The figures consist of value added by mining activities plus value added by non-mining activities. "Value added" is sometimes referred to as net output or net production. However, to arrive at the National Accounts concept of net production, or Gross Domestic Product at "Factor cost" it would be necessary to subtract also the cost of advertising, insurance and other business expenses which are not collected as part of the annual Census of mining. "Value added" figures for the primary industries, manufacturing and construction are published in DBS publication Catalogue No. 61-202. "Survey of Production".

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