

CANADA—DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH

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ANNUAL REPORT  
ON THE  
MINERAL PRODUCTION OF  
CANADA

DURING THE CALENDAR YEAR

1942

Published by Authority of the Hon. James A. MacKinnon, M.  
Minister of Trade and Commerce



OTTAWA  
EDMOND CLOUTIER  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1944

Price, \$1.00





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GOVERNMENT OF CANADA  
BUREAU OF STATISTICS  
1961-1962

ANNUAL REPORT

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CANADA

FOR THE CALENDAR YEAR

1962

Published by the Government of Canada, Ottawa, 1963  
Printed by the Queen's Printer, Ottawa



OTTAWA  
1963

## PREFACE

Annual reports on the Mineral Production of Canada have been published since 1886. The first reports were published by the Geological Survey of Canada, later by the Mines Branch of the Department of Mines, and since 1921 by the Dominion Bureau of Statistics.

The present report contains final data on the production of Canada's mines, together with details of capital employed in the industry, salaries and wages paid, the number of employees, the amounts expended on fuel and power, the power producing equipment installed, and the process supplies purchased. Bulletins on each industry are issued throughout the year and each chapter of the report is comprised of the essential features of each bulletin.

The 1932 edition contained a chronological record of principal mining events which had occurred up to that time. A decade has passed and it was thought advisable to bring this information up to date. To supplement this record, historical tables giving the annual production of each metal and industrial mineral for the Dominion and by provinces have been included also. By the use of the chronology and tables, a student of Canadian Mining History will be able to relate production data with discoveries and developments in the industry.

It has been the practice for years to include in this report world tables of all important minerals. No figures on world production have been available since 1939, but their publication will be resumed when world censorship regulations are lifted.

As in previous years, the Bureau co-operated with the Mines Departments of the provinces of Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia in the collection of these statistics. Forms are filled out in duplicate by the reporting companies, thereby saving the operator extra work, and resulting in uniform totals for Dominion and Provincial statistical bureaux.

The thanks of the Bureau are tendered to the Dominion Department of Mines and Resources and to the mine and smelter operators for assistance given and information made available. Railway and other transportation companies as well as smelter operators outside of Canada have also furnished data, the receipt of which is gratefully acknowledged.

The report has been prepared under the direction of Mr. W. H. Losce, B.Sc., Chief of the Mining, Metallurgical and Chemical Branch, by Mr. R. J. McDowall, B.Sc., Mining Statistician.

S. A. CUDMORE,  
*Dominion Statistician.*

DOMINION BUREAU OF STATISTICS,  
OTTAWA, February 8, 1944.



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## DOMINION BUREAU OF STATISTICS

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### ANNUAL REPORT

ON THE

# MINERAL PRODUCTION OF CANADA

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DURING THE CALENDAR YEAR 1942

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## CHAPTER ONE

The Canadian mining industry realized distinct annual increases in the value of its production for each year since the commencement of the second World War in 1939. In 1942 the value of Canadian mineral production totalled \$566,768,672, representing a 1.17 per cent increase over the previous all-time high record of \$560,241,290 in 1941. The value per capita of Canadian mineral production in 1942 was estimated at \$48.63.

This truly magnificent attainment during a period of world conflict reflects to a great extent the excellent co-operation experienced between the various wartime controllers and the mining industry as a whole. The request by the nation for an increase in output of strategic metals and minerals has been responded to by miners from coast to coast. Canada, in conjunction with the other allied nations, is now producing sufficient stocks of most of the mineral products essential for the successful prosecution of the war.

The value of metallic minerals and metals produced in the Dominion during 1942 totalled \$392,192,452, compared with \$395,346,581 in 1941. This decrease in value resulted largely from an increased curtailment in the mining of auriferous quartz ores. In 1942 all-time high records in output were established for nickel, lead, zinc, platinum metals, cadmium, mercury, tin, tungsten and magnesium. It is interesting to note that indium was produced commercially in Canada for the first time in 1942; the metal was recovered by the Consolidated Mining and Smelting Company of Canada Limited in its metallurgical plants located at Trail, B.C. In 1942 metallic magnesium was produced commercially for the first time in Ontario, production originating in the newly constructed plant of Dominion Magnesium Ltd., situated near Renfrew. Aluminium production in 1942 from imported ores was also the highest ever attained in the Dominion.

Production of fuels and other non-metallic minerals in 1942 amounted to \$128,846,413 as against \$119,521,437 in the preceding year. Compared with 1941, minerals in this major group to realize increases in quantity included coal, natural gas, petroleum, barite, fluorspar, peat moss, mica, salt, sodium sulphate and sulphur. Production of asbestos declined slightly from 1941, but the value showed a considerable increase. Gypsum shipments in 1942 from Nova Scotia quarries were severely restricted owing to the serious shortage in coastal shipping. An interesting event during the year under review was the commercial production for the first time in Canada of brucite granules. These were produced at Wakefield, Que., by the Aluminum Company of Canada Limited.

The value of products comprising structural materials and including clay products, cement, lime, stone and sand and gravel totalled \$45,729,807, a slight increase over the corresponding figure of \$45,373,272 in 1941. It might be presumed that wartime construction reached its peak in 1942, thus accounting for the relatively small increase in the output of building materials. The continued large consumption of lime and stone for chemical purposes reflected largely the enormous production of munitions of war.

Of the total value of Canadian mineral production in 1942, Ontario contributed \$259,114,946 or 45.7 per cent; Quebec, \$104,300,010 or 18.4 per cent and British Columbia, \$77,247,932 or 13.6 per cent.

Capital employed by the Canadian mining industry in 1942 totalled \$1,145,345,913. The industry as a whole provided employment to 112,043 persons and distributed \$198,550,260 in salaries and wages. Expenditures in 1942 by the industry for process supplies, fuel, electricity, outgoing freight and smelter treatment amounted to \$431,911,446. The labour stringency affected particularly metallic ore mining, notably gold. Employment in coal mining, on the whole, showed little change from 1941. Industries producing non-metallic minerals other than coal provided more employment than in 1941 or earlier years. Of the total of 354 strikes and lockouts throughout Canada in 1942, 61 were in mining, involving 19.7 per cent of the workers in all strikes. Fifty-three strikes were recorded in the coal mining industry and two in gold mining.

It is interesting to note that during 1942—

63 per cent of Canada's metal production came from mining areas discovered prior to 1910;

11 per cent came from areas discovered between 1910 and 1920;

21 per cent from areas discovered between 1920 and 1930;

5 per cent from areas discovered since 1930;

or

74 per cent came from areas discovered before 1920; and

95 per cent came from areas discovered before 1930.

It is therefore evident that, for at least ten or fifteen years, prospecting, discovery, and development have been inadequate to offset the exhaustion of known reserves.

**Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1941 and 1942**

	1941*		1942	
	Quantity	Value	Quantity	Value
		\$		\$
<b>METALLICS</b>				
Antimony..... lb.	3,185,077	445,911	3,041,108	516,988
Arsenic (As <sub>2</sub> O <sub>3</sub> )..... lb.	3,538,000	153,195	14,967,874	652,041
Bismuth..... lb.	7,511	10,396	347,556	479,627
Cadmium..... lb.	1,251,291	1,469,010	1,148,963	1,355,776
Chromite..... ton	2,372	42,679	11,456	343,568
Cobalt..... lb.	263,257	255,904	83,871 (d)	88,444
Copper..... lb.	643,316,713	64,407,497	603,661,826	60,417,372
Gold valued at standard rate..... fine oz.	5,345,179	110,494,653	4,841,306	100,078,674
Estimated exchange equalization on gold produced.....		95,294,739		86,311,607
Indium..... fine oz.			471	4,710
Iron ore..... ton	516,037	1,426,057	545,306	1,517,077
Lead..... lb.	460,167,005	15,470,815	512,142,562	17,218,233
Magnesium..... lb.	10,905	2,944	808,718	355,836
Manganese ore..... ton			435	8,932
Manganese metal..... lb.	7,500	2,250		
Mercury..... lb.	536,304	1,335,697	1,035,914	2,943,807
Molybdenite concentrates..... lb.	190,600	88,470	227,586	134,963
Nickel..... lb.	282,258,235	68,650,705	285,211,803	69,998,427
Other precious metals..... fine oz.		8,146,457		19,177,782
Pitchblende products..... (a)		925,196	(a)	(a)
Selenium..... lb.	406,930	777,236	495,369	951,108
Silver..... fine oz.	21,754,408	8,323,454	20,695,101	8,726,296
Tellurium..... lb.	11,453	18,394	11,084	17,735
Tin..... lb.	64,744	33,667	1,237,803	643,689
Titanium ore..... ton	12,651	49,110	10,031	50,906
Tungsten concentrates..... lb.	82,846	38,712	520,981	406,275
Zinc..... lb.	512,381,636	17,477,337	580,257,373	19,792,579
<b>Total.....</b>		<b>395,316,581</b>		<b>392,192,452</b>



Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1941 and 1942—Concluded

		1941*		1942	
		Quantity	Value	Quantity	Value
			\$		\$
NON-METALLICS—FUELS					
Coal.....	ton	18,225,921	58,059,630	18,865,030	62,897,581
Natural gas.....	M cu. ft.	43,495,353	12,665,116	45,097,359	13,301,655
Peat.....	ton	355	2,155	172	1,204
Petroleum, crude.....	brl.	10,133,838	14,415,096	10,364,796	15,068,851
<b>Total.....</b>			<b>85,141,997</b>		<b>92,169,291</b>
OTHER NON-METALLICS					
Asbestos.....	ton	477,846	21,468,840	439,459	22,603,283
Barite.....	ton	6,890	74,416	19,667	188,144
Diatomite.....	ton	344	9,935	365	9,088
Feldspar.....	ton	26,040	244,284	22,270	213,941
Fluorspar.....	ton	5,534	97,767	6,199	146,039
Garnet rock.....	ton	16	160	17	176
Graphite.....	ton		132,924		117,904
Grindstones.....	ton	188	11,500	216	10,000
Gypsum.....	ton	1,593,406	2,248,428	568,166	1,254,182
Iron oxides (ochre).....	ton	10,045	142,060	9,304	151,653
Magnesite dolomite and brucite (e).....	ton		831,041		1,059,374
Magnesium sulphate.....	ton	265	7,343	1,140	38,750
Mica.....	ton	1,744	335,288	3,010	383,559
Mineral waters.....	Imp. gal.	181,064	72,531	157,085	74,505
Nepheline syenite.....	ton		227,583		246,893
Peat moss.....	ton	27,803	644,253	53,500	1,060,372
Phosphate.....	ton	2,487	33,376	1,264	17,431
Quartz.....	ton	2,052,878	1,366,187	1,738,174	1,538,162
Salt (h).....	ton	560,845	3,190,193	653,672	3,844,187
Silica brick.....	M	4,111	238,433	4,273	263,006
Soapstone (c).....	ton	16,461	155,925	14,369	136,529
Sodium carbonate.....	ton	180	1,488	256	2,048
Sodium sulphate.....	ton	115,608	931,554	131,258	1,079,692
Strontium minerals.....	ton	27	280		
Sulphur**.....	ton	260,023	1,702,786	303,714	1,994,891
Talc.....	ton	18,171	204,884	15,499	174,295
<b>Total.....</b>			<b>34,379,440</b>		<b>38,677,123</b>
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS					
<b>Clay Products—Total.....</b>			<b>7,575,336</b>		<b>7,091,723</b>
OTHER STRUCTURAL MATERIALS					
Cement.....	brl.	8,368,711	13,063,588	9,126,041	14,365,237
Lime (b).....	ton	860,885	6,357,941	884,830	6,530,839
Sand and gravel.....	ton	31,604,806	10,375,723	26,349,907	9,005,414
Stone (b).....	ton	7,940,801	8,000,684	7,978,086	8,746,594
<b>Total.....</b>			<b>37,797,936</b>		<b>38,648,664</b>
<b>Grand Total in Canadian Funds.....</b>			<b>566,241,290</b>		<b>566,768,673</b>

\* Unless otherwise noted, all total values of mineral production from 1931 to 1942, inclusive, contain estimated exchange equalization on gold produced.

\*\*Sulphur content of pyrites shipped and estimated sulphur contained in sulphuric acid and other products made from waste smelter gases.

(a) Data not available for publication.

(b) Includes relatively large quantities used as a chemical material.

(c) Includes some talc.

(d) Exclusive of ore placed on government stock pile at Deloro, Ontario.

(e) Brucite included only in 1942.

1 Ton = 2,000 lb.

Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1942

		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
<b>METALLICS</b>												
Antimony.....	lb								3,041,030		78	3,041,108
	\$								516,975		13	516,988
Arsenic (As <sub>2</sub> O <sub>3</sub> ) (x).....	lb			6,349,074	1,504,049				7,114,751			14,967,874
	\$			428,502	152,331				71,148			632,041
Bismuth.....	lb				2,333				345,223			347,356
	\$				3,219				476,408			479,627
Cadmium.....	lb					29,236	147,314		972,413			1,148,963
	\$					34,498	173,831		1,147,447			1,355,776
Chromite.....	ton			11,456								11,456
	\$			343,568								343,568
Cobalt.....	lb			(a)	83,871							83,871
	\$				88,444							88,444
Copper.....	lb			140,911,876	308,282,414	47,595,586	56,781,466		50,015,521	74,963		603,661,826
	\$			14,212,372	30,625,404	4,800,401	5,726,979		5,044,565	7,561		60,417,372
Gold.....	fine oz	12,989		1,092,388	2,763,819	136,226	178,871	34	474,339	99,394	83,246	4,841,306
	\$	500,076		42,050,938	106,407,032	5,244,701	6,886,533	1,309	18,262,052	3,826,669	3,204,971	186,390,281
Indium.....	oz								471			471
	\$								4,710			4,710
Iron ore.....	ton			187	545,119							545,306
	\$			935	1,516,142							1,517,077
Lead.....	lb			437,034	3,183,159				507,199,704		1,322,065	512,142,562
	\$			14,713	107,018				17,032,054		44,448	17,218,233
Magnesium.....	lb			141,081	473,910				193,727			808,718
	\$			62,076	208,520				85,240			355,836
Manganese ore.....	ton	61	374									435
	\$	91	8,841									8,932
Manganese metal.....	lb											
	\$											
Mercury.....	lb								1,035,914			1,035,914
	\$								2,943,807			2,943,807
Molybdenite (concentrates).....	lb			222,276	423				4,887			227,586
	\$			131,906	150				2,907			134,963
Nickel.....	lb				285,211,803							285,211,803
	\$				69,998,427							69,998,427
Other precious metals.....	fine oz						19,176,254		1,528			19,177,782
	\$											
Pitchblende products.....	lb									(b)		
Selenium.....	lb			326,208	76,000	21,209	71,952					495,369
	\$			626,319	145,920	40,721	138,148					951,108
Silver.....	fine oz	448		1,655,042	4,452,787	821,824	2,664,132	2	10,596,204	22,531	482,133	20,695,161
	\$	188		697,865	1,877,562	346,530	1,123,358	1	4,467,996	9,500	203,296	8,726,296
Tellurium.....	lb				9,500	361	1,223					11,084
	\$				15,200	578	1,957					17,735
Tin.....	lb								1,237,863			1,237,863
	\$								643,689			643,689

Titanium ore.....	ton			10,631								10,631
	\$			50,906								50,906
Tungsten concentrates.....	lb.	4,300		2,981	162,185	1,399			250,930	98,218	968	520,981
	\$	3,967		2,612	145,241	1,300			228,590	23,725	840	406,275
Zinc.....	lb.			73,940,811	4,710,394	29,908,179	84,461,520		387,230,489			580,257,373
	\$			2,522,121	160,671	1,020,168	2,880,983		13,208,636			19,792,579
<b>Total.....</b>	<b>\$</b>	<b>504,322</b>	<b>8,841</b>	<b>61,150,893</b>	<b>230,627,535</b>	<b>11,488,987</b>	<b>16,931,789</b>	<b>1,319</b>	<b>64,157,752</b>	<b>3,867,455</b>	<b>3,453,568</b>	<b>392,192,452</b>
<b>Non-Metals</b>												
<b>Fuels</b>												
Coal.....	ton	7,204,852	435,203			1,265	1,301,116	7,754,053	2,168,541			18,865,030
	\$	29,116,118	1,826,403			3,763	1,760,065	22,624,410	7,560,822			62,897,581
Natural gas.....	M cu. ft.		619,380		10,476,770		117,124	34,482,585		1,500		15,697,359
	\$		299,688		6,809,901		45,585	6,140,146		335		13,301,655
Peat.....	ton				172							172
	\$				1,204							1,204
Petroleum, crude.....	bbl.		28,080		143,845			10,117,073		75,789		10,364,796
	\$		39,467		306,242			15,514,665		108,477		15,968,831
<b>Total Fuels.....</b>	<b>\$</b>	<b>29,116,118</b>	<b>2,165,558</b>		<b>7,117,347</b>	<b>2,763</b>	<b>1,805,650</b>	<b>44,285,321</b>	<b>7,566,822</b>	<b>109,812</b>		<b>92,169,291</b>
<b>Other Non-Metallic and Industrial Minerals</b>												
Asbestos.....	ton			439,459								439,459
	\$			22,663,283								22,663,283
Barite.....	ton	17,750							1,917			19,667
	\$	172,060							16,084			188,141
Bituminous sands.....	ton							(c)				(c)
	\$							(c)				(c)
Diatomite.....	ton	218							147			365
	\$	6,541							2,547			9,088
Feldspar.....	ton		16,802		5,468							22,270
	\$		164,588		49,353							213,941
Fluorspar.....	ton	300			4,340				1,559			6,199
	\$	6,584			113,957				25,498			146,039
Garnet rock.....	ton				17							17
	\$				176							176
Graphite.....	ton				117,904							117,904
Grindstones (includes pulpetones, etc.).....	ton		216									216
	\$		10,000									10,000
Gypsum.....	ton	394,216	36,823		82,796	29,218			23,313			566,166
	\$	512,762	111,316		304,170	179,780			146,154			1,254,182
Iron oxides (ochre).....	ton			8,866					438			9,304
	\$			147,049					4,604			151,653
Magnesian dolomite and brucite.....	ton			1,059,374								1,059,374
	\$								1,140			1,140
Magnesium sulphate.....	ton								38,760			38,760

(x) Refined arsenic produced in Canada plus As<sub>2</sub>O<sub>3</sub> content of crude arsenic and ores exported.  
 (b) Not available for publication.

(a) Exclusive of metal in ore placed on Government stock pile at Deloro, Ont.  
 (c) No sands sold as such; crude petroleum recovered included with petroleum under Fuels.



Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1942—Continued

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
<b>Non-Metals—Concluded</b>											
<b>Other Non-Metallic and Industrial Minerals— Concluded</b>											
Mica (all grades).....lb.			2,657,044	2,800,627				562,000			6,019,671
Mineral waters.....Imp. gal.			285,263	89,243				9,061			384,567
Nepheline syenite.....			129,082	28,023							157,083
Peat moss.....			60,316	14,189							74,505
Phosphate.....ton		295	12,982	9,427	2,224						246,893
Quartz.....ton		8,100	197,560	147,729	55,832		58	28,520			53,506
Salt.....ton			930	334			1,380	658,771			1,069,372
Silica brick.....ton			12,973	4,468							1,264
Soapstone (inc. talc).....ton	10,708		203,219	1,367,733		155,099					17,431
Sodium carbonate.....ton	23,557		543,817	914,256		54,495		815			1,738,171
Sodium sulphate.....ton	50,199			558,407	22,706			2,037			1,538,162
Sulphur.....ton	\$ (a) 317,798			2,793,328	397,101		22,300				653,672
Talc.....ton	\$ M 3,090			1,183			335,960				3,844,187
Total Other Non Metals.....\$	142,511			120,495							4,273
Clay—Bentonite.....ton			14,309								263,006
Fireclay.....ton			136,529								14,369
Kaolin.....ton								256			136,529
Other clay.....ton								2,048			256
Fireclay blocks and shapes.....\$											2,048
Total Clay Products.....\$											131,258
Clay—Bentonite.....\$											1,079,692
Fireclay.....ton			189,832	18,634							303,714
Kaolin.....ton			673,965	186,340				116,248			1,994,891
Other clay.....ton				15,499				1,134,680			15,199
Fireclay blocks and shapes.....\$				174,295							174,295
Total Clay Products.....\$	1,181,813	129,416	25,944,717	5,276,786	632,713	1,134,187	337,340	2,040,150			36,677,122
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</b>											
<b>CLAY PRODUCTS</b>											
Clay—Bentonite.....\$					38,800		5,404				44,204
Fireclay.....ton	2,689			380		1,278		1			5,601
Kaolin.....ton	9,129			1,911		13,109		8			40,722
Other clay.....ton			408								408
Fireclay blocks and shapes.....\$			6,130								6,130
Total Clay Products.....\$				4,700		20,097					24,903
Fireclay blocks and shapes.....\$				3,633		68,293					71,826
Total Clay Products.....\$	741	2,296				178,129		29,080			210,246

Firebrick.....	M	15					3	3,797		3,816
	\$	676					236	196,918		197,830
Brick, soft and process—Face.....	M	262		9,230	1,884					11,345
	\$	7,421		194,482	31,348					233,251
Common.....	M	6,404	1,503	7,882	869	50	1,567	1,426		20,347
	\$	115,658	25,811	6,161	116,598	10,742	600	22,384	27,808	325,762
Stiff mud process—Face.....	M	110	1,551	12,610	24,649		52	61		39,104
(wire cut)	\$	2,030	44,314	278,200	543,224		1,268	1,343	1,908	872,287
Common.....	M	310	4,526	35,640	12,407		392	3,462	3,155	59,901
	\$	4,570	76,210	529,304	187,654		4,620	31,506	59,438	893,448
Dry press—Face.....	M		1,531	9,630				1,573	131	12,871
	\$		43,676	212,729			16,754	5,542		278,701
Common.....	M		10,624	5,823			7,328	1,370		25,145
	\$		209,822	94,074			73,302	26,032		464,730
Fancy or ornamental brick (including special shapes embossed and enamelled brick).....	M			11						11
	\$			676						676
Sewer brick.....	M			513						513
	\$			9,480						9,480
Paving brick.....	M			153						153
	\$			9,353						9,353
Structural tile—Hollow blocks (including fire-proofing and load-bearing tile).....	ton	12,333	4,813	39,307	44,517		635	4,681	3,619	109,965
	\$	127,163	41,263	387,896	424,355		5,300	43,146	43,450	1,082,573
Roofing tile.....	\$							32		32
Floor tile (quarries).....	\$				23,702			3		23,705
Drain tile.....	M	191	132	985	9,263		191	897		11,639
	\$	6,841	4,448	40,328	234,971		7,645	34,802		329,035
Sewer pipe (including copings, flue linings, etc.)	\$	344,212		189,800	409,660		335,496	113,377		1,392,545
Pottery, glazed or unglazed, (Including coarse earthenware, stoneware, flower pots and all other pottery).....	\$		51,690	39,400	75,700		476,183	3,106		646,688
Other products.....	\$			490	6,484			2,085		9,059
<b>Total Clay Products.....</b>	<b>\$</b>	<b>618,441</b>	<b>246,041</b>	<b>1,741,297</b>	<b>2,549,486</b>	<b>86,890</b>	<b>271,325</b>	<b>1,013,497</b>	<b>560,746</b>	<b>7,081,723</b>
<b>OTHER STRUCTURAL MATERIALS</b>										
Cement.....	brl.		4,446,416	2,784,782	654,855		665,043	571,945		9,126,041
	\$		6,487,078	3,998,204	1,374,498		1,307,353	1,198,014		14,365,237
Lime (x)—Quicklime.....	ton	21,540	16,217	263,321	382,667		18,117	25,977		749,282
	\$	222,304	146,357	1,981,535	2,761,643		148,720	204,438		5,646,049
Hydrated lime.....	ton	310	6,210	85,255	33,031		704	5,057		125,548
	\$	4,030	51,124	342,172	363,931		7,040	32,466		884,790
<b>Total lime.....</b>	<b>ton</b>	<b>21,850</b>	<b>22,427</b>	<b>348,576</b>	<b>415,698</b>	<b>26,424</b>	<b>18,821</b>	<b>31,034</b>		<b>884,830</b>
	<b>\$</b>	<b>228,334</b>	<b>197,481</b>	<b>2,323,707</b>	<b>3,125,574</b>	<b>265,079</b>	<b>155,760</b>	<b>236,904</b>		<b>6,530,839</b>
Sand and gravel.....	ton	775,795	923,020	11,026,249	8,420,358	1,443,001	679,979	481,644	2,599,861	26,349,907
	\$	371,970	540,541	2,485,553	3,433,986	427,150	435,798	218,914	1,091,202	9,005,414

(a) Less value of containers.

Table 2.—Finally Revised Statistics on the Mineral Production of Canada, by Provinces, 1942—Concluded

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia	Northwest Territories	Yukon	Canada
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—Concluded											
OTHER STRUCTURAL MATERIALS—Concluded											
Stone—Granite.....ton	429	964	1,178,765	90,530	133			95,604			1,366,435
\$	41,985	29,334	1,449,840	288,828	2,452			133,810			1,946,249
Limestone (*).....ton	185,232	82,623	2,926,964	2,992,885	43,355		12,028	109,496			6,442,583
\$	645,680	281,296	2,565,029	2,636,431	69,514		40,436	230,139			6,468,525
Marble.....ton			9,429	4,295				100			13,824
\$			59,714	27,675				1,820			88,209
Sandstone.....ton	43,856	4,350	72,894	18,835				13,930			153,865
\$	76,502	10,650	92,724	33,004				13,930			226,810
Slate.....ton			158					1,211			1,369
\$			158					16,643			16,801
Total stone.....ton	229,517	87,937	4,188,210	3,106,545	43,488		12,028	310,341			7,978,066
\$	764,167	321,280	4,166,465	2,985,938	71,966		40,436	396,342			8,746,594
Total Other Structural Materials \$	1,362,471	1,659,302	15,463,183	13,543,792	2,138,693	435,798	1,722,463	2,922,462			38,648,084
Grand Total.....\$	32,783,165	3,609,158	104,300,010	259,114,946	14,345,046	20,578,749	47,359,831	77,247,932	3,976,267	3,453,568	566,768,672
Metallies.....\$	504,322	8,841	61,150,893	230,627,535	11,488,987	16,931,780	1,310	64,157,752	3,807,455	3,453,568	392,192,452
Fuels.....\$	29,116,118	2,165,558		7,117,347	3,763	1,805,650	44,285,221	7,566,822	108,812		92,169,291
Other non-metallies.....\$	1,151,813	129,416	25,944,717	5,276,788	632,713	1,134,187	337,340	2,040,150			36,671,122
Clay products.....\$	618,441	240,041	1,741,297	2,549,486	80,890	271,325	1,013,497	560,746			7,081,723
Other structural materials.....\$	1,362,471	1,059,302	15,463,103	13,543,792	2,138,693	435,798	1,722,463	2,922,462			38,648,084
Grand Total—1942.....\$	32,783,165	3,609,158	104,300,010	259,114,946	14,345,046	20,578,749	47,359,831	77,247,932	3,976,267	3,453,568	566,768,672
Per cent of total.....	5.78	0.64	18.40	45.72	2.53	3.63	8.36	13.63	0.70	0.61	100.00
Grand Total—1941.....\$	32,569,867	3,690,375	99,651,844	267,435,727	16,689,867	15,020,555	41,364,385	76,841,190	3,860,298	3,117,992	560,241,290
Grand Total—1940.....\$	33,318,587	3,435,916	86,313,491	261,483,349	17,828,322	11,505,958	35,092,337	74,134,485	2,594,157	4,118,333	529,825,035

(\*) Includes relatively large quantities used as a chemical.



Table 3.—Revised Monthly Production of Principal Minerals in Canada, 1942

	Asbestos	Cement	Clay Products	Coal	Copper	Feld- spar	Gold	Gypsum	Lead	Lime	Natural Gas	Nickel	Petro- leum	Salt	Silver	Zinc
	tons	barrels	\$	tons	pounds	tons	fine ounces	tons	pounds	tons	M cu. ft.	pounds	barrels	tons	fine ounces	pounds
January.....	31,215	282,862	389,659	1,919,264	51,722,951	1,528	400,134	75,218	40,046,125	72,145	5,395,065	23,782,285	875,827	47,204	1,611,695	47,027,869
February.....	32,346	298,799	331,571	1,712,029	48,970,425	1,438	376,844	52,508	39,038,625	65,736	4,867,771	22,343,149	846,189	47,652	1,548,633	43,203,703
March.....	36,692	399,201	508,237	1,610,242	55,972,810	1,527	442,962	60,258	41,681,881	73,039	4,654,461	24,553,702	923,177	48,489	1,682,211	47,933,913
April.....	32,589	618,742	513,308	1,523,885	52,071,710	1,503	424,396	75,165	44,569,901	73,072	3,826,085	23,907,023	846,737	49,198	1,690,495	48,764,184
May.....	37,859	788,344	614,627	1,316,863	51,910,320	1,857	428,798	73,658	47,552,134	73,220	3,202,569	24,259,263	892,207	59,736	1,701,502	48,773,593
June.....	39,053	1,074,710	714,324	1,386,453	50,541,392	2,078	427,982	38,317	42,885,117	73,339	2,458,302	24,298,658	856,912	56,214	1,610,420	46,063,524
July.....	39,375	1,245,588	750,039	1,497,197	49,302,824	2,038	428,323	56,624	36,611,066	72,760	2,318,638	24,765,200	869,201	59,633	2,060,064	47,285,323
August.....	42,020	1,230,065	740,162	1,468,448	50,904,328	1,996	406,315	27,011	41,455,245	74,926	2,389,244	23,801,716	870,275	51,499	1,576,828	48,692,557
September.....	37,055	1,092,781	686,901	1,469,691	49,789,764	1,936	380,703	21,685	44,144,152	75,132	3,000,431	23,217,671	827,025	57,411	1,842,007	47,455,979
October.....	40,416	1,144,153	751,842	1,574,871	48,716,916	2,130	385,111	27,191	45,549,537	78,940	3,563,803	23,026,471	860,060	57,381	1,959,272	52,200,779
November.....	38,456	621,749	648,017	1,646,387	47,198,844	2,191	365,755	31,098	45,894,806	78,947	4,642,666	21,499,988	838,511	63,660	1,700,111	50,283,756
December.....	32,383	329,047	453,036	1,739,700	46,559,542	2,048	362,983	27,433	42,714,173	73,574	5,378,324	25,756,677	858,675	55,695	1,711,863	52,572,193
Calendar Year...	439,489	9,128,041	7,081,723	18,865,030	603,661,826	22,270	4,841,306	566,166	512,142,562	884,830	45,697,359	285,211,803	10,364,796	653,672	20,695,101	580,257,373

Table 4.—Average Yearly Prices for Metals, 1938-1942

Metal	Market	Unit	1938	1939	1940	1941	1942
			\$	\$	\$	\$	\$
Antimony (ordinaries).....	New York.....	Pound.....	0-12349	0-12359	0-14000	0-14000	0-15559
Arsenic, white (nominal).....	New York.....	Pound.....	0-03000	0-03	0-035	0-040	0-040
	New York.....	Pound.....	0-1000	0-10965	0-11296	0-11797	0-11775
Copper.....	Montreal.....	Pound.....	0-1055	0-1077	0-115	0-115	0-115
	London.....	Long ton.....	45-411	49-169	(a)	(a)	(a)
Gold (in Canadian funds).....		Fine oz.....	35-175	36-141	38-50	38-50	38-50
	New York.....	Pound.....	0-0474	0-0505	0-0518	0-05793	0-06481
Lead.....	Montreal.....	Pound.....	0-04176	0-04235	0-05	0-05	0-05
	London.....	Long ton.....	15-298	15-437	(a)	(a)	(a)
Nickel.....	New York.....	Pound.....	0-35	0-35	0-35	0-35	0-35
Platinum (in Canadian funds).....	London.....	Fine oz.....	32-213	35-074	39-086	38-210	38-21
Silver.....	New York.....	Fine oz.....	0-43225	0-39082	0-34773	0-34783	0-38333
Tin.....	New York.....	Pound.....	0-42301	0-50323	0-49827	0-52018	0-5200
	St. Louis.....	Pound.....	0-0461	0-0511	0-06335	0-07474	0-08250
Zinc.....	Montreal.....	Pound.....	0-039	0-0468	0-052	0-0515	0-0515
	London.....	Long ton.....	13-990	14-950	(a)	(a)	(a)

NOTE.—All prices in dollars per unit excepting London copper, lead and zinc prices which are quoted in pounds sterling per long ton.

(a) No quotations.

The agreement made in 1939 by the large Canadian base metal producers and the Imperial Government, by which the producers were to supply the Imperial Government with copper, lead and zinc at prices which prevailed shortly before the outbreak of war, was continued with some adjustments or revisions for increases in prices due to the increased cost of labour and materials. Canada can now furnish large quantities of these metals in the refined state, whereas in 1914 no refined copper, nickel or zinc and only a comparatively small amount of refined lead were produced in this country.

Table 5.—Metal Prices by Months 1941 and 1942

Month	Copper* (electrolytic) New York (cents per pound) †		Pig Lead* New York (cents per pound)		Silver				Zinc* St. Louis (cents per pound)	
					New York (cents per oz.) (0-999 fine)		London (pence per oz.) (0-925 fine)			
	1942	1941	1942	1941	1942	1941	1942	1941	1942	1941
January.....	11-775	11-819	6-275	5-500	35-125	34-750	23-500	23-273	8-250	7-250
February.....	11-775	11-794	6-500	5-602	35-125	34-750	23-500	23-341	8-250	7-250
March.....	11-775	11-814	6-500	5-765	35-125	34-750	23-500	23-446	8-250	7-250
April.....	11-775	11-820	6-500	5-850	35-125	34-750	23-494	23-500	8-250	7-250
May.....	11-775	11-815	6-500	5-850	35-125	34-750	23-500	23-457	8-250	7-250
June.....	11-775	11-810	6-500	5-850	35-125	34-750	23-500	23-400	8-250	7-250
July.....	11-775	11-812	6-500	5-850	35-125	34-750	23-500	23-397	8-250	7-250
August.....	11-775	11-778	6-500	5-850	35-125	34-750	23-500	23-459	8-250	7-250
September.....	11-775	11-775	6-500	5-850	44-750	34-750	23-500	23-500	8-250	7-250
October.....	11-775	11-775	6-500	5-850	44-750	34-750	23-500	23-500	8-250	7-942
November.....	11-775	11-775	6-500	5-850	44-750	34-772	23-500	23-500	8-250	8-250
December.....	11-775	11-775	6-500	5-850	44-750	35-125	23-500	23-500	8-250	8-250
Average.....	11-775	11-797	6-481	5-793	38-333	34-783	23-500	23-438	8-250	7-474

\* No London quotations for 1942 or 1941. Montreal quotations remained constant throughout 1942 and 1941 at: copper 11-5 cents; lead 5 cents and zinc 5-2 cents.

Transposed into Canadian funds the average price of copper, based on the London market, was 10-086 cents per pound in 1942 and 1941; the average price of lead based on the same market was 3-362 cents per pound in 1942 and 1941. The average price of zinc in Canadian funds based on the London market in both 1942 and 1941 was 3-411 cents per pound. The average price of silver in Canadian funds, based on the New York market, was 42-166 cents per fine ounce in 1942 and 38-261 cents in 1941.

† f.o.b. refinery. United States prices from Engineering and Mining Journal, New York.

TABLE 6—CHRONOLOGICAL RECORD OF CANADIAN MINING  
EVENTS, 1604—1943.

## Year

- 1604—Discovery of iron and silver reported at St. Mary's Bay, Nova Scotia, by Master Simon, a mining engineer accompanying Champlain. Native copper was also reported to have been found at Cap d'Or.
- 1612—Sir Thomas Button entered Nelson River.
- 1654—Louis XIV granted a concession to Nicholas Denys to mine gold, silver, copper and other minerals on Cape Breton Island.
- 1672—Nicholas Denys reported the discovery of coal on Cape Breton Island.
- 1677—Intendant of New France, M. Duchesneau, proclaimed the imposition of a royalty of 20 sous per ton on coal mined in Cape Breton.
- 1711—Admiral Walker obtains coal in Cape Breton.
- 1720—First coal produced in Canada by regular mining methods on north side of Cow Bay, Cape Breton, N.S.
- 1724—Coal was exported from Cape Breton to Boston.
- 1732—La Verendrye reached Lake Winnipeg.
- 1737—Iron ores smelted on St. Maurice river, Quebec, by Cugnet & Cie or "La Compagnie des Forges."
- 1744—Publication of Bellin's map showing existence of silver-lead ores on Lake Temiskaming, Quebec, now known as the Wright mine.
- 1754—Hendry reached Saskatchewan River from Hudson Bay.
- 1770—Jesuit Fathers experimented with native copper found at Point Mamainse, north shore Lake Superior.
- Alexander Henry, English trader, formed a mining company, in which the Duke of Gloucester and other prominent Englishmen were partners, to develop minerals near Sault Ste. Marie, Ontario.
- 1771—Samuel Hearne, Hudson's Bay clerk, prospects the Copper Mine River area, Northwest Territories, for copper.
- 1779—Earliest recorded gypsum mining operations by settlers, Nova Scotia.
- 1782—Coal mined in vicinity of Grand Lake, New Brunswick.
- 1784—Government commenced systematic coal mining on northwest shore of Sydney Harbour, N.S.
- 1789—Sir Alex. MacKenzie discovers coal on Great Bear River, Northwest Territories.
- 1800—First iron furnace in Ontario erected in Leeds county at Furnace Falls (Lyndhurst) by D. Sherwood, S. Barlow, W. Sutherland and E. Jones.
- David Thompson discovers coal on Saskatchewan river.
- 1813—Blast furnace erected by John Mason at Normandale, Norfolk county, Ontario, used unsuccessfully in treating bog ores.
- 1820—Blast furnace erected in Marmora twp., Hastings county, Ontario, by Mr. Hayes.
- 1822—First record of gypsum mining in Ontario, near Paris.
- Normandale iron furnace commenced successful iron smelting operations in Ontario under Mr. Van Norman.
- 1823—Placer gold discovered on Chaudière River, Quebec, by a woman.
- First gypsum mill operated in Ontario.
- 1826—General mining association formed in Nova Scotia.
- 1829—Lièvre river apatite deposits in Quebec discovered.
- 1830—First mining shaft in Nova Scotia sunk on Sydney main coal seam.
- 1835—Coal discovered at Squash, Vancouver Island, through information supplied by Indians.
- 1840—First hydraulic cement made in Canada at Hull, Quebec.
- 1843—Geological Survey of Canada instituted under Sir Wm. Edmund Logan.
- 1846—Silver veins reported in vicinity of Thunder Bay, Lake Superior.
- Aseano Sobrero, Italian, first makes nitroglycerine.
- Oil seepages reported on Gaspé Peninsula by Sir Wm. Logan.
- 1847—Normandale iron furnace in Ontario shut down owing to lack of ore and fuel.
- First mention of copper ores in Eastern Townships, Quebec, in Geological report, 1847-48.
- Gypsum mining operations commenced near Hillsborough, New Brunswick.
- 1848—Montreal Mining Company commenced mining at Bruce Mines, Ontario.
- 1850—Indians located Douglas coal seam at Nanaimo, B.C.
- 1852—August 24, J. W. McKay, Hudson's Bay Co. factor sent by James Douglas from Victoria to take possession of Nanaimo coal field and collect royalty from users of coal.
- Free gold discovered in quartz at Mitchell harbour, Queen Charlotte Islands, causing the first auriferous quartz rush in British Columbia.
- 1853—March 26. Governor Douglas, Victoria, issued, as Lieutenant Governor of Queen Charlotte Islands, Crown Colony, the first proclamation relating to mining in British Columbia.
- 1855—Placer gold found at the mouth of Pend d'Oreille River, B.C., by ex-servants of the Hudson's Bay Company at Fort Colville.



- 1857—Sir James Hunter located coal on Souris river, Manitoba.  
Placer gold reported at the junction of the Fraser and Thompson rivers, B.C.  
December 28. James Douglas issued proclamation regarding working of gold mines located chiefly in the Kamloops, Ashcroft, and Vernon areas of British Columbia.
- 1858—Introduction of Canadian decimal currency.  
Legislature of Nova Scotia obtained possession and control of mines and minerals of province.  
First producing oil well on American continent opened in Lambton county, Ontario.  
Discovery of placer gold in the lower reaches of the Fraser river, B.C., caused rush to Yale, Hope and Canyon by miners from California and other foreign parts.
- 1859—Passage of the Goldfields Act, British Columbia, Sept. 7.  
Placer miners penetrate to Cariboo and Quesnel, B.C.  
Canadian silver coinage issued.
- 1860—John Pulsiver discovered gold in Tangier district, Halifax county, N.S.  
First drilling for oil in Gaspé, Quebec.  
Pete Toy bar discovered at the Parsnip and Findlay rivers, B.C.  
Crushing plant erected at Wellington Copper Mine, Ontario.
- 1861—Gold discovered in Oldham district, Halifax county, N.S.
- 1862—Gold discovered in Lawrencetown, Isaacs Harbour and Renfrew districts, N.S.
- 1863—Miners from State of Washington ascending the Kootenay, established Wildhorse Creek diggings, B.C.  
Issue of a comprehensive Geology of Canada under Sir William Logan.
- 1864—Placer gold located on Leech Creek, B.C.  
Copper claims staked on Howe Sound and Knight Inlet.
- 1865—Dewdney trail completed to Wildhorse from Hope, B.C., to enable gold escorts to reach Victoria on British territory.  
Placer claims staked on Big Bend area of Columbia river, B.C., by former Cariboo miners.  
Gold discovered in Mount Uniacke district, Nova Scotia.  
Eustis mine opened in Eastern Townships, Quebec.
- 1866—First discovery of gold in Canadian Pre-Cambrian shield near Madoc, Hastings county, Ontario, known as Richardson mine, made by a Dutch prospector named Powell and associates. Thos. McFarlane discovered high grade silver ores in Ontario on an island in Lake Superior. (Silver Islet mine).  
First recorded production of salt in Ontario, near Maitland river.
- 1866—Alfred Bernard Nobel discovered the method of making dynamite.
- 1869—Gold discovered in Fifteen Mile Stream district, Nova Scotia.  
Gold discovered in Yukon river.  
Salt produced at Seaforth, Ontario.  
Transfer of Hudson's Bay Company Lands (Rupert's Land) to Dominion of Canada.
- 1870—First commercial shipments of apatite in Canada made from North Burgess twp., Ontario.  
Montreal Mining Company sold Lake Superior mining lands, including Silver Islet.
- 1871—First recorded production of soapstone in Quebec from Bolton twp., Brome county.  
Dominion Lands Survey Branch created.  
Huronian mine (Moss) N.W. Ontario, located by Peter McKellar on advice of an Indian.  
First staking of silver ores on Eureka Mt., near Hope, B.C.
- 1873—Dease Lake areas, B.C., staked for placer gold, first staker W. H. Smith.  
Omineca placer mining area began to open up and Manson creek settlement established.
- 1877—Geological Survey of Canada recognized by Act of Parliament.
- 1878—Asbestos first mined in Quebec by Andrew Johnston (Johnston Asbestos Co.)  
Gold discovered at Lake of the Woods, Ontario.
- 1879—Coal fields of the Crow's Nest Pass, B.C., opened.
- 1880—Geological Survey offices and museum moved from Montreal to Ottawa.
- 1881—Quebec Technical Mines Branch formed as division of Crown Lands Department.  
Zenith zinc mine discovered, Nipigon district, Ontario.
- 1883—Copper-nickel ores discovered near Sudbury (Murray mine) by Thos. Flanagan.  
Miners penetrated into the West Kootenay district, British Columbia, locating mines on Kootenay river and Kootenay lake.
- 1884—Worthington mine, Sudbury area, Ontario, discovered by F. C. Crean.  
Silver Islet mine, Lake Superior, abandoned.  
Kingdon lead mine deposits, Carleton county, Ontario, worked.  
Thos. Frood and A. J. Cockburn discovered Frood mine, Sudbury area, Ontario.  
Renaldo McConnell discovered copper-nickel ore in Snyder twp., Ontario.
- 1885—Samuel J. Ritchie organized Canadian Copper Company.  
Copper Cliff mine, Ontario, discovered.  
Henry Ranger located Creighton mine, Sudbury area, ore deposit first noted by Surveyor Salter and Geologist Murray.
- 1885—Canadian Pacific Railway completed.  
John Chance staked Granite Creek placer deposits in British Columbia.  
Cayoosh Creek placers staked in British Columbia.  
James Stobie discovers Stobie mine, Sudbury area, Ontario.
- 1886—First shipments of coal from Lethbridge area, Alberta.



- 1886—First complete statistical returns issued by Geological Survey of Canada.  
Incorporation of Canadian Copper Company.  
First stakings in Boundary Creek area, British Columbia, by W. T. Smith.  
First officially recorded Canadian mica production in Ontario and Quebec.  
Stobie and Evans mines, Sudbury district, opened.
- 1887—R. W. MacArthur and Wm. Forest discovered cyanide process for gold extraction, at Glasgow, Scotland.
- 1888—Asbestos first milled in Quebec by Scottish Canadian Asbestos Co.  
Coal discovered near Banff, Alberta.  
Coal mining commenced at Canmore, Alberta.  
First smelter blown in at Copper Cliff, Ont., December 24th.  
Monarch mine on Canadian Pacific Railway at Field, B.C., opened.  
Discovery of natural gas in Essex county, Ontario.
- 1889—Levack mine, Sudbury area, Ontario, discovered by James Stobie.  
H. H. Vivian and Company of Swansea, Wales, started organized mining operations in Sudbury area.  
Discovery of Leamington gas field in Ontario.  
James Riley, Glasgow engineer, discovered the hardening and toughening effect of nickel in steel making.  
Rossland Camp at head of Trail Creek, B.C., opened by staking of Lily May by Joe Bourjouis.
- 1890—Coal first mined in Turtle Mountain field, Manitoba. Vaden mine.  
First smelter blown in at Murray mine, Sudbury. Matte shipped to Wales.
- 1891—First shipments from Rossland, B.C., to Colorado Smelting Works, Butte, Montana.  
Sultana mine, Lake of Woods district, Ontario, opened, closed 1906.  
The United States navy concluded successful experiments using nickel-steel for the first time as armour plate.  
Bureau of Mines, Ontario, organized.  
Garson Mine, Sudbury, discovered by John T. Cryderman.
- 1892—Col. R. M. Thompson developed the Orford nickel-copper separation process.  
Dr. Ludwig Mond developed the Mond copper-nickel separation process.  
Sullivan camp, B.C., commenced by staking of the Hamlet, etc., claims by Pat Sullivan, John Cleaver, E. C. Smith and W. C. Burchett.
- 1893—Kneehills coal mines, Alberta, opened.  
Mikado mine, Lake of Woods district, Ontario, discovered.
- 1894—Pilot Bay smelter constructed and silver-lead-zinc mines of Ainsworth and Sloan, B.C., became active.
- 1895—Sullivan mine, B.C., commenced shipping.
- 1896—Salt produced in Dauphin Lake district, Manitoba; sold to settlers.  
Iron ore bounties inaugurated.  
Black Donald graphite mine, Renfrew county, Ontario, discovered and operated in 1897.  
Discovery of placer gold in Klondike, Yukon Territory.  
Hall mines smelter at Nelson, B.C., opened.  
Iron Mask staked August 13 at Kamloops, B.C., by Gen. Breedson.  
B.C. Smelting and Refining Company started smelting Rossland ores at Trail in February—Promoters: D. C. Corbin and August Heinze.
- 1897—Pioneer mine, B.C., located September 6, by Wm. Allen.
- 1898—Atlin goldfields, B.C., discovered by prospectors turning aside from the Klondike gold rush; Rainy Hollow copper deposits discovered in same manner.
- 1898—Pioneer and other claims staked on Cadwallader Creek, B.C.  
Britannia mine deposits, B.C., discovered by Oliver Furry.
- 1899—Helen iron mine, Ontario, opened by Algoma Steel Corporation.  
Frood mine, Sudbury, opened.  
Sunset claim, Copper Mountain, B.C., staked.  
Granby Consolidated Mining, Smelting and Power Co., B.C., incorporated.
- 1900—Mond Nickel Company incorporated.  
Corundum mining commenced in Renfrew county, Ontario.  
Klondike gold production reaches maximum.  
Nova Scotia Steel and Coal Co. acquire Sydney coal mines of General Mining Association.  
April 1st, Grand Forks smelter started in B.C.  
Bonanza mine, Observatory Inlet, B.C., discovered by Donahue and H. C. Flewin.  
Granby smelter, at Greenwood Camp, B.C., blown in on August 21.  
Talc mining started in Hastings county, Ontario.
- 1901—First wells drilled for natural gas in Medicine Hat field, Alberta.  
Creighton mine, Sudbury area, commenced production.  
Crofton smelter, B.C., started.  
Britannia mine, B.C., started shipping concentrates to Tacoma.  
Production of aluminium, Shawinigan Falls, Quebec.  
Hidden Creek mine, Observatory Inlet, B.C., discovered by McMillan, Rudge and H. C. Flewin.  
Boundary Falls smelter, B.C., started.

- 1901—Tye smelter, B.C., started.  
First active development of gypsum deposits in Manitoba, the Manitoba Union Mining Company erecting a crushing and calcining mill on Portage Bay.
- 1902—Incorporation of International Nickel Company of New Jersey.  
Marysville smelter, B.C., constructed.  
Electrolytic lead (Betts process) made at Trail, B.C.
- 1903—High grade silver-cobalt minerals discovered at Long Lake, later known as the Cobalt Camp, Temiskaming district, Ontario.  
St. Anthony mine, Sturgeon Lake, commenced producing.  
Settlement of Alaska Boundary dispute.  
Mining commenced at Hedley, B.C.  
First recorded natural gas production in Alberta.
- 1904—Nipissing Mines incorporated.  
La Rose Mine, Cobalt, started producing.  
W. G. Trethewey located Trethewey mine, Cobalt, Ont.  
Coniagas mine located, Cobalt, Ont.  
Copper-gold ores discovered in Chibougamou district, Quebec.
- 1905—Atikokan iron mine, Ontario, equipped for production.  
Buffalo mine, Cobalt, Ont., started operating.  
First recorded shipment of Canadian fluorspar, Madoc, Ont.  
Original test work on cyaniding cobalt ores in Canada carried out at School of Mining, Kingston, Ont. Mining commenced at O'Brien mine, Cobalt, Ont.
- 1906—January 18th. Consolidated Mining and Smelting Co. of Canada, incorporated.  
Ontario Mining Act passed.  
Discovery of gold by Ollier and Renault on Lake Fortune (Lake Fortune Mine), Quebec.  
Silver discovered at Elk Lake, Ontario.  
Gold discovered at Larder Lake, Ontario. Kerr-Addison, Chesterville, Dr. Reddick, Larder Lake Proprietary, Harris-Maxwell and many other properties staked.  
First electrical mining equipment used in Canada installed at Creighton mine, Sudbury district, Ontario.
- 1907—Silver discoveries at Gowganda, Ont.  
Silver discovered in South Lorraine, Ont.  
Supplementary Revenue Act imposes tax on mining profits in Ontario.  
Federal Department of Mines created under a Minister of Mines.  
Silver and arsenic produced at Deloro, Ont., from silver-cobalt-nickel-arsenic ores of the Cobalt District of Ontario.
- 1908—First gold discovery in Porcupine area, Ontario, by H. F. Hunter.  
Gold mills operated in Larder Lake District at Harris-Maxwell, Larder Lake Proprietary and Dr. Reddick properties; district was later dormant for several years.  
First silver production from South Lorraine, Ont.  
Branch of Royal Mint established at Ottawa, Ont.  
First shipments of magnesite from deposits in Grenville twp., Quebec.
- 1909—Hollinger mine gold veins discovered by Benjamin Hollinger, John Miller and Alex. Gillies.  
McIntyre mine veins, Porcupine, Ont., discovered by Alex. McIntyre.  
Dome mine deposits, Porcupine, Ont., discovered by John Wilson and associates.  
Cyaniding of low grade ores commenced at O'Brien mine, Cobalt, Ont.
- 1910—Premier mine, B.C., discovered by Bunting Bros. and Wm. Dilsworth.  
Mixed nickel and cobalt oxides produced at Deloro, Ont.
- 1911—First gold discovery in vicinity of Kirkland Lake, Ont., made by W. H. Wright on what is now known as the Wright-Hargreaves mine.  
Porcupine camp destroyed by fire with heavy loss of life.  
Discovery of gold by J. J. Sullivan and H. Authier in Dubuisson twp., Quebec.  
First recorded discovery of gold in Manitoba by Major E. A. Pelletier at Rice Lake.  
First shipment of British Columbia gypsum used in cement manufacture.  
Victoria Memorial Museum, Ottawa, completed.  
Black Cobalt Oxide and Grey Cobalt Oxide first marketed from Deloro, Ont.
- 1912—Hollinger mine, Porcupine, commenced first milling operations.  
Low grade cyanide process installed at Nipissing mine, Cobalt.  
Copper Mountain claims, B.C., taken over by British Columbia Copper Co.  
Natural gas production commenced in Stony Creek field, New Brunswick.  
Harry Oakes staked ground later known as Lake Shore Mine at Kirkland Lake, Ont.
- 1913—Tough-Oakes mine, Kirkland Lake camp, Ontario, shipped high grade cobbed ore.  
Gold discovered on Kirkland Lake properties known later as Lake Shore, Teck-Hughes, Kirkland Lake and Sylvanite mines.  
Smelting of nickel ores commenced by Mond Nickel Co. at Garson, Ont., May 15.  
Incorporation of British American Nickel Co., Ltd.
- 1914—Supplementary Revenue Act in Ontario changed to The Mining Tax Act.  
Doctor T. O. Bosworth staked petroleum claims at Fort Norman, N.W.T.  
Granby copper smelter, at Anyox, B.C., blown in.  
Cyanidation first used in Kirkland Lake camp, at Tough-Oakes mine.
- 1915—Siscoe mine claims staked in Quebec by S. E. Siscoe.

- 1915—Flin Flon ore deposits discovered by Thos. Creighton representing the Hammell-Currie-Fasken syndicate.  
Mandy mine, Manitoba, discovered.
- 1916—Construction commenced on nickel refinery at Port Colborne, Ont.  
Incorporation of International Nickel Co. of Canada.  
Falconbridge Nickel deposits, Sudbury district, Ontario, later known as Falconbridge Nickel Mines, discovered by drilling.  
Pioneer mine, B.C., commenced drilling operations.  
Electrolytic refined copper and zinc first produced at Trail, B.C.
- 1917—Teck Hughes mine, Kirkland Lake, started milling.  
Mandy mine, Man., produces.
- 1918—Tough-Oakes mine temporarily closed.  
Refined nickel produced in Canada at Port Colborne plant of International Nickel Co.  
Premier mine, B.C., came into production.
- 1919—Lake Shore, Wright-Hargreaves, and Kirkland Lake mills commenced operations.  
Ontario Department of Mines formed.  
Smelter of British American Nickel Co. at Nickelton, Ont., and refinery at Deschenes, Que., commenced operations.  
L. Beauvet discovered silver-lead ores at Keno Hill, Mayo district, Yukon.  
First salt shipments from Malagash deposits in Nova Scotia.
- 1920—Rock salt discovered at Fort McMurray, Alberta.  
The first well, Discovery No. 1, drilled at Fort Norman, N.W.T., by the Imperial Oil Company Ltd., petroleum found at 783 feet.  
Mandy mine, Manitoba, suspends operations.
- 1921—Noranda ore deposits, Quebec, staked by Ed. Horne.  
First shipment of silver-lead ores from Mayo, Yukon.  
Rubber mill liners used at Nipissing mill, Cobalt, Ont.
- 1922—Amulet mine claims, Quebec, staked by McDonough Bros.  
Rod mills appeared as milling equipment in Canadian mining plants.  
Drilling commenced in Wainwright oil field.
- 1923—Granada mine claims, Rouyn, Quebec, staked by R. C. Gamble et al.  
Sherritt-Gordon ore deposit staked by Carl Sherritt and Phillip Sherlett in January.  
Red Coulee well first to reach oil in Sunburst formation, southern Alberta.
- 1924—British American Nickel Co. went into liquidation.  
Royalite No. 4 well, Turner Valley, Alberta, brought into production.  
Lithium ore discovered near Pointe du Bois, Manitoba.
- 1925—Discovery of gold in Red Lake district by Lorne Howey on what was later known as the Howey mine.  
Silver-lead ores milled at Wernecke, Yukon.  
Waite-Ackerman-Montgomery mine claims staked by H. Montgomery.  
Allenby Copper Company took over Copper Mountain claims in August and shipped concentrates to Trail, B.C.
- 1926—Aluminium first produced at Arvida, P.Q., by Aluminum Company of Canada.  
Falconbridge Nickel Mines incorporated.
- 1927—Noranda mine commenced shipping; smelter operated for first time.  
Central Manitoba mine operated mill for first time.  
Sherritt-Gordon mines incorporated in Ontario, July 5.
- 1928—Collapse of Worthington mine.  
Waite-Ackerman-Montgomery mine started shipping.  
Merger of Mond and International Nickel Companies.  
Coniaurum mill, Porcupine camp, Ontario, commenced production in July.  
March mine, Porcupine camp, Ontario, came into production.  
Disastrous underground fire, in February, at Hollinger mine, Porcupine camp, Ontario, 39 lives lost.  
Argonaut and Associated Goldfields suspended gold mining operations in Ontario.  
Tough-Oakes-Burnside mine closed November 28.
- 1929—Canada's mineral production reached a record value of \$310,850,246.  
Red Coulee field, Alberta, began petroleum production.  
Siscon gold mine, Quebec, started production.  
New 300 ton mill of Monarch mine, B.C., started producing.  
Dome mine mill, Porcupine camp, Ontario, destroyed in October by fire.  
New surface plant at Frood mine, Sudbury, Ont., placed in operation.  
Natural resources transferred to Manitoba and Alberta.  
McIntyre mine, Porcupine, Ontario, erected small flotation plant.
- 1930—Gold discovered in Bannockburn township, Ontario, on what was later known as the Ashley mine.  
Mill installed on Minto mine, Michipicoten, Ont.  
New mill at Howey mine, Red Lake, Ont., commenced operations April 2.  
Silver-radium ores discovered by G. Labine at Great Bear Lake, N.W.T.  
Granada mine, Quebec, commenced production.  
Manitoba, Saskatchewan and Alberta took over natural resources from Federal Government.



- 1930—Island Falls power plant, Manitoba, operated for first time, June 1.  
 First refined zinc produced in November at Flin Flon, Manitoba, by Hudson Bay Mining and Smelting Co.  
 First blister copper produced at Flin Flon, Manitoba, in December.  
 New smelter of International Nickel Co. blown in at Copper Cliff, July 1.  
 New electrolytic copper refinery of Ontario Refining Co. placed in operation at Copper Cliff, Ont.  
 New Falconbridge Nickel Mines smelter blown in February 4, Sudbury, Ont.  
 Bismuth first produced at Trail, B.C.  
 Fuming plant constructed at Trail, B.C., for recovery of lead and zinc.  
 Natural resources transferred to British Columbia and Saskatchewan.  
 Copper Mountain Mine, B.C., closed down November 15.  
 Canada attained position of the world's second greatest gold producer.  
 Nitric acid and sulphuric acid produced regularly in new plant of Canadian Industries Limited at Copper Cliff, Ont.  
 First discovery well drilled in Red Coulee Field, Alberta.
- 1931—Toburn (Tough-Oakes) mine, Kirkland Lake, re-opened.  
 Lake Shore mine, Kirkland Lake, Ont., installs 200 ton flotation unit in mill.  
 Gold discoveries made in Swayze and Three Duck Lake areas, Ontario.  
 Parkhill and Minto mines in Michipicoten district, Ontario, came into production.  
 Gold discovered at Island Lake, Manitoba.  
 Commercial production of fertilizer commenced at Trail, and smoke claims against Consolidated Mining and Smelting Company settled.  
 Nipissing Mining Company, Cobalt, Ont., ceased mining silver-cobalt ores.  
 Selenium produced for the first time in Canada by Ontario Refining Co. Ltd.  
 Mining Corporation discontinued mining in South Lorraine, Ont.  
 Keeley Silver mine, South Lorraine, Ont., closed.  
 Canadian Copper Refiners Ltd., operated new copper refinery at Montreal East, Quebec.  
 Regular production commenced by Sherritt-Gordon mill, Manitoba, April 1st.  
 Equalization exchange premiums paid by Dominion Government to gold miners.  
 Exports of gold bullion without licence prohibited by Dominion Government.  
 Great Britain went off the gold standard on September 21, and was followed by many other countries.  
 Big Missouri Mine, B.C., operated pilot mill.  
 Nickel Plate mine, Hedley, B.C., closed down.  
 Orford process plant completed at Copper Cliff, Ont.  
 Copper converters at Port Colborne, Ont., closed down in August, preparatory to transferring Orford process to Copper Cliff.  
 New Brunswick Power Commission plant came into operation in September, using Minto coal.  
 Test shipments of Ontario lignite from Onakawana deposits, made to Germany.
- 1932—Ashley mine, Ontario, commenced gold production in October.  
 Nickel output in Ontario greatly reduced.  
 Kenty mine in Swayze area, Ontario, sank two shafts.  
 O'Brien Cadillac mine, Quebec, commenced gold milling.  
 Sherritt-Gordon, Manitoba, suspended mining operations in June.  
 San Antonio gold mine, Manitoba, commenced production in May.  
 Beattie gold mines, Quebec, commenced construction of mill.  
 Treadwell Yukon Mining Co. commenced production of gold in new mill on Bussière claims in Quebec.  
 The United States imposed duty of 4 cents per pound, in June, on foreign copper.  
 McLeod River Mining Corporation operated gold dredge near Peers, Alberta.  
 Salt produced commercially for first time at Ncepawa, Manitoba.  
 First commercial shipment of silver-radium ores from Great Bear Lake, N.W.T., silver ores being smelted at Trail, B.C.  
 Silver reached a record low of 24.5 cents in New York, December 29.  
 Eldorado Gold Mines commenced treatment of radium-bearing ores in new plant at Port Hope, Ont.  
 Domestic Fuel Act expired June 20.  
 Moss mine, Thunder Bay district, Ontario, commenced gold production.  
 Mill at Braylorne mine, British Columbia, placed in operation.  
 Gold discovered at God's Lake, Manitoba.  
 Domestic copper sold in the United States, December 6, at 5 cents per pound, Connecticut an all time low for the metal.  
 First officially recorded statistics of metal production for Saskatchewan.  
 Treadwell Yukon mill at Wernecke, Yukon, permanently shut down and camp abandoned.  
 Union of South Africa abandoned gold standard, December 28, 1932.  
 Small oil refinery operated at Fort Norman, N.W.T.  
 Gem Lake and Cryderman mines, Manitoba, commenced milling.
- 1933—United States ratified the silver agreement of the London Economic Conference December 22.

- 1933—Amalgamation of Toronto and Standard Mining Stock Exchanges agreed upon.  
 Salt produced at Simpson, Sask.  
 Macassa mine, Kirkland Lake, Ontario, commenced milling.  
 United States went off gold standard April 19.  
 Cariboo Gold Quartz Mining Co. commenced production near Barkerville, British Columbia.  
 First absorption plant put into operation in Alberta to extract liquids from Turner Valley gas.  
 Milling commenced at Island Lake mine, Manitoba.  
 Milling commenced at San Antonio mine, Manitoba.  
 Monarch mine, Field, British Columbia, resumed production.  
 Beattie Gold Mines, Quebec, commenced production of concentrates.  
 Port Hope radium refinery in Ontario came into production; radium and uranium compounds produced commercially in Canada for the first time.  
 Green-Stabell Gold Mine, Quebec, commenced milling.  
 Oro Grande mine, Manitoba, commenced milling.  
 Reno mine, British Columbia, resumed production after destruction of mill by fire.  
 Seal Harbour Gold Mines Ltd. commenced operations in Nova Scotia.  
 Montague Gold Mines Ltd. commenced work in Montague district, Nova Scotia.  
 Gem Lake mines, Manitoba, taken over by Diana Gold Mines Ltd.
- 1934—Perron gold mine commenced milling in July—northwest Quebec.  
 A well, Century 1, completed in Turner Valley, Alberta, produced crude oil instead of naphtha-laden gas.  
 Fifty-ton amalgamation mill came into production at McWatters mine, northwest Quebec.  
 Milling commenced at Sullivan mine, northwest Quebec, in May.  
 Milling commenced at Little Long Lac mine, Ontario, November 24.  
 Milling commenced at J. M. Consolidated mine, Patricia district, Ontario, in May.  
 Milling commenced at Northern Empire mine, Ontario, March 13.  
 Milling commenced at Matachewan Consolidated Mine, Matachewan district, Ontario.  
 Milling commenced at Young-Davidson mine, Matachewan district, Ontario, on September 8.  
 Milling commenced at Central Patricia mine, Patricia district, Ontario, on May 27.  
 Tetraault mine, Portneuf county, Quebec, resumed production in November.  
 First actual production of selenium in Quebec; recovered by Canadian Copper Refiners Ltd. from anode copper from Noranda smelter.  
 Lloydminster No. 1 first commercial gas well in Saskatchewan came in at 1,975 feet, Lloydminster, March 30.  
 Lloydminster first town in Saskatchewan to use natural gas.  
 Discovery of gold south of Beaverlodge Lake, Saskatchewan, by C. Nyman or Tom Box. January 31, the President of the United States issued a Proclamation reducing the gold weight of the United States dollar from 25.8 to 15 5/21 grains, 0.9 fine.  
 Dominion Tax on gold came into effect April 19.  
 Bralorne mill, British Columbia, capacity increased and late in year milling was commenced at the Dentonia, Island Mountain and Kootenay Belle properties.  
 Operations at Oro Grande mine, Manitoba, taken over by Beresford Lake Mines Ltd. Production suspended.  
 Guysboro Mines Ltd., Goldenville, Nova Scotia, commenced operations in July.  
 Rock wool industry established in Canada.  
 Operations resumed at Rex mine, Manitoba.  
 Operations resumed at Gem mine, Manitoba, by Diana Gold Mines Ltd.
- 1935—Monarch mine, Field, British Columbia, suspended milling on December 5.  
 Treadwell Yukon Company Limited installed a new mill at Elsa mine, Mayo district, Yukon.  
 Chromite ore smelted by Chromium Mining & Smelting Corporation Limited at Sault Ste. Marie, Ontario.  
 Operations suspended at Canusa mine, Porcupine district, in September.  
 Dominion Government transferred gold held against Dominion notes to Bank of Canada.  
 Milling commenced at Pickle Crow mine, Patricia district, Ontario, on May 1.  
 Milling commenced at Ross mine, Hislop township, Ontario, on January 1.  
 Milling commenced at McKenzie Red Lake mine in February.  
 Bank of Canada commenced operations on March 11.  
 Silver held by Dominion Government transferred to Bank of Canada.  
 United States Government's buying price of domestic silver raised to 77.57 cents in April.  
 Gold bullion tax discontinued after May 31 and depletion allowances revised for payments of gold mining dividends.  
 British Metals Corporation resumed operations in October at Sterling mine in Nova Scotia.  
 In northwest Quebec, the Arntfield, Canadian Malartic and Lamaque gold mines came into production.  
 Gold-bearing veins discovered in Sachigo River area, Patricia district, Ontario.  
 In British Columbia, new mills came into production at Ymir Yankee Girl, Second Relief and Sheep Creek gold mines.



- 1935—First actual production of tellurium in Quebec; recovered from anode copper from Noranda smelter.  
 Milling commenced at God's Lake mine, Manitoba, in September.  
 Milling suspended at Island Lake mine, Manitoba.  
 Colony gas wells Nos. 1, 2 and 3 came in at Lloydminster, Saskatchewan.  
 Rt. Hon. Sir Montague Barlow, Bt., appointed September 13 by Alberta Government to report on Alberta coal mining industry.  
 Bralorne and Bradian mines consolidated in British Columbia.  
 The Granby Consolidated Mining, Smelting and Power Company closed down its Anyox operations in August and the company went into voluntary liquidation.  
 Explosion at Lethbridge Collieries, Alberta, December 9—16 men killed.  
 Milling of ore from the Nickel Plate mine, British Columbia, (Kelowna Exploration Co.) was resumed after some years of inactivity and the capacities of Cariboo Gold Quartz and Island Mountain mills were increased.  
 Granda Gold Mines, western Quebec, suspended production.  
 Discovery of natural gas at Kakwa, Saskatchewan.  
 Consolidated Mining & Smelting Company of Canada Ltd. commenced gold mining operations at Caribou, Nova Scotia, in August.
- 1936—Imperial coal mine, Coalhurst, Alberta, abandoned.  
 Pembina Peerless Colliery, Evansburg, Alberta, closed.  
 Shawkey mine, northwest Quebec, brought into production in February.  
 First cyanide gold mill erected in Nova Scotia, at Seal Harbour mine.  
 Perron Mines, northwest Quebec, brought new 125 ton mill into production in February.  
 Stadacona-Rouyn mine, northwest Quebec, brought into production in November.  
 Mining claims staked in Quebec reached an all-time high record of 17,503.  
 Ashley mine, Ontario, closed down in July.  
 Pamour mine, Porcupine district, Ontario, went into production in May.  
 Ardeen mine, Moss township, Ontario, closed down in December.  
 Red Lake Gold Shore mine came into production in August.  
 Argosy mine, Ontario, opened 125 ton mill in July.  
 Extensions made to both International and Falconbridge Nickel Companies' plants.  
 Gunnar gold mine, Manitoba, commenced production in May.  
 Rex mine (Laguna) Herb Lake, Manitoba, resumed production in August.  
 Clean-up operations conducted and final shipments made at Anyox copper mine, British Columbia.  
 Copper Cliff smelter enlarged by two furnaces and seven converters.  
 Ore dressing plant, mill and smelter at Falconbridge Nickel Mines enlarged.  
 Turner Valley Royalties No. 1 brought in as the first big crude oil producer in Turner Valley field.  
 Cadmium metal produced for first time by Hudson Bay Mining & Smelting Company at Flin Flon.  
 Amendment to Income Tax Act in May exempted new producing metal mines for 3 years.  
 Thompson Cadillac mine, western Quebec, commenced milling in June.  
 Belletierre mine, western Quebec, commenced milling in October.  
 Road from Amos to Val d'Or, Quebec, completed.  
 Milling capacity increased to 325 tons a day at San Antonio mine, Manitoba.  
 Adolph Studer discovered gold in September at Sulphide Lake, Saskatchewan.  
 25 ton gold mill erected on Monarch claim, Amisk Lake, Saskatchewan.  
 In British Columbia production was resumed at the Surf Inlet mine. New mills began operating in British Columbia at the Bayonne, Hedley Mascot and Wesko mines and the flotation mill at Kootenay Belle was replaced by a cyanide mill of greater capacity.  
 The Dentonia flotation mill, British Columbia, ceased operating.  
 Production of elemental sulphur and other products from lean roaster gases was commenced on a commercial scale at the Trail smelter.  
 Important gold discovery at O'Brien mine, Cadillac township, western Quebec.  
 Cave-in at Moose River gold mine, Nova Scotia—April.
- 1937—Milling commenced in July at Delnite, mine, Porcupine district, Ontario.  
 Milling commenced at Raven River mill, Larder Lake district, Ontario.  
 Sand River mine, Thunder Bay district, Ontario, came into production.  
 Gurney gold mine, Manitoba, came into production in October.  
 Production resumed at Sherritt-Gordon mine, Manitoba, on August 1.  
 Production resumed at Copper Mountain mine, Allenby, British Columbia, in June.  
 Bousquet and McMillan mines, Sudbury district, closed.  
 New Golden Rose cyanide mill, Temagami district, Ontario, completed.  
 Tashota mine, Ontario, closed down in October.  
 Gold Eagle mine, Patricia district, completed mill in October.  
 Hudson Patricia mine, Patricia district, closed.  
 Milling commenced at Bankfield mine, Ontario, in June.  
 Aldermac mine, western Quebec, resumed production in January.  
 Sigma mine, western Quebec, commenced milling in March.  
 Powell Rouyn mine, western Quebec, went into production, first shipment in June.



- 1937—Waite-Amulet mines, western Quebec, resumed production in June.  
 Cournoir mine, western Quebec, resumed production.  
 Normetal mine, western Quebec, went into production in September.  
 Tetreault mine, Portneuf county, Quebec, closed.  
 Mining claims staked in Quebec reached an all-time high record of 18,841.  
 Goldfield, Saskatchewan, officially created a village in September.  
 Western Gem coal mine, Drumheller, Alberta, abandoned.  
 Regular mining and milling operations suspended at Central Manitoba mines, July 8.  
 First commercial shipment of lithium minerals in Canada made from Pointe du Bois district, Manitoba.  
 Gold Clauses Act passed (obligation to pay in gold not required).  
 Nova Scotia Government reopened Lacey mine as a training project.  
 Colliery No. 20 opened at New Aberdeen, Nova Scotia, by Dominion Coal Co.  
 New gold mills commenced operating at Polaris Taku (November), and Durango mines, British Columbia.  
 The Quebec legislature passed a law enacting that a company must be constituted by a Quebec charter to acquire mining rights belonging to the Crown.  
 Beresford Lake Mines Ltd., Manitoba, resumed production in December.  
 Natural gas discovered at Kamsack, Saskatchewan.
- 1938—Mesabi mine, Kirkland Lake district, came into production in May.  
 Gas explosion at Hinton Collieries, Hinton, Alberta, March 30.  
 A vocational mine school was organized by Quebec Bureau of Mines at Gale mine.  
 A substantial deposit of copper-zinc ore discovered at Amulet mine, Quebec.  
 Rouyn-Louvincourt road completed in western Quebec.  
 Tionaga mine, Sudbury district, Ontario, came into production.  
 Parkhill and Algold mines, Algoma district, Ontario, closed down.  
 Morris Kirkland mine ceased operations in July.  
 Madsen Red Lake mine came into production in August.  
 Sachigo River mine, Patricia district, Ontario, started milling in May.  
 Consolidated-Ryeon mill came into production in September—Yellowknife, Northwest Territories.  
 Hasaga mines, Red Lake, Ontario, took over Red Lake Gold Shores mill.  
 Privateer and Spud Valley mines, Zeballos district, British Columbia, commenced milling in the latter part of the year.  
 Gold Belt mine in the Sheep Creek camp, British Columbia, commenced milling.  
 Milling ceased at the Durango and Wesko properties, B.C.  
 Queens Mines Ltd. commenced operations during January in Molega district, Nova Scotia.  
 British Metals Corp. (Canada) Ltd. closed down mining operations at Stirling, Nova Scotia in February.  
 Moneta mine, Poreupine district, brought into production in January.  
 Big Missouri mill in Portland Canal area, British Columbia, came into production in May.  
 Development of Box mine near Goldfields, Saskatchewan.  
 Cariboo Hudson mine, British Columbia, commenced producing.  
 New mines commencing production in Quebec were the East Malartic, Francoeur, Halliwell, Lapa Cadillac, Lake Rose, Pan Canadian, Payore and Sladen-Malartic.  
 C.N.R. Bonnetter-Rouyn line completed in northwest Quebec.  
 Commercial production of mercury at Mud Creek, British Columbia.  
 Hallnor mine, Poreupine district, Ontario, brought into production in June.  
 Milling commenced in June at Golden Gate mine, Kirkland Lake district, Ontario.  
 Upper Canada mine, Kirkland Lake district, Ontario, came into production.  
 Kerr-Addison mine, Larder Lake, commenced milling on May 2.  
 Cline mine, Algoma district, Ontario, commenced milling in July.  
 McLeod-Cockshutt and Hardrock mines in Thunder Bay district, Ontario, started milling and Magnet mine shipped ore.  
 Gold discovered at Thompson, Wray and Russell Lakes, Northwest Territories.  
 Straw Lake Beach mine, Kenora district, Ontario, started milling.  
 Lapa Cadillac mine, western Quebec, commenced milling in August.  
 East Malartic mine, western Quebec, commenced milling in November.  
 Tombill mine, Thunder Bay district, came into production in February.  
 Discovery of bessemer grade hematite ore at Steep Rock Lake, Atikokan, Ontario, reported in March.  
 Tungsten mine opened at Goff, Nova Scotia.  
 Colliery No. 18 opened at New Waterford, Nova Scotia, by Dominion Coal Co.  
 Sladen Malartic mine, western Quebec, commenced milling in January.  
 Pan Canadian mine, western Quebec, went into production in May.  
 Payore mine, western Quebec, commenced milling in June.  
 Lake Rose mine, western Quebec, commenced milling in June.  
 Francoeur mine, western Quebec, went into production in August.  
 A Superior School of Mines, Geology and Metallurgy established in Quebec city.  
 Canadian Kaolin Silica Products Ltd. remodelled and enlarged its silica plant at St. Remi, Papineau county, Quebec; daily capacity increased to 500 tons.

- 1938—Belleterre Quebec Mines Ltd. completed the erection of a hydro-electric power plant on Winneway River, Guillet township.  
Oil found in wells at Lloydminster and Vara, Saskatchewan.
- 1939—New Gold Clauses Act passed.  
Negus mine, Yellowknife, Northwest Territories, came into production in February.  
Eustis mine, Quebec, closed permanently.  
Export of copper, lead, zinc and various other metals and minerals prohibited without licence.  
New Helen iron mine, Michipicoten district, Ontario, resumed production.  
King George and Queen Elizabeth visit Frood mine, Sudbury, Ontario, June 5.  
September 1, German army invades Poland.  
September 3, Germany and Great Britain at war.  
September 10, Canada declared war against Germany.  
Income Tax amendment afforded tax credit to mining industry as a whole.  
Amm gold mine, western Quebec, went into production in March.  
Moosha mine, western Quebec, went into production in August.  
Malartic Gold Fields mine, western Quebec, commenced milling in December.  
Chesterville mine, Larder Lake, Ontario, came into production in June.  
Tyrannite mine, Matachewan district, Ontario, came into production in June.  
Ronda mine, Sudbury district, Ontario, produced from January to August.  
Preston East Dome mine, Porcupine district, Ontario, came into production in March.  
Magnet Consolidated Gold Mine, Thunder Bay district, Ontario, commenced milling in July.  
Uchi mine, Patricia district, Ontario, commenced milling in May.  
Cochenour Willans, Patricia district, Ontario, came into production in March.  
Kenricia mine, Kenora district, Ontario, started milling in July.  
Agwa mine, Ontario, began milling in July, closed down September 30.  
Nova Scotia Government opened a rehabilitation project in the fifteen mile stream district.  
Guysborough Mines Limited open new mine at Lake Charlotte, Nova Scotia.  
Tungsten mine at Indian Path, Nova Scotia, reopened by Siscoe Gold Mines Ltd.  
Wood Cadillac mine, western Quebec, commenced milling in December.  
Bay View Colliery No. 8 opened at Joggins, Nova Scotia, by Joggins Coal Co. Ltd.  
Central Cadillac mine, western Quebec, commenced milling operations in November, using Thompson-Cadillac mill.  
Quebec Government established an ore sampling plant at mine school.  
Waite-Amulet Mines Ltd. built a new mill at Amulet mine.  
Canadian Refractories Limited started development of large brucite deposits in Gatineau district of Quebec.  
De Santis mine, Porcupine district, Ontario, commenced milling in July.  
Brouhan mine, Porcupine district, Ontario, commenced milling in November, using Mace mill.  
Porcupine Lake mine closed down in April.  
Mace mine, Porcupine district, Ontario, closed down in November.  
New 150 ton mill of Upper Canada Mines, Kirkland Lake district, started.  
Raven River mine ceased milling, Larder Lake, Ontario, in July.  
Kerr-Addison mine, Larder Lake, Ontario, increased mill to 900 tons.  
Tionaga mine, Sudbury district, Ontario, closed down in May.  
Lebel Oro mine, Sudbury district, Ontario, closed down in October.  
Algoma Summit mine, reopened under name of Magino.  
Minto mine, Algoma district, Ontario, closed down July 31.  
Ranson mine, Algoma district, started in July.  
Hiawatha mine, Algoma district, Ontario, suspended operations in July.  
Jellieoc mine, Thunder Bay district, Ontario, commenced ore shipments to Magnet mill in August.  
Berens River mill, Patricia district, Ontario, started September 8.  
Elora mill, Kenora district, Ontario, closed down in September.  
Cordova mine, Hastings county, Ontario, resumed production in December.  
Laguna (Rex) mine, Manitoba, suspends operations in December.  
Gurney mine, Manitoba, suspends operations in November.  
Flin Flon mine increases output to 5,200 tons a day.  
Box mine mill, Goldfields, Saskatchewan, commenced operating in July.  
Hillcrest Collieries, Alberta, abandoned.  
Commercial production of tungsten concentrates at Wells, British Columbia, by Columbia Tungsten Co. Ltd.  
Canadian War Supply Board commenced operations September 25.  
Canadian Foreign Exchange Board formed September 15.  
First Canadian troops landed in United Kingdom December 17.  
Russia invaded Finland November 30.  
Late in the year mills were completed at the Central Zeballos and Mont Zeballos properties in British Columbia.  
Coalmont Collieries, British Columbia, ceased operations in April.



- 1939—Shipment of bentonite made from a deposit 7 miles northwest of Morden, Manitoba.  
 J. A. Coulombe reopened the Coulombe Titanic Iron Mine near St. Urbain, Charlevoix county, Quebec.  
 Montague Gold Mines Ltd. ceased operating during May in Nova Scotia.  
 Canadian base metals producers agree to supply the Imperial Government with copper, lead and zinc at prices prevailing shortly before the war.
- 1940—January 15, Canada's first publicly offered war loan placed on market.  
 January 20, details of British Commonwealth Air Training Plan announced.  
 February 25, first R.C.A.F. squadron landed in England.  
 April 9, Canadian Government announced the formation of the Department of Munitions and Supply.  
 May 10, Germany invaded Belgium, Holland and Luxemburg.  
 June 4, evacuation of B.E.F. from Dunquerque.  
 June 25, France ceased hostilities.  
 June 10, Italy declared war on Britain and France.  
 July 2, establishment of Wartime Industries Control Board at Ottawa.  
 In Quebec the Amin and Moosila Gold Mines ceased production and the Pandora and Senator-Rouyn mines produced bullion for the first time.  
 Cordova and Addington gold mines in eastern Ontario closed down.  
 Aunor Gold Mines Ltd., Porcupine camp, Ontario, in January shipped bullion for the first time.  
 Broulan Porcupine mines, Ontario, erected a new mill.  
 Faymar Porcupine mine, Ontario, commenced milling in April.  
 Hollinger Cons. Gold Mines Ltd. erected the first concrete headframe in Canada.  
 Jellieco Mines Ltd., Ontario, ceased operations.  
 McMarnac Red Lake Gold Mines Ltd., Ontario, came into production in October.  
 J. M. Consolidated Gold Mines Ltd., Ontario, ceased operations April 24.  
 Jason Mines Ltd., Ontario, resumed operations at the old Argosy mine in June.  
 Operations ceased at the Kenricia mine, Ontario, May 31.  
 Upper Seine Gold Mine, Ontario, resumed production.  
 Pamon Gold Mines Ltd. re-opened Monarch mine, Amisk Lake, Saskatchewan.  
 Hydro-electric plant completed by Consolidated Mining & Smelting Co. of Canada, Ltd., at Prosperous Lake, Northwest Territories.  
 Slave Lake Gold Mines Ltd. resumed operations in Northwest Territories in September.  
 Mercury gold mines, Northwest Territories, carried on exploration work.  
 Canadian Industrial Minerals Ltd. discovered important barite deposit in October at Pembroke, Hants county, Nova Scotia.  
 East deposit of Sherritt-Gordon Mines Ltd., Manitoba, came into production.  
 Milling re-commenced at Monarch mine, B.C. January 15.  
 Eldorado mine, Northwest Territories, temporarily closed June 18.  
 Consolidated Mining & Smelting Company of Canada, Ltd., commenced production in June of mercury at Pinchi Lake, British Columbia.  
 Canada banned exports of copper except to Great Britain.  
 Publication of statistics relating to Canadian production of strategic metals and minerals banned in December.  
 August 17-18, Ogdensburg conference.  
 September 9, second Canadian war loan offered.  
 Norwegian Nickel refinery of Falconbridge Nickel Mines Ltd. seized by Germans; company's matte now treated by International Nickel Company of Canada Limited.  
 Operation of Western Exploration Company mill at Silverton, British Columbia, resumed in September.  
 Nicolet Asbestos Mines, Tingwick township, Quebec, resumed production in April.  
 The Quebec Legislature repealed the law passed in 1937 enacting that a company had to be incorporated under a law of the province to acquire mining rights on land forming part of public domain.  
 The Quyon Molybdenite Company Ltd. started production at the Moss mine, Onslow township, Quebec.  
 The Quebec Legislature passed the Unwrought Metal Sales Act to facilitate the suppression of illegal traffic in precious metals.  
 The Senneterre-Mont Laurier highway, Quebec, was opened to traffic.  
 Century mine, Elbow Lake, Manitoba, installed a century mill and produced some gold in July.  
 San Antonio mine, Manitoba, increased daily production to 550 tons in September.  
 Beresford Lake Mines Ltd., Manitoba, discontinued production in October.  
 50-ton sodium sulphate plant was erected at Sybouts Lake, Saskatchewan.
- 1941—August 14, "Atlantic Charter" declaration.  
 June 22, Germany attacked Russia.  
 August 29, Canada instituted sweeping controls of prices and sale of goods.  
 December 7, Japan attacked United States' possessions in the Pacific.  
 December 11, German and Italian declarations of war on United States, followed by similar action on the part of the United States.



- 1941—Canadian Wartime Mine Shop Association formed in May.  
 Seal Harbour Gold Mines, Nova Scotia, closed down.  
 Senator-Rouyn completed its new mill in April.  
 Morris Kirkland Gold Mines, Ontario, closed down in December.  
 Hoyle Gold Mines, Ltd., Ontario, commenced milling in January.  
 Mic Mac Mines, western Quebec, commenced construction of a mill.  
 West Malartic mines, western Quebec, commenced erection of a mill.  
 The Quebec Government completed, in October, the erection of a hydro-electric power plant in Laudanet township, western Quebec.  
 New plant using vacuum process erected by Neepawa Salt Co., Manitoba, for greatly increased salt production.  
 Natural gas piped to Kamsack, Saskatchewan.  
 Discovery of glass sands at Red Deer River, Saskatchewan.  
 J. Purdy discovered an important deposit of muscovite mica on Lot 6, Concession 2 of Mattawan township, Nipissing district, Ontario.  
 Canadian Industrial Minerals Ltd. commence milling barite at Pembroke, Nova Scotia, in May.  
 First fluorspar mined in Nova Scotia at Lake Ainslie by North American Chemical Company.  
 Bonetal Gold Mines Ltd., Ontario, shipped ore in November.  
 New Golden Rose mine, Ontario, closed in September.  
 500-ton mill at Jerome mine, Ontario, commenced operating in August.  
 St. Anthony mine, Ontario, closed in December.  
 Northern Empire Mines Ltd., Ontario, ceased operations.  
 Operations ceased at the Upper Seine mine, Ontario.  
 Operations at the Gold Eagle mine, Ontario, ceased September 12.  
 Mining ceased at Howey mine, Ontario, November 3.  
 Straw Lake Beach Mines ceased operations in July.  
 The Howe Sound Exploration Co. explored its Snow Lake property, Manitoba.  
 Preview Mines Ltd. operated a small gold mill at Sulphide Lake, Saskatchewan.  
 Clean-up operations were conducted at the Windpass mine, British Columbia.  
 Milling ceased at Relief Arlington mine, British Columbia, June 28.  
 Milling commenced at Parnigan mine, Northwest Territories, November 27.  
 Milling commenced at Thompson-Lundmark mine, Northwest Territories, August 19.  
 Golden Manitou Mines Ltd., Quebec, commenced erection of a mill.  
 Lake Geneva Mining Co. Ltd., Ontario, conducted mining and milling from August 1.  
 Zineton Mines Ltd., British Columbia, exported zinc concentrates.  
 Aluminum Company of Canada Ltd. erected a plant at Wakefield, Quebec, for the production of bauxite granules.  
 Tin produced commercially for the first time in Canada; recovered at Trail, British Columbia, by the Consolidated Mining & Smelting Company of Canada, Ltd.  
 Magnesium powder produced at Trail, British Columbia, by Consolidated Mining and Smelting Company of Canada, Ltd.  
 Old Josephine iron mine, Algoma district, Ontario, being developed.  
 Battle of Britain began June 7.  
 Strike of miners at Kirkland Lake, commenced November 18.  
 Lend-Lease Act passed by United States Congress, March 11.  
 Reno Gold Mines mill, British Columbia, shut down late in the year.  
 Refinery of Abasand Oils Ltd., commenced operating near Fort McMurray, Alberta; plant destroyed by fire in November.
- 1942—March 6, Prime Minister King announced approval of construction of Alaskan Highway.  
 Wartime Metals Corporation formed in Canada.  
 West Malartic, Mic Mac and Golden Manitou mines came into production in Quebec.  
 Arntfield mine, Quebec, closed in April.  
 Abasand Oils Ltd., rebuilt refinery at Fort McMurray, Alberta.  
 Wood Cadillac mine, Quebec, closed in June.  
 Pandora mine, Quebec, closed in August.  
 Courmor mine, Quebec, suspended operations at midyear.  
 Operations suspended April 14 at Golden Gate and Crescent mines, Ontario.  
 Mining operations suspended at the De Santis, Faymar, Nakhodas and Naybob properties, Porcupine district, Ontario.  
 Hollinger Gold Mines, Ontario, completed a scheelite mill.  
 Tyrantite mine, Ontario, suspended operations July 31.  
 Operations suspended at Rundle mine, Ontario, July.  
 Renabie property, Ontario, closed in May.  
 Cline Lake mine, Ontario, closed in November.  
 Production at Bankfield mine, Ontario, ceased August 30.  
 Operations ceased at Tombill and Elmos mines, Ontario, in November.  
 Operations ceased at Sturgeon River mine, Ontario, in October.  
 Sand River mine, Ontario, closed August 26.

- 1942—Goldorel mine plant, Ontario, destroyed by fire.  
 Jason mine, Ontario, closed down October 10.  
 Gunnar Gold Mine, Manitoba, closed in June.  
 Box mine, Saskatchewan, closed August 15.  
 Polaris-Taku mine, British Columbia, closed in April.  
 Big Missouri mine, British Columbia, ceased operations in October.  
 Surf Inlet, mine, British Columbia, ceased operations in November.  
 Bayonne mine, British Columbia, closed August 31.  
 Production of scheelite concentrates began early in the year at the Red Rose property, Hazelton, British Columbia.  
 Buccaneer mine, British Columbia, closed August 11.  
 Central Zeballos mine, British Columbia, closed July 7.  
 Homeward mine, British Columbia, closed February 7.  
 Musketeer mine, British Columbia, closed July 23.  
 Mount Zeballos mine, British Columbia, closed April 30.  
 Spud Valley mine, British Columbia, closed June 30.  
 Vancouver Island Drilling & Exploration Mine, British Columbia, closed October 15.  
 Ymir Yankee Girl mine, British Columbia, closed October 31.  
 New Calumet Mines carried on an extensive development program in Quebec.  
 Ptarmigan mine, Northwest Territories, closed in September.  
 Ruth mine, Northwest Territories, milled from August 1 to August 12.  
 International Tungsten Mines Ltd. (Slave Lake Gold Mines) operated only during first eight months of the year.  
 New copper deposit explored near Lennoxville, Quebec, by Aldermac Copper Corp. Ltd.  
 Miners' strike at Kirkland Lake ended February 11.  
 Coal miners in Cape Breton commence a week-long strike April 14.  
 Extension of National Selective Service March 24.  
 Indium produced in Canada for the first time at Trail, British Columbia.  
 Plant of Dominion Magnesium Ltd. near Renfrew, Ontario, came into production in September.  
 Important molybdenite deposits discovered by Dome Exploration Co. in Pressiac township, Quebec.  
 Kootenay Bell mine, British Columbia, ceased milling late in year.  
 The Tetraault mine, at Montauban-les-Mines, Portneuf county, Quebec, was re-opened by Siscoe Metals Ltd.; production started in August.  
 Wartime Metals Corporation re-opened the old molybdenite reduction plant in LaCorne township, Quebec.  
 Wartime Metals Corporation re-opened the Belanger chromite mine, in Coleraine township, Quebec, and commenced erection of a mill.  
 Chromite Limited, Cleveland township, Quebec, commenced production of chromite concentrate.  
 The Quebec Department of Mines erected a scheelite mill at the mine school near Val d'Or. For the first time the value of the annual mineral production of the province of Quebec reached the \$100,000,000 mark.  
 Extensive deposits of chromite discovered in June, in Bird River area, Manitoba.  
 Ogma mine, Manitoba, ships gold ore to Gunnar mill.  
 Manitoba permits employment of women for surface work at mines, July.  
 Successful operations carried out in the production of peat moss for agricultural purposes from Julius bog, Moss Spur, Manitoba.  
 250-ton sodium sulphate plant erected at Alsask Lake, June.  
 Port at Goldfields, Saskatchewan, closed December 31.  
 Pamon gold mine plant, Saskatchewan, destroyed by fire May 13.  
 Eldorado pitchblende mine, Northwest Territories, re-opened in April.  
 Sherritt-Gordon mine, Manitoba, produced zinc concentrates, June.  
 United States established a price of 71·11 cents an ounce for silver produced in the United States; foreign silver 45 cents per ounce.  
 Seal Harbour Gold Mines Ltd. ceased operations in Nova Scotia.  
 Guysboro Mines Ltd., Nova Scotia, suspended operations.  
 Canol project started early in summer near Fort Norman, N.W.T., through military necessity; 14 wells, showing petroleum, drilled during year.
- 1943—Mandy mine, Manitoba, re-opened by Emergency Metals Ltd., produced concentrate in April.  
 Naybob mine, Porcupine district, Ontario, closed in January.  
 Moneta mine, Porcupine district, Ontario, closed in August.  
 Hoyle mine mill, Porcupine district, Ontario, destroyed by fire in July.  
 Yama mine, Larder Lake, Ontario, closed in February.  
 Young-Davidson mine, Ontario, closed from January to May.  
 Wendigo mine, Ontario, permanently closed in January.  
 Regener Metals mine, Ontario, closed in April.  
 Uchi mine, Ontario; mining operations discontinued in March.

- 1943—Magnet mine, Ontario, suspends operations in November.  
Jerome mine, Ontario, suspends milling in August.  
Gold rush into Missanabie, Ontario.  
Goulais River magnetite deposits, Ontario, diamond drilled.  
Privateer mill, British Columbia, closed in September.  
Emerald and Red Rose tungsten mills in British Columbia shut down.  
Elk River collieries, near Fernie, British Columbia, prepared for production.  
Strike of coal miners in British Columbia and Alberta November 1 to November 13.  
Indian Molybdenum Ltd. commenced production in September of molybdenite concentrates in Pressiac township, Quebec.  
Dominion Steel & Coal Co. made shipments of iron ore from Bathurst, New Brunswick; closed late in year.  
Development of Stobie and Murray nickel mines, Ontario, resumed; Old Alexo nickel mine, Ontario, re-opened by Harlin Nickel Mines Ltd.; ore shipped to International Nickel Company.  
Ontario Nickel Corporation shipped nickel ore from Moose Lake, Sudbury district.  
Bralorne Mines Ltd. produced mercury at Takla Lake, British Columbia.  
Kenwest mine, Ontario, suspended operations in July.  
Gold Belt mine, British Columbia, suspended operations in September.  
Operations suspended at Con mine, Northwest Territories, September.  
Operations suspended at Rycon mine, Northwest Territories, September.  
Operations suspended at Thompson-Lundmark mine, Northwest Territories, October.  
Reco Mountain Base Metals mines, British Columbia, shipped concentrates in November.  
Twin "J" Mines Ltd., British Columbia, shipped concentrates in August.  
Kootenay Florence mine, British Columbia, shipped concentrates in August.  
New Calumet Mines Ltd., Quebec, came into production; zinc concentrates shipped in September.  
Committee of inquiry into Ontario mining industry appointed by Premier Geo. Drew.  
Nickel Offsets Ltd. made shipments of nickel ore from near Chelmsford, Sudbury area.  
Asphalt produced from bituminous sands in Alberta by Oil Sands Ltd.  
Stock piles of most Canadian-produced strategic metals and minerals reach satisfactory proportions.  
Green Act raised United States Treasury price of silver to 71.11 cents per ounce.  
Avon Gold Mines Ltd., Oldham, Nova Scotia, suspended operations in February.  
Lava talc deposit developed in Kootenay National Park, British Columbia.  
Italy surrendered Sept. 8th.  
Molybdenite concentrates shipped from LaCorne mine, Quebec, a wartime project.



Table 7.—Annual Values of the Mineral Production of Canada since 1886

NOTE.—In presenting a total valuation of the mineral production as is here given, it should be explained that the production of the metals, copper, gold, lead, nickel, silver, zinc, etc., is given as far as possible on the basis of the quantities of metals recovered in smelters, and the total quantities in each case are valued chiefly at the average market price of the refined metal in a recognized market. There is thus included in some cases the values that have accrued in the smelting or refining of metals outside of Canada.

Year	Value of production	Value per capita	Year	Value of production	Value per capita
	\$	\$		\$	\$
1886.....	10,221,255	2-23	1915.....	137,109,171	17-44
1887.....	10,321,331	2-23	1916.....	177,201,534	22-05
1888.....	12,518,894	2-67	1917.....	189,646,821	23-18
1889.....	14,013,113	2-98	1918.....	211,301,897	25-37
1890.....	16,763,353	3-50	1919.....	176,686,390	20-84
1891.....	18,976,616	3-92	1920.....	227,859,665	26-40
1892.....	16,623,415	3-39	1921.....	171,923,342	19-56
1893.....	20,035,082	4-04	1922.....	184,297,242	20-55
1894.....	19,931,158	3-98	1923.....	214,079,331	23-41
1895.....	20,505,917	4-05	1924.....	209,583,406	22-71
1896.....	22,474,256	4-38	1925.....	226,583,333	24-19
1897.....	28,485,023	5-49	1926.....	240,437,123	25-01
1898.....	38,412,431	7-32	1927.....	247,350,695	25-67
1899.....	49,234,005	9-27	1928.....	274,089,487	27-96
1900.....	64,420,877	12-04	1929.....	310,850,246	31-00
1901.....	65,707,911	12-16	1930.....	279,873,578	27-42
1902.....	113,231,836	11-36	1931.....	230,434,726	22-21
1903.....	61,740,513	10-83	1932.....	191,228,225	18-20
1904.....	60,082,771	10-27	1933.....	221,495,253	20-74
1905.....	69,078,999	11-49	1934.....	278,161,500	25-07
1906.....	79,286,097	12-81	1935.....	312,344,457	28-56
1907.....	86,865,202	13-75	1936.....	361,919,372	32-82
1908.....	85,557,101	13-16	1937.....	457,359,092	41-13
1909.....	91,831,441	13-70	1938.....	441,823,237	39-42
1910.....	106,523,623	14-93	1939.....	474,602,059	41-94
1911.....	163,220,994	14-32	1940.....	529,825,035	46-39
1912.....	135,048,296	18-33	1941.....	560,241,290	49-06
1913.....	145,634,812	19-35	1942.....	566,768,672	48-63
1914.....	128,863,075	16-75			
			<b>Grand Total.....</b>	<b>9,751,982,266</b>	<b>* 836-79</b>

\* Based on an estimated population of 11,654,000 in 1942.

NOTE.—For complete data, by minerals, see Annual Mineral Production Reports for 1937 and 1938.

Table 8.—Annual Values of the Mineral Production of Canada, by Classes, since 1929

Year	Metallics	Non-Metallics		Total
		Fuels and other non-metallics	Structural materials and clay products	
	\$	\$	\$	\$
1929.....	154,454,056	97,861,356	58,534,834	310,850,246
1930.....	142,743,764	83,402,349	53,727,465	279,873,578
1931.....	120,930,147	65,346,284	44,158,295	230,434,726
1932.....	112,041,763	56,788,179	22,398,281	191,228,225
1933.....	147,015,593	87,782,973	16,696,687	221,495,253
1934.....	194,110,968	64,763,861	19,286,761	278,161,590
1935.....	221,800,849	67,328,208	23,215,400	312,344,457
1936.....	259,425,194	76,723,437	25,770,741	361,919,372
1937.....	334,165,243	88,324,150	34,869,699	457,359,092
1938.....	323,075,154	84,889,417	33,878,666	441,823,237
1939.....	343,506,123	95,733,177	35,362,759	474,602,059
1940.....	382,503,012	104,849,372	42,472,051	529,825,035
1941.....	395,346,581	119,521,437	45,373,272	560,241,290
1942.....	* 392,192,452	128,846,413	45,729,807	566,768,672

\* Exclusive of the value of pitchblende products.

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals

Year	Gold*		Silver		Copper		Lead		Zinc†	
	fine oz.	\$	fine oz.	\$	pounds	\$	pounds	\$	pounds	\$
1858..	34,104	705,000								
1859..	78,129	1,615,072								
1860..	107,806	2,228,543								
1861..	128,973	2,666,118								
1862..	135,391	2,798,774								
1863..	202,498	4,186,011								
1864..	199,005	4,126,199								
1865..	192,898	3,987,562								
1866..	152,555	3,153,597								
1867..	145,775	3,013,431								
1868..	134,169	2,773,527								
1869..	102,720	2,123,405								
1870..	83,415	1,724,348								
1871..	105,187	2,174,412								
1872..	90,283	1,866,321								
1873..	74,346	1,536,871								
1874..	97,856	2,022,862								
1875..	130,300	2,693,533								
1876..	97,729	2,020,233								
1877..	94,304	1,949,444								
1878..	74,420	1,538,394								
1879..	76,547	1,582,358								
1880..	63,121	1,304,824								
1881..	63,524	1,313,153								
1882..	60,298	1,240,268								
1883..	53,853	1,113,246								
1884..	51,202	1,058,439								
1885..	55,575	1,148,829								
1886..	70,782	1,463,106			3,505,000	385,550				
1887..	57,460	1,187,804	355,083	347,271	3,260,424	360,798	204,800	9,218		
1888..	53,145	1,098,010	437,232	410,998	5,562,884	927,107	674,500	29,812		
1889..	62,653	1,295,159	383,318	358,785	6,809,752	930,341	165,100	6,488		
1890..	55,620	1,149,776	400,687	419,118	6,013,671	947,133	105,000	4,704		
1891..	45,018	930,614	414,523	409,540	9,529,401	1,226,703	88,665	3,857		
1892..	43,905	907,601	310,551	272,130	7,087,275	818,580	808,420	33,064		
1893..	47,243	976,803	428,738	330,128	8,109,850	871,809	2,135,023	79,636		
1894..	54,600	1,128,888	847,897	534,049	7,708,789	736,960	5,703,222	187,636		
1895..	100,798	2,063,674	1,578,275	1,030,299	7,771,639	836,228	16,461,794	531,716		
1896..	133,262	2,754,774	3,206,343	2,149,503	9,393,012	1,021,960	24,199,977	721,159		
1897..	291,557	6,027,016	5,558,446	3,323,995	13,300,802	1,501,660	39,018,219	1,396,853		
1898..	666,398	13,775,420	4,452,333	2,593,929	17,747,136	2,134,980	31,915,319	1,206,399	788,000	36,011
1899..	1,028,529	21,261,584	3,411,644	2,032,658	15,078,475	2,655,319	21,802,436	977,250	814,000	40,805
1900..	1,350,057	27,908,153	4,468,225	2,740,362	18,937,138	3,065,922	63,169,821	2,780,521	212,800	9,342
1901..	1,167,216	24,128,053	5,539,192	3,265,354	37,827,019	6,096,581	51,900,958	2,249,387		
1902..	1,032,161	21,336,667	4,291,317	2,238,351	38,804,250	4,511,383	22,956,381	934,095	142,200	6,882
1903..	911,559	18,483,590	3,108,581	1,709,442	42,684,454	5,649,487	18,139,293	768,552	900,000	48,600
1904..	796,374	16,862,517	3,577,526	2,047,095	41,388,722	5,306,635	37,531,244	1,617,221	477,568	24,350
1905..	684,951	14,159,195	6,000,023	3,621,133	48,092,753	7,497,660	56,864,915	2,676,632	9,413	139,200
1906..	596,415	11,502,120	8,473,379	5,659,455	55,609,888	10,720,474	54,608,217	3,089,187	1,154	23,800
1907..	405,617	8,382,780	12,779,799	8,348,659	56,079,205	11,398,120	47,738,703	2,542,086	1,573	49,100
1908..	476,112	9,842,105	22,106,233	11,686,239	63,702,843	8,413,876	43,195,733	1,814,221	452	3,215
1909..	453,865	9,382,230	27,529,473	14,178,504	52,493,863	6,814,754	45,857,424	1,692,139	18,371	242,699
1910..	493,707	10,205,835	32,869,264	17,580,455	55,692,399	7,094,094	42,987,508	1,216,249	5,063	120,003
1911..	473,159	9,781,077	32,559,044	17,355,272	55,648,011	6,886,998	23,784,999	827,717	2,590	101,072
1912..	611,885	12,048,794	31,955,500	19,440,165	77,832,127	12,718,548	35,763,476	1,597,554	6,415	211,774
1913..	802,973	16,983,923	31,845,803	19,040,924	76,976,925	11,753,606	37,662,703	1,754,705	7,889	186,827
1914..	773,178	16,983,907	28,449,821	15,503,631	75,735,960	10,301,806	36,337,765	1,627,568	10,893	262,563
1915..	918,050	18,977,901	26,625,960	13,228,842	100,785,180	17,410,635	46,316,450	2,593,721	14,895	554,938
1916..	930,492	19,274,976	25,459,741	16,717,121	117,150,028	31,867,150	41,497,615	3,532,602	23,304,760	2,991,623
1917..	738,831	15,272,902	22,231,274	18,091,895	109,227,332	29,687,980	32,576,281	3,628,020	29,668,764	2,440,817
1918..	699,681	14,463,680	21,383,979	20,693,704	118,769,434	29,250,536	51,398,092	4,754,315	35,083,175	2,862,436
1919..	766,704	15,860,423	16,020,657	17,802,474	75,053,581	14,028,265	43,827,699	3,053,037	32,194,707	2,362,448
1920..	765,007	15,814,098	13,330,357	13,450,330	81,600,691	14,244,217	35,053,717	3,214,262	39,863,912	3,057,961
1921..	926,329	19,148,920	13,543,198	8,485,355	47,620,820	5,953,555	66,679,592	3,828,742	53,089,356	2,471,310
1922..	1,203,364	26,116,050	18,626,439	12,576,758	42,879,818	5,738,177	93,307,171	5,817,702	56,290,000	3,217,536
1923..	1,233,341	25,405,421	18,901,744	12,067,509	86,881,537	12,529,186	111,234,466	7,985,522	90,416,240	3,991,701
1924..	1,525,882	31,532,443	19,730,323	13,180,113	104,457,447	13,604,538	175,485,499	14,221,345	98,900,077	6,274,791
1925..	1,735,735	35,880,826	20,228,968	13,971,150	111,450,518	15,649,882	253,590,578	23,127,460	109,268,511	8,328,446
1926..	1,754,228	36,263,110	22,371,924	13,994,531	133,094,942	17,490,300	283,801,265	19,240,661	149,938,105	11,110,413
1927..	1,852,785	38,300,464	22,736,698	12,816,677	140,147,440	17,195,487	311,423,161	16,477,139	165,495,525	10,250,793
1928..	1,890,520	39,082,005	21,936,407	12,761,725	202,696,046	28,598,249	337,946,688	15,553,231	184,647,374	10,143,060
1929..	1,928,308	39,861,663	23,143,261	12,284,300	248,120,760	43,415,251	326,522,566	16,544,248	197,267,087	10,626,778
1930..	2,102,068	43,453,601	26,443,823	10,098,376	303,478,356	37,948,359	332,894,163	13,102,635	267,643,505	9,635,166
1931..	2,093,892	58,093,396	20,562,247	6,141,943	292,304,300	24,114,065	267,342,482	7,200,183	237,245,451	6,059,249
1932..	3,044,387	71,479,373	18,347,907	5,811,081	247,679,070	15,204,058	255,947,378	4,499,704	172,283,558	4,144,454
1933..	2,049,309	48,350,237	15,187,950	5,746,027	299,982,448	21,634,853	266,475,191	6,372,998	199,131,984	6,393,132
1934..	2,972,074	102,536,553	16,415,282	7,790,840	364,761,082	26,671,438	346,276,576	8,436,658	298,579,683	9,087,571
1935..	3,284,890	115,595,279	16,618,558	10,767,144	418,997,700	32,311,960	339,105,079	10,624,772	320,640,859	9,936,908
1936..	3,748,028	131,293,421	18,334,487	8,273,804	421,027,732	39,514,101	383,180,999	14,993,869	333,182,736	11,045,007
1937..	4,096,213	143,326,493	22,977,751	10,312,644	530,028,615	68,917,219	411,999,484	21,053,173	370,337,589	11,333,949
1938..	4,754,228	166,205,990	22,219,195	9,660,239	571,249,664	56,554,034	418,027,600	14,008,941	381,506,588	11,723,698
1939..	5,094,379	184,115,951	23,163,629	9,378,490	608,825,570	60,934,859	388,509,550	12,313,608	394,553,860	12,108,244
1940..	5,311,145	204,479,083	23,833,752	9,116,172	655,593,441	65,773,061	471,850,256	15,563,765	424,028,862	14,463,624
1941..	5,345,170	205,789,302	21,754,408	8,323,454	643,316,713	64,407,497	460,167,005	15,470,815	512,381,636	17,477,337
1942..	4,841,306	186,390,281	20,695,101	8,728,290	603,661,826	60,417,372	512,142,562	17,218,233	580,257,373	19,792,579
<b>Total</b>	<b>55,723,542</b>	<b>2,431,280,829</b>	<b>849,848,250</b>	<b>489,839,959</b>	<b>5,600,120,793</b>	<b>1,004,753,176</b>	<b>7,818,280,626</b>	<b>338,057,055</b>		<b>232,118,203</b>

\* From 1858 to 1890, inclusive, gold valued at \$20.671834. From 1931 to 1942 valued at world price of Gold in Canadian Funds.

† From 1898 to 1904, quantities show pounds of zinc contained in ores shipped. From 1905 to 1915, quantities show tons of ore or concentrates shipped from mines. From 1916 to 1942 quantities show recoverable zinc in ores exported plus refined zinc made in Canada. In 1942 production of indium totalled 471 troy ounces valued at \$4,710.



Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Nickel		Cobalt		Arsenic		Platinum*		Palladium and other precious metals (b)	
	Pounds	\$	Pounds	\$	Tons	\$	Fine oz.	\$	Fine oz.	\$
1885.....					440	17,600				
1886.....					120	5,460				
1887.....					30	1,200		5,600		
1888.....					30	1,200		6,000		
1889.....	830,477	498,286						3,500		
1890.....	1,435,742	933,232			25	1,500		4,500		
1891.....	4,035,347	2,421,208			20	1,000		16,000		
1892.....	2,413,717	1,399,956						3,500		
1893.....	3,982,982	2,071,151						1,800		
1894.....	4,907,430	1,870,958			7	420		950		
1895.....	3,888,525	1,360,984						3,800		
1896.....	3,397,113	1,188,990						750		
1897.....	3,997,647	1,399,176						1,600		
1898.....	5,517,690	1,820,838						1,500		
1899.....	5,744,000	2,067,840			57	4,872		825		
1900.....	7,080,227	3,327,707			303	22,725				
1901.....	9,189,047	4,594,523			695	41,676		457		
1902.....	10,693,410	5,025,903			800	48,000	2,385	40,502	4,411	86,014
1903.....	12,605,510	5,092,204			257	15,420	1,710	33,345	3,177	61,952
1904.....	10,547,883	4,219,153	32,000	19,960			551	10,872	952	18,564
1905.....	18,876,315	7,550,526	236,000	100,000			574	11,870	1,003	16,746
1906.....	21,490,955	8,948,834	642,000	80,704	201	14,058	112	3,140	202	2,512
1907.....	21,189,793	9,535,407	1,478,000	104,426	986	47,303	227	7,032	607	
1908.....	19,143,111	8,231,538	2,448,000	111,118	1,702	58,566	172	2,807	328	Values
1909.....	26,282,991	9,461,877	3,066,000	94,965	1,353	67,446	547	13,604	1,271	
1910.....	37,271,033	11,181,310	2,196,000	54,699	2,049	81,044	258	8,437	523	
1911.....	34,098,744	10,229,623	1,704,000	170,890	2,097	76,237	666	28,718	753	not
1912.....	44,841,542	13,452,463	1,868,000	314,381	2,045	89,262	497	22,638	680	
1913.....	49,076,772	14,903,032	1,042,000	420,386	1,692	101,463	211	9,151	399	
1914.....	45,517,937	13,655,381	702,000	590,406	1,737	104,015	748	33,765	1,272	complete
1915.....	68,308,657	20,402,507	412,000	383,261	2,396	147,830	475	22,366	600	
1916.....	82,058,564	29,035,497	800,000	805,014	2,186	262,349	1,032	85,418	1,602	
1917.....	84,330,280	33,732,112	674,000	1,138,190	2,936	609,431	1,028	103,061	1,679	
1918.....	92,507,293	37,002,917	760,000	1,040,310	3,560	563,639	689	71,428	1,260	
1919.....	44,544,883	17,817,953	596,000	1,019,479	4,389	509,924	667	74,311	1,128	
1920.....	61,335,706	24,534,282	566,000	1,605,365	2,459	447,848	595	37,680	1,425	
1921.....	19,293,090	6,752,571	251,986	755,958	1,491	233,763	292	22,599	913	
1922.....	17,597,123	6,158,993	569,960	1,852,370	2,576	321,037	470	45,863	1,210	
1923.....	62,453,845	18,332,077	888,061	2,530,974	3,210	626,815	1,217	141,826	2,030	183,560
1924.....	69,536,359	19,470,178	948,704	1,682,395	2,311	348,293	9,186	1,091,427	9,516	863,113
1925.....	73,857,114	15,946,672	1,116,492	2,328,517	1,717	130,302	8,698	1,928,192	8,288	648,969
1926.....	65,714,294	14,374,163	664,778	1,136,014	2,537	146,811	9,521	923,607	10,024	640,178
1927.....	66,798,717	15,262,171	880,590	1,764,534	3,114	211,979	11,228	717,013	11,545	554,190
1928.....	96,755,578	22,318,907	956,590	1,672,320	2,716	193,052	10,532	708,909	13,607	627,833
1929.....	110,275,912	27,115,461	929,415	1,801,915	2,615	171,320	12,519	846,756	17,318	809,289
1930.....	103,768,820	24,455,123	694,163	1,144,007	2,261	129,527	34,024	1,543,261	34,062	895,867
1931.....	65,666,320	15,267,453	521,051	651,170	1,787	135,170	44,775	1,596,900	46,918	1,217,717
1932.....	30,327,968	7,179,862	490,031	587,957	1,212	98,714	27,343	1,099,393	37,613	901,890
1933.....	83,264,658	20,130,480	466,702	597,752	734	56,534	24,786	857,590	31,009	645,043
1934.....	128,687,340	32,139,425	594,671	592,497	824	56,412	116,230	4,490,763	83,932	1,699,228
1935.....	138,516,240	35,345,103	681,419	512,705	1,279	75,326	105,374	3,445,730	84,772	1,962,937
1936.....	169,730,393	43,876,525	887,591	804,676	683	42,491	131,571	5,320,731	103,671	2,483,075
1937.....	224,005,046	59,507,176	507,064	848,145	695	41,032	139,377	6,752,816	119,829	3,179,782
1938.....	210,572,738	53,914,494	459,226	790,913	1,088	56,538	161,320	5,196,794	130,893	3,677,342
1939.....	220,105,865	50,920,305	732,561	1,213,454	871	52,257	148,902	5,222,589	135,402	4,199,622
1940.....	245,557,871	59,822,591	794,359	1,235,220	1,047	62,798	108,488	4,240,362	91,522	3,520,746
1941.....	282,258,235	68,656,795	293,257	255,904	1,769	153,195	124,317	4,750,153	97,432	3,396,304
1942.....	285,211,803	69,998,427	(n)83,871	88,444	7,484	652,041				
<b>Total.....</b>	<b>3,619,405,648</b>	<b>995,912,416</b>	<b>34,295,142</b>	<b>33,501,401</b>	<b>77,593</b>	<b>7,396,895</b>				

\* From 1887 to 1901 placer platinum only, 1907 to 1920 represents largely, recovery of platinum metal by the International Nickel Company, in New Jersey and not necessarily all from Sudbury ores.

(a) Exclusive of metal in ore placed on government stock pile at Deloro, Ontario.

(b) Data relating to platinum metals prior to 1923 are conjectural in nature and do not necessarily agree with provincial totals.

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Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Titanium ore (a)		Iron ore (*)		Antimony ore		Chromite		Manganese ore		Molybdenite ore and concentrates (d)		Pitch- blende products
	Tons	\$	Tons	Tons	\$	Tons	\$	Tons	\$	Tons	\$	\$	
1886.			64,361	665	31,490	60	945	1,789	41,499				
1887.			76,330	594	10,860	38	570	1,245	43,658				
1888.			78,587	345	3,696			1,801	47,944				
1889.			84,181	55	1,100			1,455	32,737				
1890.			76,511	26	625			1,328	32,550				
1891.			68,979	10	60			255	6,694				
1892.			103,248					115	10,250				
1893.			125,602					213	14,578				
1894.			109,991			1,000	20,000	74	4,180				
1895.			102,797			3,177	41,300	125	8,464				
1896.			91,906			2,342	27,004	124	3,975				
1897.			50,705			2,637	32,474	15	1,166				
1898.			58,343	1,344	20,000	2,021	24,252	50	1,600				
1899.			74,617			2,010	21,842	1,581	20,004				
1900.			122,000			2,335	27,000	30	1,800				
1901.			313,646			1,274	16,744	440	4,820				
1902.			404,003			900	13,000	172	4,062	3	400		
1903.			264,294			3,509	51,129	91	2,775	85	1,275		
1904.			219,046			6,074	67,146	86	2,740				
1905.			291,067	527		8,575	93,301	22	1,720				
1906.			248,831	782		9,035	91,859	93	925				
1907.			312,850	2,048	70,108	7,196	72,901	1	22				
1908.			238,082	148	5,443	7,225	82,008						
1909.			268,043	66	5,880	2,470	26,604						
1910.			259,418	364	13,906	299	3,734						
1911.			210,344			157	2,587	6	300				
1912.			215,883					75	1,875				
1913.			307,634										
1914.			244,854			136	1,210	28	1,120	16	2,063		
1915.			398,112	1,371	93,171	12,341	179,543	201	9,360	39	28,920		
1916.			275,176	939	136,380	27,517	311,460	957	89,544	610	188,316		
1917.			215,302	361	22,000	36,725	499,682	158	14,836	1,554	320,006		
1918.			211,608			21,994	867,122	440	6,230	461	428,807		
1919.			197,170			8,541	228,898	661	14,159	46	69,203		
1920.			129,072			11,016	251,379	649	11,029				
1921.			59,509			2,798	55,690	68	3,400				
1922.			17,971			767	11,503	73	2,044				
1923.	69	186	30,690			3,538	52,650	200	1,400				
1924.	1,408	3,771	72					584	4,088	10	9,370		
1925.	3,978	11,934		1	206					15	11,176		
1926.	200	600		1	281					12	10,472		
1927.	2,029	8,980											
1928.	2,244	6,732											
1929.	2,748	7,359				126	900			9	6,400		
1930.	412	1,239						273	1,356				
1931.	1,509	10,261						117	2,893	1	280		
1932.						78	1,113						
1933.						30	343					(e)	247,900
1934.	2,023	14,161				111	1,578						159,400
1935.	2,288	16,400				1,144	14,947	100	800				413,700
1936.	2,566	18,318		Pounds		923	13,578	221	1,596				605,500
1937.	4,229	26,432	(b) 48,163	7,394	4,272	43,260	85	817		8	8,147	876,540	
1938.	207	1,440	24,590	2,200						6	4,500	1,045,458	
1939.	3,694	21,267	123,598	1,225,585	151,499			396	3,688	1	816	1,121,553	
1940.	4,535	24,510	414,603	2,504,492	396,468	335	5,780	152	4,315	11	10,280	410,176	
1941.	12,651	49,110	516,037	3,185,077	445,911	2,372	42,079	(c)	(c)	98	88,470	925,196	
1942.	10,031	50,906	645,306	3,041,108	516,988	11,456	343,598	435	8,932	114	134,963	(f)	
							3,643,279	16,964	471,945	3,099	1,323,864		

(\*) Includes some titaniferous ore prior to 1923.

(a) See footnote above, (b) Includes metal produced in Canada plus metal in ores exported, 1937 to 1942.

(c) 7,500 pounds of manganese metal valued at \$2,250 produced at a Nova Scotia mine. (d) Sales, including MoS<sub>3</sub> consumed at Quyon, Quebec. (e) First production. (f) Not available for publication.

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Tungsten concentrates		Selenium		Tellurium		Cadmium		Bismuth	
	lb.	\$	lb.	\$	lb.	\$	lb.	\$	lb.	\$
1912.....	28,000	(a)								
1913.....										
1914.....										
1915.....										
1916.....	580	234								
1917.....	27,000	11,700								
1918.....										
1919.....										
1920.....										
1921.....										
1922.....										
1923.....										
1924.....									12,863	27,913
1925.....									19,667	18,566
1926.....									6,440	8,440
1927.....									2,072	1,033
1928.....							491,894	341,374	14,002	5,067
1929.....							773,976	675,294	194,329	307,114
1930.....							456,582	337,871	12,732	6,366
1931.....			21,500	40,850			323,139	180,958	118,207	157,650
1932.....							65,425	26,824	16,855	7,340
1933.....			48,221	70,345			246,041	78,733	78,303	81,526
1934.....			104,924	171,311	5,130	25,599	293,611	95,065	253,644	301,215
1935.....			366,425	703,536	16,425	32,850	580,530	441,203	13,797	13,245
1936.....			350,857	621,017	35,591	62,907	785,916	699,465	364,165	360,523
1937.....			397,227	687,203	41,490	71,777	745,207	1,222,140	5,711	5,654
1938.....			358,929	622,742	48,237	82,967	699,138	561,799	9,516	9,754
1939.....	8,825	4,917	150,771	266,714	2,940	4,769	939,691	862,209	409,449	466,362
1940.....	12,002	7,303	179,860	343,533	3,491	5,607	908,127	1,056,152	58,529	81,004
1941.....	82,846	38,712	406,030	777,236	11,453	18,394	1,251,291	1,469,016	7,511	10,396
1942.....	520,981	406,275	495,369	951,108	11,084	17,735	1,148,993	1,355,776	347,559	479,627
<b>Total.....</b>			<b>2,881,013</b>	<b>5,255,595</b>	<b>175,841</b>	<b>322,695</b>	<b>9,709,531</b>	<b>9,294,479</b>	<b>1,945,349</b>	<b>2,346,795</b>

(a) Value not recorded.

NOTE.—Total commercial production of tin from Canadian ores was as follows:—1941, 64,744 pounds valued at \$33,667; 1942, 1,237,863 pounds valued at \$643,689. Production of magnesium from Canadian ores totalled 10,905 pounds in 1941, valued at \$2,944 and 808,718 pounds valued at \$355,836 in 1942; the metal was produced commercially for the first time in Canada from Canadian ores, in 1941.

Table 9.—Aluminium Production in Canada from Imported Ores 1901-1943

Year	Pounds	Year	Pounds	Year	Pounds	Year	Pounds	Year	Pounds
1901.....	283,737	1911.....	9,679,980	1921.....	6,335,083	1931.....	68,103,008	1941.....	427,746,554
1902.....	1,983,252	1912.....	12,029,046	1922.....	12,867,305	1932.....	39,585,847	1942.....	681,192,951
1903.....	1,750,599	1913.....	14,065,028	1923.....	24,245,766	1933.....	35,532,104	1943.....	901,499,290
1904.....	2,302,178	1914.....	14,550,959	1924.....	27,243,004	1934.....	34,865,362		
1905.....	2,590,329	1915.....	18,308,524	1925.....	31,105,293	1935.....	46,342,747		
1906.....	4,696,949	1916.....	21,184,791	1926.....	38,910,914	1936.....	59,280,250		
1907.....	5,921,299	1917.....	22,088,067	1927.....	82,735,938	1937.....	93,812,965		
1908.....	972,146	1918.....	23,535,689	1928.....	82,797,894	1938.....	142,407,743		
1909.....	6,083,695	1919.....	21,582,264	1929.....	63,439,528	1939.....	165,680,869		
1910.....	9,647,958	1920.....	22,384,702	1930.....	76,217,209	1940.....	218,288,565		

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Mercury		Coal*		Petroleum		Natural Gas		Peat Fuel	
	pounds	\$	tons	\$	brls.	\$	M cu. ft.	\$	tons	\$
1785-1866...			2,863,826	4,905,462						
1867			631,320	1,056,725						
1868			623,392	1,073,061						
1869			687,825	1,155,282						
1870			752,635	1,243,139						
1871-1873...			3,033,152	5,073,331						
1874			1,063,742	1,763,423						
1875			1,039,974	1,747,016						
1876			994,762	1,729,546						
1877			1,035,670	1,794,415						
1878			1,089,744	1,941,285						
1879			1,126,497	2,050,639						
1880			1,482,714	2,657,194						
1881			1,537,106	2,688,821	368,987					
1882			1,548,148	3,248,440	389,573					
1883			1,818,084	3,109,635	472,866					
1884			1,984,059	3,593,831	571,000					
1885			1,920,977	3,417,807	587,563					
1886			2,116,653	3,739,840	584,061	325,655				
1887			2,429,330	4,388,206	713,728	556,708				
1888			2,602,552	4,674,140	695,203	713,695				
1889			2,658,303	4,894,287	704,690	653,600				
1890			3,084,082	5,676,247	795,030	902,734				
1891			3,577,740	7,019,425	755,298	1,010,211				
1892			3,287,745	6,363,757	779,753	984,438	150,000			
1893			3,783,490	7,359,080	798,406	874,255	376,233			
1894			3,847,070	7,429,468	829,104	835,322	313,754			
1895	5,306	2,343	3,478,344	6,739,153	726,138	1,086,738	423,032			
1896	4,408	1,940	3,745,716	7,226,461	720,822	1,155,647	276,301			
1897	684	324	3,780,107	7,303,597	709,857	1,011,546	325,873			
1898			4,173,108	8,224,288	758,391	1,061,747	322,123			
1899			4,925,051	10,283,497	808,570	1,202,020	387,271			
1900			5,777,319	13,742,178	710,498	1,151,007	417,094	400	1,200	
1901			6,486,325	12,699,243	622,392	1,008,275	339,476	220		
1902			7,466,081	15,210,877	530,024	951,190	195,902	478	1,663	
1903			7,960,364	15,942,833	486,037	1,048,874	202,210	1,100	3,300	
1904			8,254,595	16,502,231	503,474	935,895	328,376	800	2,400	
1905			8,667,948	17,520,263	634,095	856,028	379,501	80	260	
1906			9,762,001	19,732,019	569,753	761,760	583,523	474	1,422	
1907			10,511,426	24,381,442	788,872	1,057,088	815,032	50	290	
1908			10,886,311	25,194,573	527,987	747,102	1,012,660	60	180	
1909			10,501,475	24,781,236	420,755	559,604	1,207,029	60	240	
1910			12,909,152	30,909,779	315,895	388,550	1,346,471	841	2,604	
1911			11,323,388	26,467,646	291,002	357,073	1,917,678	1,463	3,817	
1912			14,512,829	36,019,044	243,336	345,050	2,362,700	700	2,900	
1913			15,012,178	37,334,940	228,080	406,439	20,477,838	3,309,381	2,600	10,100
1914			13,637,529	33,471,801	214,805	343,124	21,092,504	3,484,727	685	2,470
1915			13,267,023	32,111,182	215,464	300,572	20,124,162	3,706,035	300	1,050
1916			14,483,395	38,817,481	198,123	392,284	25,467,458	3,658,029	300	1,500
1917			14,046,750	43,199,831	213,832	542,239	27,408,940	5,045,298		
1918			14,977,926	55,192,896	304,741	885,143	20,140,309	4,350,940		
1919			13,919,096	55,622,676	240,466	736,324	19,937,769	4,176,037	986	6,561
1920			16,946,764	82,496,538	196,251	823,235	16,845,518	4,232,642	4,550	18,650
1921			15,057,493	72,451,650	187,541	641,539	14,077,601	4,594,164	1,666	6,664
1922			15,157,431	65,518,497	179,068	611,176	14,682,651	5,846,501	3,000	14,500
1923			16,990,571	72,058,986	170,169	522,018	15,960,583	5,884,618		
1924			13,638,197	53,593,988	160,773	467,400	14,881,336	5,708,636		
1925	380	(a)	13,134,968	49,261,951	332,001	1,250,705	16,902,897	6,833,005	1,370	8,394
1926			16,478,131	59,875,044	364,444	1,311,665	19,208,209	7,557,174		
1927			17,426,861	61,867,463	476,591	1,516,043	21,376,791	8,043,010		
1928			17,564,293	63,757,893	624,184	2,035,300	22,582,586	8,614,182	1,497	5,345
1929			17,496,557	63,065,170	1,117,368	3,731,764	28,378,462	9,977,124	2,607	13,330
1930			14,881,324	52,849,748	1,522,220	5,033,820	29,370,819	10,289,985	2,847	10,932
1931			12,243,211	41,207,682	1,342,573	4,211,674	25,874,723	9,026,754	1,674	7,033
1932			11,738,613	37,117,695	1,044,412	3,022,592	23,420,174	8,899,462	3,248	7,593
1933			11,903,344	35,923,962	1,145,333	3,138,791	23,138,103	8,712,234	1,131	3,449
1934			13,810,193	42,045,042	1,410,895	3,446,162	29,162,324	8,759,652	1,878	7,943
1935			13,888,006	41,963,110	1,446,620	3,492,188	24,910,790	9,363,141	1,340	6,761
1936			15,229,182	45,791,934	1,509,374	3,421,707	28,113,348	10,762,243	1,341	7,376
1937			15,835,954	48,752,048	2,943,750	5,398,353	32,380,991	11,674,802	478	2,676
1938	760	760	14,204,718	43,982,171	9,966,084	9,230,173	33,444,791	11,587,450	620	3,500
1939	436	1,226	15,692,608	48,676,990	7,826,301	9,846,352	35,185,146	12,507,307	445	2,445
1940	153,830	369,317	17,560,884	54,675,844	8,590,978	11,190,213	41,232,125	13,900,593	30	75
1941	636,304	1,335,697	18,225,921	58,059,630	10,133,838	14,415,096	43,495,353	12,065,113	358	2,155
1942	1,035,914	2,943,807	18,865,030	62,897,581	10,364,796	15,968,851	45,697,359	13,301,655	172	1,204
Total			651,463,000	1,968,406,583	81,282,525	131,647,968	249,554,283	41,843	171,401	

\* For the years 1919 to 1942 the tonnage shown is the total output of all mines; for previous years the tonnage shown includes only sales, colliery consumption and coal used by the operators.

(a) No value recorded.



Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Peat Moss		Actinolite		Asbestos		Barite		Bituminous Sands		Corundum	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1880.					380	24,700						
1881.					540	35,100						
1882.					810	52,650						
1883.					955	68,750						
1884.					1,141	75,097						
1885.					2,440	142,441	300	1,500				
1886.					3,458	206,251	3,854	19,270				
1887.					4,619	220,976	400	2,400				
1888.					4,404	255,007	1,100	3,850				
1889.					6,113	426,554						
1890.					9,890	1,260,240	1,842	7,543				
1891.					9,279	999,878						
1892.					6,082	390,462	315	1,260				
1893.					6,331	310,156						
1894.					7,630	420,825	1,081	2,830				
1895.					8,756	368,175						
1896.					12,250	429,856	145	715				
1897.			205	1,845	30,442	445,368	571	3,060				
1898.					23,785	491,197	1,125	5,533				
1899.					25,536	488,849	720	4,402				
1900.					29,141	748,431	1,337	7,605			3	300
1901.			521	3,126	40,217	1,259,759	653	3,842			387	46,415
1902.			550	4,400	40,416	1,148,319	1,096	3,957			768	84,465
1903.			550	3,108	41,677	929,757	1,163	3,931			703	77,510
1904.					48,465	1,226,352	1,382	3,702			993	109,545
1905.					68,263	1,503,259	3,360	7,500			1,644	149,153
1906.					82,185	2,060,143	4,000	12,000			2,274	204,973
1907.					90,426	2,505,042	1,344	3,000			1,892	177,922
1908.					90,773	2,573,335	4,312	19,021			1,089	100,398
1909.					87,300	2,301,775	179	1,120			1,491	162,492
1910.			30	330	102,215	2,573,603					1,870	198,680
1911.			67	736	127,414	2,943,108	50	400			1,472	161,873
1912.			92	1,000	136,301	3,137,279	464	5,104			1,960	239,091
1913.			66	720	161,086	3,849,925	641	5,410			1,177	137,030
1914.			119	1,304	117,573	2,909,806	612	6,169			548	72,176
1915.			220	2,420	136,842	3,674,985	550	6,875			262	33,138
1916.			250	2,750	154,149	5,228,869	1,368	19,393			67	10,307
1917.			120	1,320	153,781	7,230,383	3,490	54,027			188	32,153
1918.			228	2,508	158,259	8,970,797	640	10,165			137	26,112
1919.			80	880	159,236	10,975,369	468	8,154				
1920.			100	1,160	199,573	14,792,201	751	22,983			196	24,547
1921.			78	975	92,761	4,906,230	270	9,567			403	55,965
1922.			50	575	163,706	5,552,723	289	9,537				
1923.			53	583	231,482	7,522,506	409	8,548				
1924.			90	1,225	225,744	6,710,830	151	3,308	531	2,127		
1925.			40	500	273,524	8,977,546	95	2,250	1,148	4,594		
1926.			88	1,000	279,403	10,099,423	100	2,307	528	2,112		
1927.			86	1,075	274,778	10,621,013	56	1,268	2,706	10,824		
1928.			70	875	273,033	11,238,390	127	2,847	94	374		
1929.			30	375	306,055	13,172,581	105	2,341	989	3,956		
1930.			34	437	242,114	8,390,163	66	1,484	2,067	8,268		
1931.			35	456	164,296	4,812,886	16	363	1,015	4,060		
1932.					122,977	3,039,721			343	1,372		
1933.					158,367	5,211,177			466	1,662		
1934.			30	365	155,980	4,036,326			862	3,449		
1935.					210,407	7,054,614			40	100		
1936.					301,287	9,958,183						
1937.					410,026	14,505,791			35	142		
1938.					289,793	12,890,195						
1939.					364,472	15,859,212	323	3,639				
1940.	(a)	(a)			346,805	15,619,865	338	4,819	(b)	(b)		
1941.	27,803	644,253			477,846	21,468,840	8,890	74,416	(b)	(b)		
1942.	53,506	1,069,372			439,459	22,663,283	19,667	188,144	(b)	(b)		
			3,874	36,648	8,194,478	314,769,497	68,245	571,628			19,524	2,104,251

(a) Prior to 1941 included in survey of manufactures.

(b) No sands sold as such; production included with crude petroleum.

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Diatomite		Feldspar		Fluorspar		Graphite		Grindstones		Garnets	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1886							500	4,000	4,020	46,545		
1887							300	2,400	5,292	64,008		
1888							150	1,200	5,764	51,129		
1889							242	3,160	3,404	30,863		
1890			700	3,500			175	5,200	4,884	42,340		
1891			685	3,425			260	1,560	4,470	42,587		
1892			175	525			107	3,763	5,122	49,836		
1893			575	4,525					4,480	36,979		
1894							5	400	3,667	31,217		
1895			1,018	2,545			220	6,150	3,395	30,652		
1896	644	9,960	972	2,583			789	22,455	3,563	31,960		
1897	15	150	1,400	3,290			436	16,240	4,472	40,740		
1898	1,017	16,660	2,500	6,250			600	13,698	4,735	40,590		
1899	1,000	15,000	3,000	6,000			1,310	24,179	4,112	35,265		
1900	336	1,950	318	1,112			1,922	31,040	5,179	47,290		
1901	850	15,300	5,350	10,700			2,210	38,750	4,034	37,275		
1902	1,052	16,470	7,576	15,152			1,095	28,300	4,383	40,018		
1903	835	16,700	13,928	18,906			728	23,745	5,423	46,462		
1904	320	6,400	11,083	22,166			452	11,760	4,509	40,822		
1905	300	3,600	11,700	23,400	12	84	541	16,735	5,460	59,000		
1906			16,948	40,890			387	18,300	5,305	58,314		
1907	30	225	12,584	29,519			579	10,000	5,384	58,876		
1908	30	195	7,877	21,099			251	5,565	3,658	42,053		
1909			12,783	40,383			864	47,800	4,002	46,374		
1910	22	134	15,809	47,667	2	15	1,392	74,087	3,787	41,496		
1911	20	122	17,723	51,939	34	238	1,269	69,576	4,332	46,832		
1912	38	230	13,733	30,916	40	240	2,060	117,122	4,204	40,460		
1913	620	12,138	16,790	60,795			2,162	90,282	4,008	45,300		
1914	650	13,000	18,060	70,824			1,647	107,203	3,783	48,847		
1915	317	12,119	14,559	57,801			2,635	124,223	2,279	31,967		
1916	620	12,139	19,488	71,407	1,284	10,238	3,955	325,362	3,232	40,975		
1917	600	18,000	19,462	89,826	4,240	68,756	3,714	402,892	2,169	38,702		
1918	500	12,500	18,782	112,728	7,362	156,029	3,114	248,870	2,806	70,745		
1919	565	11,300	14,679	86,231	5,063	97,837	1,360	100,221	1,931	56,344		
1920	260	8,600	37,873	280,895	11,235	240,440	2,190	165,617	2,262	74,119		
1921	341	11,268	29,868	230,754	5,519	136,267	937	65,862	1,064	40,637		
1922	219	5,781	27,727	248,402	4,503	102,138	597	31,353	837	30,292		
1923	130	3,250	29,225	237,601	139	1,732	1,113	67,873	1,717	51,493	1,250	100,000
1924	33	838	44,804	358,540	76	1,343	1,334	76,117	2,031	69,111	360	7,200
1925			28,681	235,789	3,886	19,234	2,569	158,763	1,735	61,784		
1926			35,951	310,238			2,727	194,860	1,513	58,986		
1927	206	6,650	29,849	259,151			1,829	111,656	1,317	47,475	2	150
1928	368	8,960	31,897	284,942			1,097	57,041	1,250	45,901		
1929	429	10,330	37,527	340,471	17,870	268,120	1,461	103,174	1,038	37,401		
1930	554	13,247	26,796	208,409	80	1,240	1,535	96,392	235	9,574		
1931	1,610	32,789	18,343	186,961	40	620	548	32,149	198	8,164		
1932	1,496	29,509	7,047	81,982	32	464	346	18,483	200	9,336		
1933	1,789	36,648	10,658	105,117	73	1,004	405	18,367	161	7,079		
1934	1,372	54,910	18,302	147,281	150	2,100	1,518	71,424	353	14,543		
1935	823	33,140	17,742	144,330	75	900	1,782	70,731	373	14,501		
1936	615	13,650	17,846	154,475	75	900		88,812	360	15,362		
1937	643	18,606	21,346	178,222	150	2,550		125,343	251	12,407		
1938	398	13,842	14,058	129,293	217	3,906		41,590	285	12,790		
1939	301	10,388	12,500	112,309	240	4,995		61,684	284	12,190		
1940	245	7,957	21,455	187,623	4,454	59,317		94,038	290	11,858		
1941	344	9,935	26,040	244,284	5,534	97,767		132,924	179	8,500	16*	160
1942	365	9,088	22,270	213,941	6,199	140,039		117,904	200	8,000	17*	176
Total...	22,985	633,678	848,062	5,877,534	78,593	1,424,579		4,613,475	159,381	2,196,516	1,645	167,686

\*Garnet schist.

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Gypsum		Iron Oxides		Magnesitic Dolomite		Magnesium Sulphate		Manganese Bog	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1874	67,830	68,164								
1875	91,485	91,613								
1876	92,705	94,386								
1877	111,080	98,807								
1878	105,455	93,805								
1879	104,993	80,864								
1880	136,935	124,000								
1881	121,270	116,349								
1882	150,272	147,597								
1883	168,152	169,228								
1884	130,141	134,451								
1885	97,552	106,415								
1886	162,000	178,742	350	2,350						
1887	154,008	157,277	485	3,733						
1888	175,887	179,393	397	7,900						
1889	213,273	205,108	794	15,280						
1890	226,509	194,033	275	5,125						
1891	203,605	206,251	900	17,750						
1892	241,048	241,127	390	5,800						
1893	192,568	196,150	1,070	17,700						
1894	223,631	202,031	611	8,690						
1895	226,178	202,608	1,339	14,600						
1896	207,032	178,061	2,362	16,045						
1897	239,691	244,531	3,905	23,560						
1898	219,256	232,515	2,226	17,450						
1899	244,566	257,329	3,919	20,000						
1900	252,101	259,000	1,966	15,398						
1901	293,796	340,148	2,233	16,735						
1902	335,599	370,479	4,955	30,495						
1903	314,489	388,459	6,266	32,760						
1904	345,961	373,471	3,925	24,095						
1905	442,158	586,168	5,105	34,675						
1906	469,022	643,294	6,758	36,125						
1907	485,921	646,914	5,828	35,570						
1908	340,964	575,701	4,746	30,440	120	840				
1909	473,129	800,632	3,940	28,093	330	2,508				
1910	525,246	934,446	4,813	35,185	323	2,180				
1911	518,363	903,394	3,622	28,333	991	5,531				
1912	578,458	1,324,620	7,054	32,410	1,714	9,645				
1913	636,370	1,447,739	5,087	41,774	515	3,335				
1914	516,880	1,156,207	5,890	51,725	358	2,240				
1915	474,815	854,929	6,248	48,353	14,779	120,584				
1916	342,915	738,593	8,811	58,711	55,413	563,829				
1917	336,332	881,984	9,409	87,605	58,090	728,275	929	4,945		
1918	152,287	823,006	17,317	112,440	39,365	1,016,765	1,049	14,565		
1919	299,063	1,215,287	11,862	113,427	11,273	328,465	738	9,115		
1920	429,144	1,893,991	19,128	157,900	18,378	512,756	1,947	30,888		
1921	386,550	1,785,538	9,048	93,610	3,730	81,320	2,029	30,506		
1922	559,265	2,160,898	7,285	110,608	2,849	70,294	1,021	24,017		
1923	578,301	2,243,100	10,424	129,636	4,801	134,382	121	6,580		
1924	446,016	2,208,108	7,266	91,190	3,873	101,356				
1925	740,323	2,389,891	7,118	91,913	5,570	122,325				
1926	883,728	2,770,813	6,626	101,843	4,571	137,431				
1927	1,063,117	3,251,015	6,125	103,530	7,337	230,309				
1928	1,246,308	3,743,648	5,414	111,198	13,195	346,990			385	2,237
1929	1,211,880	3,345,696	6,518	115,932	18,899	491,170			301	1,830
1930	1,070,968	2,818,788	6,596	83,873	13,330	330,162			275	1,650
1931	863,752	2,111,517	5,520	49,295	11,411	295,579			77	462
1932	438,629	1,080,379	5,240	46,101	(e)	262,890				
1933	382,736	675,822	4,357	33,450	(e)	360,128	129	3,360		
1934	461,237	803,776	4,959	66,166	(e)	382,927	42	1,100		
1935	541,894	932,293	5,516	77,075	(e)	480,084	310	7,965		
1936	833,822	1,278,971	5,854	69,630	(e)	768,742	654	13,712		
1937	1,047,187	1,540,483	6,197	83,640	(e)	677,207	727	14,450		
1938	1,008,799	1,502,265	5,821	71,760	(e)	420,261	470	9,400		
1939	1,421,934	1,935,127	6,015	88,418	(e)	474,418	550	9,900		
1940	1,448,788	2,065,933	9,979	111,874	(e)	897,013				
1941	1,593,406	2,248,428	10,045	142,009	(e)	831,041	265	7,343		
1942	596,166	1,254,182	9,304	151,653	(e)	*1,059,374	1,140	38,760		
Total	31,861,763	65,674,040	316,713	3,273,560		12,276,369	13,042	244,310	1,638	6,179

(e) Quantity not published since 1931.

\* Includes value of brucite granules shipped from Wakefield, Quebec to Canadian Refractories Ltd.



Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Mica		Mineral Waters		Natro-Alunite		Phosphate		Pulpestones	
	Tons	\$	Imp. gals	\$	tons	\$	tons	\$	tons	\$
1870.....							1,200	13,600		
1871.....							200	2,100		
1872.....										
1873.....										
1874.....										
1875.....										
1876.....										
1877.....										
1878.....										
1879.....							10,743	208,109		
1880.....							8,446	122,035		
1881.....							13,060	190,086		
1882.....							11,968	218,456		
1883.....							17,153	308,357		
1884.....							19,716	427,668		
1885.....							21,709	424,240		
1886.....		29,003					28,969	496,293		
1887.....		29,816					20,495	304,338		
1888.....	16	30,207	124,850	11,456			23,690	319,815		
1889.....		28,718	424,600	37,360			22,485	242,285		
1890.....		68,074	661,165	66,031			30,988	316,662		
1891.....		71,510	427,485	54,268			31,753	361,045		
1892.....		104,745	640,380	75,348			23,588	241,603		
1893.....		75,719	725,996	108,347			11,932	157,424	60	900
1894.....		45,591	767,460	110,040			7,890	61,962	120	1,400
1895.....		65,000	730,382	126,048			6,861	41,166	90	1,500
1896.....		60,000	706,372	111,736			1,822	9,565	80	1,280
1897.....		76,000	749,691	141,477			570	3,420	60	900
1898.....		118,375	655,000	100,000			908	3,984	100	1,600
1899.....		163,000		100,000			733	3,665	200	3,200
1900.....		166,000		75,000			3,000	18,000	375	7,000
1901.....		160,000		100,000			1,415	7,105	390	6,160
1902.....	1,059	135,904		100,000			1,033	6,280	547	8,415
1903.....		177,857		100,000			856	4,953	250	4,100
1904.....		160,777		100,000			1,329	8,214	115	1,840
1905.....		178,235		100,000			817	4,500	140	1,960
1906.....	574	303,913		100,000			1,300	8,425	68	1,875
1907.....	774	312,599		136,020			850	6,375	40	600
1908.....	430	139,871		151,953			824	6,018		
1909.....	369	147,782		175,173			1,590	14,794	158	4,725
1910.....	758	190,385		199,593			998	8,054	240	6,640
1911.....	590	128,677		223,758			1,478	12,578	125	3,700
1912.....	580	143,970		172,465			621	5,206	160	3,960
1913.....	1,104	194,304		173,677			164	1,640	125	4,000
1914.....	595	109,081		134,111			385	3,643	100	3,400
1915.....	417	91,905		115,274			954	7,275	40	4,000
1916.....	1,208	255,230		127,806			217	2,502		
1917.....	1,166	358,851		145,814			203	2,514		
1918.....	747	271,550		154,468			149	1,486	47	2,750
1919.....	2,754	273,788		71,015			140	1,200	180	8,400
1920.....	2,203	376,022		24,582			24	331	14	420
1921.....	702	70,003	328,723	21,719	30	1,500		450	125	10,000
1922.....	3,349	152,203	221,433	14,220	50	2,500	30	1,706	200	22,000
1923.....	3,525	326,974	232,451	16,455	15	750	190	600	150	12,000
1924.....	4,091	357,272	209,353	15,421			30		260	25,100
1925.....	4,020	261,463	190,134	28,413	20	1,000	16	189	624	58,113
1926.....	2,545	229,204	215,356	29,721			40	800	781	57,781
1927.....	2,738	174,377	303,530	14,624			131	1,717	1,155	89,541
1928.....	3,660	87,108	269,045	33,408	7	248	641	8,276	911	75,242
1929.....	4,053	118,549	321,905	16,139			641	8,276	591	52,659
1930.....	1,170	96,004	227,141	24,481			1,185	5,380	754	62,336
1931.....	1,339	54,066	217,408	13,234			40	760	573	49,897
1932.....	309	6,828	76,714	7,170					342	27,305
1933.....	944	49,284	38,818	5,441			1,316	12,333	60	3,500
1934.....	998	97,071	97,440	17,738			2,214	5,475	214	9,870
1935.....	628	82,038	146,516	16,590			81	683	523	27,225
1936.....	801	74,566	154,286	18,516			186	1,103	288	14,109
1937.....	945	133,731	225,019	20,580			525	4,927	87	4,600
1938.....	518	80,898	188,309	21,590			100	900	87	4,875
1939.....	1,068	147,321	123,679	19,105			208	1,880		
1940.....	975	237,145	140,663	20,892			157	1,712		
1941.....	1,743	335,288	181,064	72,531			358	4,039		
1942.....	3,010	383,567	157,085	74,505			2,487	33,376		
							1,264	17,431		
Total.....		8,797,676		4,245,405	122	5,998	346,451	4,712,894	11,509	690,778

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Nepheline Syenite	Quartz*		Salt		Sharpening Stones		Silica Brick		Sodium Carbonate	
		\$	tons	\$	tons	tons	\$	M	\$	tons	\$
1886					62,350		227,195				
1887					60,173		166,394				
1888					59,070		185,460				
1889					32,832		120,547				
1890			200	1,000	43,754		108,857				
1891					45,021		101,179				
1892					45,486		102,041				
1893			100	500	62,324		195,926				
1894					57,199		170,687				
1895					52,376		160,453				
1896			10	50	43,960		169,693				
1897					51,348		225,730				
1898			284	570	57,142		248,630	33	985		
1899			600	1,260	59,339		254,390	24	1,000		
1900					62,055		279,458				
1901					59,428		262,328				
1902					64,456		292,581				
1903					62,452		297,517				
1904					69,477		321,778				
1905					67,340		320,538	12	600		
1906		48,376		65,765	79,720		329,130	18	900		
1907		56,585		124,148	72,697		342,315	30	1,500		
1908		44,741		52,830	79,675		378,798	27	1,350		
1909		56,924		71,285	84,037		415,219	33	1,650		
1910		88,205		91,951	84,092		409,624	36	1,800		
1911		60,526		83,865	91,582		443,004	54	2,000		
1912		100,242		195,216	95,053		459,582	35	1,300		
1913		78,261		109,842	104,791		491,280	74	2,425		
1914		54,148		81,553	107,038		493,648	115	1,254		
1915		127,108		205,153	119,900		600,226	281	3,615		
1916		136,745		251,226	132,903		717,653	224	2,614		
1917		216,288		496,182	138,900		1,047,782	307	4,302		
1918		208,155		629,813	131,727		1,285,039	56	3,500		
1919		64,991		527,635	148,301		1,307,929	45	3,392		
1920		128,295		467,821	206,855		1,544,724	56	3,987		
1921		100,350		312,947	164,658		1,673,685	17	1,430	197	14,775
1922		109,947		208,598	181,794		1,628,323	18	1,450	202	3,027
1923		204,076		599,250	202,397		1,713,516	35	3,500	265	3,975
1924		150,896		323,156	207,979		1,374,780	36	3,600	510	5,173
1925		197,224		363,612	233,746		1,410,697	46	4,600	1,120	8,140
1926		232,082		353,161	262,547		1,480,149	27	2,700	595	5,370
1927		233,984		496,364	268,672		1,614,667	23	2,300	79,527	805
1928		282,522		523,933	298,445		1,495,971	24	2,400	155,502	519
1929		265,949		561,527	330,264		1,575,086	155	6,617	173,581	600
1930		220,200		418,127	271,695		1,604,631	22	2,250	97,379	364
1931		195,724		303,158	259,047		1,604,149	81	2,634	900	35,746
1932		189,132		276,147	263,543		1,947,551	68	2,899	93	4,304
1933		185,783		297,820	280,116		1,939,854	123	4,970	636	23,185
1934		272,593		482,265	321,753		1,954,953	111	4,710	2,528	85,945
1935		233,002		424,882	360,343		1,880,978	47	5,400	2,461	96,194
1936	37,426	1,040,649		507,781	391,316		1,773,144	122	4,872	2,393	97,285
1937	121,481	1,377,448		1,129,011	458,957		1,790,465	74	4,147	3,744	181,420
1938	142,737	1,380,011		961,617	440,045		1,912,913	21	3,408	1,788	100,403
1939	140,148	1,582,935		1,100,214	424,500		2,486,632	20	3,088	2,493	124,807
1940	117,849	1,858,302		1,203,527	464,714	(a) 51	2,823,239	51	2,085	3,438	182,786
1941	227,583	2,052,878		1,366,187	560,845	18	3,166,165	18	3,000	4,111	238,433
1942	246,893	1,738,174		1,538,192	653,672	16	3,844,187	16	2,000	4,273	263,006
Total	1,031,117	15,736,615	17,562,141	10,093,218	57,914,461	2,618	112,831	42,997	2,069,911	9,121	105,166

\* Commencing in 1936 includes low-grade fluxing sand.

(a) Includes 33 tons grinding pebbles valued at \$165, from Saskatchewan.

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Sodium Sulphate		Sulphur*		Talc and Soapstone		Volcanic Dust	
	tons	\$	tons	\$	tons	\$	tons	\$
1886.....			42,906	193,077	50	400		
1887.....			38,043	171,194	100	800		
1888.....			63,479	285,656	140	280		
1889.....			72,225	307,202	195	1,170		
1890.....			49,227	123,067	917	1,239		
1891.....			25,542	203,193				
1892.....			26,000	179,310	1,374	6,240		
1893.....			22,245	175,626	717	1,920		
1894.....			16,616	121,581	916	1,640		
1895.....			14,021	102,504	475	2,138		
1896.....			13,823	101,155	410	1,230		
1897.....			15,953	116,730	157	1,350		
1898.....			13,209	128,872	405	1,000		
1899.....			11,352	110,748	450	1,960		
1900.....			16,413	155,164	1,420	6,365		
1901.....			14,457	130,544	258	842		
1902.....			14,603	138,939	689	1,804		
1903.....			13,933	127,713	990	2,739		
1904.....			15,244	134,033	840	1,875		
1905.....			13,669	125,486	500	1,800		
1906.....			17,525	169,990	1,234	3,030		
1907.....			18,960	212,491	1,534	4,602		
1908.....			19,408	224,824	1,016	3,048		
1909.....			20,504	222,814	4,350	10,300		
1910.....			22,087	187,062	7,112	22,308		
1911.....			33,893	365,820	7,300	22,100		
1912.....			33,426	314,081	8,270	23,132		
1913.....			65,012	521,181	12,250	45,980		
1914.....			93,609	744,508	10,808	40,418		
1915.....			116,157	985,190	11,885	40,554		
1916.....			116,975	1,084,095	13,104	49,423		
1917.....			165,453	1,610,762	15,803	76,539		
1918.....			154,269	1,705,219	18,169	119,197		
1919.....			65,674	522,704	18,642	116,295		
1920.....	811	19,490	67,006	719,110	21,671	166,934		
1921.....	623	18,850	12,213	116,326	10,124	144,565		
1922.....	504	11,980	6,900	74,303	13,195	188,456		
1923.....	733	10,189	11,073	113,020	10,366	150,507		
1924.....	1,083	6,004	9,742	95,620	11,332	154,480	245	1,103
1925.....	3,876	19,380	7,587	58,809	14,474	205,835	160	1,380
1926.....	6,775	13,550	8,975	63,809	15,707	217,195	90	630
1927.....	5,659	11,319	25,229	198,388	16,521	236,105	105	735
1928.....	6,016	68,804	38,589	321,033	16,058	219,358	485	9,795
1929.....	5,018	64,112	42,781	350,843	16,698	229,198	300	6,000
1930.....	31,571	293,847	37,730	314,835	27,247	186,216	242	4,840
1931.....	44,957	421,097	50,107	429,457	21,916	157,083	128	2,560
1932.....	22,466	271,736	53,172	470,014	13,275	159,036	180	3,600
1933.....	50,080	485,416	57,373	510,299	10,829	190,836	118	2,360
1934.....	66,821	597,986	51,537	515,592	15,532	180,777	31	620
1935.....	44,817	343,764	67,446	634,235	15,301	171,532		
1936.....	75,598	552,681	122,132	1,033,055	16,587	177,270		
1937.....	79,884	618,028	130,913	1,154,992	15,939	163,844		
1938.....	63,009	553,307	112,395	1,044,817	13,814	144,849		
1939.....	71,485	628,151	211,278	1,668,025	18,241	170,066		
1940.....	94,260	829,589	170,630	1,298,018	23,791	229,639		
1941.....	115,608	931,554	260,023	1,702,786	34,632	360,809		
1942.....	131,258	1,079,892	303,714	1,994,891	29,868	310,824		
<b>Total.....</b>	<b>922,912</b>	<b>7,840,532</b>			<b>551,639</b>	<b>5,128,105</b>	<b>2,084</b>	<b>33,623</b>

\* From 1891 to 1927 figures show sulphur content of pyrites shipped. Since 1927 figures include sulphur in pyrites shipped plus sulphur recovered from smelter gases. 1886 to 1890 inclusive tonnage of pyrites shipped.



Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—Continued

Year	Clay Products	Cement		Lime		Sand and Gravel	
	\$	Brls.	\$	tons	\$	tons	\$
1886	1,126,057				283,755	124,865	24,226
1887	1,398,007	69,843	81,909		394,850	180,860	30,307
1888	1,494,673	50,608	35,593		339,951	260,020	38,398
1889	1,652,334	90,474	69,790		362,848	283,044	52,647
1890	2,041,101	102,216	92,405		412,308	342,158	65,518
1891	1,802,032	93,479	108,561		251,215	243,724	59,601
1892	2,177,068	117,408	147,463		411,270	297,578	85,329
1893	2,619,590	158,597	194,015		900,000	329,116	121,795
1894	2,590,230	168,142	144,637		900,000	324,656	86,040
1895	2,487,248	128,294	173,875		700,000	277,102	119,359
1896	2,227,062	149,090	201,651		650,000	224,769	80,110
1897	2,325,903	205,213	275,273		650,000	152,903	76,729
1898	2,690,974	250,209	397,580		650,000	165,954	90,498
1899	2,988,099	308,753	633,291		800,000	242,450	101,640
1900	3,195,105	417,532	662,910		800,000	197,558	101,666
1901	3,382,706	450,394	660,030		830,000	107,302	117,465
1902	3,625,489	722,525	1,127,550		822,000	159,793	119,120
1903	4,034,289	719,003	1,225,247		900,000	355,792	124,006
1904	3,841,590	967,172	1,338,239		760,000	399,809	189,803
1905	4,709,842	1,360,732	1,924,014		750,000	306,953	152,805
1906	5,072,635	2,128,374	3,179,559	183,064	1,009,177	326,550	139,712
1907	5,772,117	2,441,868	3,781,371	166,436	974,595	298,095	119,833
1908	4,500,702	2,606,333	3,709,954	126,051	712,947	298,954	161,387
1909	6,450,840	4,007,709	5,345,802	195,752	1,132,756	481,584	256,166
1910	7,629,956	4,753,075	6,412,215	204,685	1,137,079	624,821	407,974
1911	8,359,933	5,692,915	7,644,937	263,673	1,517,599	573,494	408,110
1912	10,575,869	7,132,732	9,106,556	296,654	1,844,849		1,512,090
1913	9,504,314	8,688,605	11,019,418	264,547	1,609,308		2,258,874
1914	8,871,957	7,172,480	9,187,324	246,000	1,360,628		2,505,310
1915	3,914,488	5,681,032	6,977,024	176,654	1,015,702		1,624,767
1916	4,120,805	5,369,590	6,547,728	192,246	1,091,493	8,156,207	1,838,320
1917	4,779,038	4,768,488	7,724,246	229,451	1,558,487	9,182,417	2,326,249
1918	4,883,489	3,591,481	7,676,503	222,738	1,876,025	11,262,282	2,367,018
1919	7,906,366	4,995,257	9,802,433	250,163	2,310,607	10,264,481	2,680,460
1920	10,064,929	6,651,980	14,798,070	329,957	3,818,553	11,530,795	4,201,067
1921	8,857,818	5,752,885	14,195,143	240,767	2,781,197	11,574,862	2,537,249
1922	11,498,456	6,943,972	15,438,481	314,054	3,165,005	11,666,374	3,502,935
1923	10,483,016	7,543,589	15,064,661	351,236	3,266,608	12,752,515	3,016,518
1924	9,215,077	7,498,624	13,398,411	319,793	3,178,541	11,608,500	3,181,083
1925	9,529,691	8,116,597	14,046,704	358,979	3,387,652	11,018,647	3,220,410
1926	10,357,323	8,707,021	13,013,283	413,901	3,781,484	17,112,708	4,941,434
1927	11,173,189	10,065,845	14,391,937	444,753	3,923,388	22,052,819	6,055,601
1928	12,361,718	11,023,924	16,739,163	508,889	4,534,568	28,102,017	5,809,431
1929	13,904,643	12,284,081	19,337,235	674,087	5,998,610	27,846,945	7,317,814
1930	10,553,578	11,032,538	17,713,097	490,802	4,038,698	28,547,511	8,344,913
1931	7,841,288	10,161,658	15,826,245	344,785	2,764,415	21,748,586	6,651,165
1932	3,650,218	4,498,721	6,950,721	320,650	2,394,537	11,469,942	4,480,596
1933	2,202,835	3,007,432	4,536,035	323,540	2,432,306	11,738,923	4,464,285
1934	2,680,410	3,783,225	5,997,946	368,113	2,745,797	14,854,159	4,035,477
1935	3,012,563	3,648,086	5,880,043	405,419	2,925,791	21,213,489	6,389,440
1936	3,471,027	4,508,718	6,908,192	468,401	3,335,070	22,124,160	6,921,399
1937	4,516,859	6,108,971	9,005,807	549,353	3,824,917	27,001,391	10,402,696
1938	4,536,084	5,519,102	8,241,350	486,022	3,542,652	32,223,882	12,002,554
1939	5,151,236	5,731,294	8,511,211	552,209	4,003,514	31,294,341	11,241,102
1940	6,344,547	7,559,648	11,775,345	716,730	5,194,555	31,375,415	11,759,245
1941	7,575,236	8,308,711	13,093,588	860,885	6,357,941	31,604,806	10,375,723
1942	7,081,723	9,126,041	14,365,237	884,830	6,530,839	26,349,907	9,005,414
<b>Total</b>	<b>319,149,648</b>	<b>243,382,421</b>	<b>385,639,836</b>		<b>119,647,056</b>		<b>176,396,712</b>

Table 9.—Historical Summary of Canada's Mineral Production—Dominion Totals—  
Concluded

Year	Limestone (a)		Sandstone		Granite		Marble		Slate	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1886.....		\$ 650,384			6,092	63,309	501	9,000	5,345	64,075
1887.....		581,367			21,217	142,506	242	6,224	7,357	89,000
1888.....		664,825			21,352	147,305	191	3,100	5,314	90,689
1889.....		937,000			10,107	79,624	83	980	6,935	119,160
1890.....		984,787			13,307	65,985	780	10,776	6,368	100,250
1891.....		723,004			13,635	70,056	240	1,752	5,000	65,000
1892.....		633,188			24,302	89,326	340	3,600	5,180	69,070
1893.....		1,131,006			22,521	94,393	590	5,100	7,112	90,825
1894.....		1,269,645			16,392	109,936				75,550
1895.....		1,136,603			10,238	84,838	200	2,000		58,900
1896.....		1,042,850			18,717	106,709	224	2,405		53,370
1897.....		1,037,448			10,345	61,934				42,800
1898.....		1,335,403			23,897	81,073				40,791
1899.....		1,551,886			13,418	90,542				33,406
1900.....		1,504,582				80,000				12,100
1901.....		1,837,737				155,000			715	9,980
1902.....		2,127,055				210,000				19,200
1903.....		2,230,939				200,000			5,510	22,040
1904.....		2,114,315				150,000			5,277	23,247
1905.....		2,072,758				226,305				21,568
1906.....		2,084,056				278,419				24,446
1907.....		1,832,550			151,136	194,712			4,335	20,056
1908.....		1,681,293				282,320		125,000	2,950	13,496
1909.....		2,139,691		374,179		454,824		158,441	4,000	19,000
1910.....		2,249,576		502,148		739,516		158,779	3,959	18,492
1911.....		2,594,926		451,183		1,119,865		162,783	1,833	8,248
1912.....		2,762,936		329,352		1,373,119		260,764	1,804	8,939
1913.....		3,204,091		396,782		1,653,791		249,975	1,432	6,444
1914.....		2,672,781		487,140		2,176,602		132,533	1,075	4,837
1915.....		2,312,081		249,336		1,525,553		158,027	397	2,039
1916.....		2,224,091		146,244		1,247,267		118,810	1,262	6,223
1917.....		2,283,659		261,256		639,412		55,820	1,422	7,789
1918.....		2,342,403		102,750		590,871		550	833	5,124
1919.....		3,074,815		86,577		850,563		213,082	1,632	10,853
1920.....		5,665,693		165,149		1,508,916		240,593		14,200
1921.....	3,322,024	5,155,046	28,426	78,036	319,398	937,894	1,650	172,720		22,325
1922.....	3,152,124	4,175,941	25,221	80,908	457,925	1,486,259	1,912	231,894	1,899	14,871
1923.....	3,687,663	4,475,921	22,766	66,547	398,432	1,150,303	2,473	201,518	1,636	17,289
1924.....	4,249,061	4,831,684	94,603	240,273	419,971	1,013,345	4,379	322,455		
1925.....	4,643,853	5,049,563	87,502	145,757	971,718	2,014,535	3,046	254,022		
1926.....	5,283,745	5,657,328	44,127	112,347	1,064,423	1,574,627	5,295	521,572		
1927.....	6,438,379	7,145,917	132,790	232,793	730,009	1,383,557	5,209	503,037		
1928.....	6,949,420	7,267,437	100,951	223,236	1,195,810	2,306,946	7,753	414,682		
1929.....	7,720,840	8,172,681	159,407	398,974	1,728,165	3,080,815	14,012	414,062		
1930.....	7,732,675	8,075,616	384,610	789,060	1,851,132	3,379,951	26,089	809,582	150	3,000
1931.....	6,262,430	6,305,538	924,101	1,332,883	1,190,887	2,763,050	20,442	668,713	250	5,000
1932.....	3,687,241	3,227,715	500,480	349,458	490,822	1,110,582	12,379	250,706	250	3,750
1933.....	2,572,911	2,142,516	99,043	108,562	256,723	679,585	10,897	65,913	250	3,750
1934.....	3,747,779	3,157,832	115,169	143,283	200,285	781,739	13,783	69,475	738	4,802
1935.....	3,631,665	3,253,573	342,824	838,005	326,354	1,126,287	15,975	85,369	1,129	4,329
1936.....	3,731,548	3,143,872	285,508	495,856	941,743	1,319,313	22,866	169,098	1,247	5,414
1937.....	5,542,806	4,673,942	238,165	343,871	1,135,099	1,827,433	21,642	88,595	900	5,519
1938.....	4,288,507	3,864,619	101,854	218,405	705,307	1,379,417	19,375	87,274	979	6,311
1939.....	4,149,589	3,817,551	176,265	331,830	1,102,305	2,119,501	14,124	200,054	1,149	6,760
1940.....	6,108,591	5,126,075	176,475	305,543	1,147,747	1,884,410	13,739	75,409	1,113	7,522
1941.....	7,151,049	6,057,727	189,885	305,528	600,922	1,498,786	17,649	126,081	1,296	12,562
1942.....	6,442,583	6,468,525	153,865	226,810	1,366,425	1,946,240	13,824	88,209	1,369	16,801
<b>Total.....</b>		<b>*144,773,362</b>		<b>*10,906,061</b>		<b>53,778,166</b>		<b>7,903,824</b>		<b>1,411,812</b>

\* Total value from 1909 to 1942.

(a) Exclusive of limestone used in making cement and lime.

Table 10.—Total (Cumulative) Recorded Production in Canada of Specified Metals and Minerals to December 31, 1942

		Quantity	Value
			\$
Gold.....	(a) fine ounces	85,723,542	2,431,280,820
Silver.....	(b) fine ounces	849,948,250	480,857,059
Copper.....	(c) pounds	8,000,120,793	1,004,753,176
Nickel.....	(d) pounds	3,619,405,648	995,912,410
Lead.....	(b) pounds	7,818,280,620	338,057,085
Zinc.....	(f) .....	.....	232,418,202
Cobalt.....	(e) pounds	34,205,142	33,501,404
Platinum metals.....	(g) fine ounces	2,811,548	.....
Coal.....	(h) tons	651,463,000	1,968,406,583
Asbestos.....	(i) tons	8,192,478	314,769,497

NOTE.—The total value of production by the entire Canadian mining industry from 1886 to the end of 1942 totalled \$9,751,982,296.

(a) Since 1858; (b) since 1887; (c) since 1886; (d) since 1889; (e) since 1904; (f) since 1898; (g) since 1920. Production data prior to 1920 were not included owing to some doubt existing as to origin of certain metals recovered in United States plants (h) since 1785 (i) since 1880.

Table 11.—Values of the Mineral Production of Canada, by Provinces, since 1932

Year	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	\$	\$	\$	\$	\$
1932.....	16,201,279	2,223,505	25,638,466	85,910,030	9,058,365
1933.....	16,966,183	2,107,682	28,141,482	110,205,021	9,026,951
1934.....	23,310,729	2,156,151	31,209,945	145,565,871	9,776,934
1935.....	23,183,128	2,821,027	39,124,606	158,034,269	12,052,417
1936.....	26,672,278	2,587,791	49,736,919	184,532,892	11,315,527
1937.....	30,314,188	2,703,643	65,190,215	230,042,517	15,751,645
1938.....	26,253,645	3,802,595	68,965,594	219,801,994	17,173,002
1939.....	39,746,200	3,949,433	77,335,998	232,519,948	17,137,930
1940.....	33,318,587	3,435,916	80,313,491	261,483,349	17,828,522
1941.....	32,599,867	3,690,375	99,651,044	267,435,727	16,689,807
1942.....	32,783,165	3,609,168	104,300,010	259,114,946	14,345,946

  

Year	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories (*)
	\$	\$	\$	\$	\$
1932.....	1,681,728	21,174,061	27,326,173	1,993,195	21,423
1933.....	2,477,425	19,702,953	30,794,504	2,041,223	279,729
1934.....	2,977,061	20,228,851	41,206,965	1,628,879	199,604
1935.....	3,816,943	22,289,681	48,692,050	1,302,308	541,634
1936.....	6,970,397	23,305,729	54,407,036	2,220,372	775,834
1937.....	10,271,463	25,597,117	73,555,798	3,784,528	994,518
1938.....	7,782,847	28,966,272	64,540,130	3,959,570	1,614,076
1939.....	8,794,090	30,691,617	65,216,745	4,961,321	3,248,777
1940.....	11,505,858	35,092,337	74,134,485	4,118,333	2,594,157
1941.....	15,020,555	41,364,385	70,841,180	3,117,992	3,860,298
1942.....	20,578,749	47,359,831	77,247,932	3,453,568	3,976,267

\* Values of pitchblende products not included in 1942.



## DOMINION BUREAU OF STATISTICS

Table 12.—Historical Summary of the Mineral Production of Nova Scotia

—	Antimony		Arsenic		Barite		Clay products	Coal	
	pounds	\$	pounds	\$	tons	\$	\$	tons	\$
1866								(c) 2,640,416	4,139,714
1867								596,332	931,709
1868								574,100	897,041
1869								647,727	1,012,074
1870								719,211	1,123,767
1871								754,827	1,179,417
1872								1,003,806	1,568,446
1873								1,108,245	1,731,632
1874								872,654	1,520,240
1875								930,613	1,454,084
1876								837,755	1,308,991
1877								880,215	1,375,339
1878								875,994	1,368,741
1879								866,220	1,353,469
1880								1,177,669	1,840,108
1881								1,280,050	2,000,079
1882								1,524,947	2,382,730
1883								1,578,609	2,466,576
1884								1,543,829	2,412,233
1885							50,630	1,547,090	2,418,735
1886						43,746	1,698,018	2,653,152	
1887							1,858,596	2,904,057	
1888							1,942,231	3,034,735	
1889							60,520	1,918,827	2,998,167
1890						54,755	2,181,033	3,407,864	
1891							93,611	2,267,919	3,543,624
1892							•	2,159,389	3,374,046
1893							•	2,444,924	3,820,194
1894							•	2,527,982	3,949,070
1895							•	2,225,145	3,476,790
1896					145	715	•	2,508,579	3,919,635
1897					571	3,060	•	2,493,554	3,896,179
1898							1173,290	2,563,180	4,004,970
1899							1110,695	3,148,822	5,622,808
1900							1108,210	3,623,536	8,098,250
1901					653	3,842	1103,695	4,158,008	6,496,082
1902					1,096	3,957	1152,025	5,161,316	9,216,636
1903					1,163	3,931	1150,100	5,053,338	10,095,246
1904					1,382	3,702	1157,762	5,506,241	9,993,288
1905					3,360	7,500	190,145	5,046,583	10,083,184
1906					4,000	12,000	160,506	6,220,505	11,108,044
1907					1,344	3,000	125,560	6,354,133	12,764,999
1908					4,312	19,021	117,833	6,652,539	13,364,476
1909					179	1,120	188,185	5,652,089	11,354,643
1910							204,782	6,431,142	12,919,705
1911					50	400	274,240	7,004,420	14,071,379
1912					464	5,104	272,053	7,783,888	17,374,750
1913					641	6,410	232,272	7,080,073	17,812,663
1914					612	6,169	266,204	7,370,924	16,452,955
1915	(b) 2,576,000	77,300			550	6,875	221,881	7,463,370	16,659,308
1916					1,368	19,393	238,470	6,912,140	18,514,602
1917					3,490	54,027	331,542	6,327,091	19,410,737
1918					580	9,145	303,515	5,818,562	21,095,470
1919					468	8,154	432,900	5,720,373	22,078,726
1920					751	22,083	511,114	6,429,291	32,238,129
1921					270	9,567	361,761	5,734,928	27,782,050
1922					289	9,537	431,618	5,569,072	24,629,921
1923			45,000	2,250	200	4,368	413,974	6,597,838	28,170,458
1924			381,092	15,244	151	3,308	1359,288	5,557,441	22,280,539
1925					95	2,259	1425,710	3,842,978	15,826,680
1926					100	2,307	362,067	6,747,477	29,845,226
1927			35,000	700	56	1,268	416,417	7,071,870	27,164,671
1928					127	2,847	496,577	6,743,504	27,427,556
1929					105	2,341	653,157	7,056,133	28,071,956
1930					66	1,484	495,333	6,252,552	24,528,880
1931					16	363	467,126	4,955,593	19,011,720
1932							172,557	4,084,581	15,167,793
1933							125,500	4,557,590	15,069,793
1934							157,158	6,341,625	21,860,693
1935							270,478	5,822,075	20,391,227
1936							355,254	6,649,102	22,973,281
1937	(a) 48,163	7,394					406,846	7,260,954	25,640,819
1938	(a) 24,560	2,200					340,253	6,236,417	22,523,802
1939	(a) 1,200	148					339,952	7,051,176	25,611,271
1940					25	162	490,543	7,848,921	28,766,195
1941					6,561	72,468	520,435	7,387,792	28,446,204
1942					17,750	172,060	618,441	7,204,852	29,116,118
Total		87,042	461,092	18,194	52,999	484,847	14,107,281	320,539,753	924,526,966

\* No production recorded, or production not available by provinces.

(a) Metal content of ore.

(b) Ore.

(c) From 1785 to 1866.

Table 12.—Historical Summary of the Mineral Production of Nova Scotia—Continued

	Copper		Diatomite		Gold		Grindstones		Gypsum	
	pounds	\$	tons	\$	fine oz.	\$	tons	\$	tons	\$
1861.....					6,863	141,871				
1862.....					13,180	272,448				
1863.....					18,863	390,349				
1864.....					24,011	496,357				
1865.....					23,776	491,491				
1866.....					25,763	532,563				
1867.....					19,377	400,555				
1868.....					16,855	348,427				
1869.....					18,740	387,392				
1870.....					18,139	374,972				
1871.....					12,352	255,349				
1872.....					11,180	231,122				
1873.....					8,623	178,244			(a) 67,830	68,164
1874.....					10,576	218,629			86,065	86,193
1875.....					11,300	233,585			87,720	87,590
1876.....					15,925	329,205			106,950	93,867
1877.....					11,864	245,253			88,631	76,695
1878.....					12,980	268,328			95,623	71,353
1879.....					12,472	257,823			125,685	111,833
1880.....					10,147	209,755			119,303	100,284
1881.....					13,307	275,090			133,426	121,070
1882.....					14,571	301,207			145,448	132,834
1883.....					15,168	313,554			107,653	100,446
1884.....					20,945	432,971			81,887	77,898
1885.....					22,038	455,504	1,765	24,050	123,753	118,110
1886.....					20,009	413,631	1,710	25,020	116,346	116,346
1887.....					21,137	436,939	1,971	20,400	124,818	120,429
1888.....					24,673	510,029	712	7,128	165,025	142,850
1889.....					22,978	474,990	850	8,536	181,285	154,972
1890.....					21,841	451,503	1,980	10,800	161,934	153,955
1891.....					18,805	389,965	2,462	27,610	197,019	170,021
1892.....					18,436	381,095	2,112	21,000	152,754	144,111
1893.....					18,834	389,338	2,128	16,000	168,300	147,644
1894.....					21,919	453,119	1,400	14,000	156,809	133,929
1895.....			644	9,900	23,876	493,568	1,450	14,500	136,590	111,251
1896.....			15	150	27,195	562,165	1,407	17,500	155,572	121,754
1897.....			1,017	16,600	26,054	538,590	1,422	12,350	132,080	106,610
1898.....			1,000	15,000	29,876	617,004	1,378	10,300	120,754	102,055
1899.....			336	1,950	28,055	598,553	1,411	12,600	138,712	108,828
1900.....			850	15,300	26,450	546,963	358	3,200	170,100	130,947
1901.....			1,052	16,470	30,348	627,357	1,074	8,118	206,087	181,425
1902.....			835	16,700	25,633	527,806	1,337	9,562	189,427	173,881
1903.....			320	6,400	10,362	214,209	1,020	7,332	218,580	153,600
1904.....			300	3,600	13,707	283,353	1,020	10,200	272,252	298,248
1905.....					12,223	252,676	1,023	9,680	333,312	345,414
1906.....			30	225	13,675	282,686	551	4,480	357,411	380,859
1907.....			30	185	11,842	244,799	473	4,803	234,455	230,433
1908.....					10,193	210,711	312	3,204	345,682	364,379
1909.....			22	134	7,928	163,801	3,586	43,700	400,455	458,638
1910.....			38	230	7,781	160,854	380	3,382	353,999	406,457
1911.....			620	12,138	4,385	90,638	374	3,760	376,082	481,493
1912.....			650	13,000	2,174	44,935	350	4,900	404,801	479,515
1913.....			317	12,118	2,994	60,031	350	5,270	303,155	368,931
1914.....			620	12,138	6,636	137,180	285	5,300	298,864	339,857
1915.....			600	18,000	4,562	94,305	273	5,800	238,212	278,160
1916.....			500	12,500	1,176	24,310	375	9,875	215,472	301,261
1917.....			565	11,300	850	17,371	283	8,440	260,661	573,752
1918.....			200	8,600	690	14,263	211	8,990	206,831	511,883
1919.....			341	11,208	418	8,641	183	6,990	332,404	589,148
1920.....			219	5,781	1,128	21,598	102	3,692	341,705	747,034
1921.....			130	3,250	680	13,580	256	7,906	441,752	915,840
1922.....			33	838	1,047	21,043	338	12,525	551,230	1,070,408
1923.....					1,626	33,612	439	16,723	678,107	1,187,918
1924.....					1,678	34,687	311	15,130	820,438	1,512,015
1925.....					3,151	65,137	11	220	1,013,257	1,830,243
1926.....			266	6,650	1,290	26,097			948,895	1,152,160
1927.....			208	4,160	2,687	55,545	6	110	827,063	982,282
1928.....			254	5,080	1,272	26,295	6	110	707,817	878,487
1929.....			398	7,906	460	9,920			341,508	398,861
1930.....			1,484	29,679	984	22,634	12	433	315,948	363,528
1931.....			1,438	28,760	1,382	39,525	21	868	378,287	488,044
1932.....			1,747	34,940	3,525	121,613	50	2,006	454,703	523,216
1933.....			1,320	52,800	9,376	329,942	50	2,242	729,019	808,294
1934.....			666	26,660	11,900	418,959	70	4,415	926,709	978,288
1935.....			565	11,300	19,918	406,931	37	7,006	870,856	908,383
1936.....	770,307	73,855	481	15,392	29,943	1,082,170	152	5,616	1,298,618	1,340,830
1937.....	180,609	23,620	384	13,480	22,219	855,432	53	2,378	1,278,204	1,302,347
1938.....			241	7,780	19,170	738,045			1,395,172	1,517,297
1939.....			238	7,310	12,989	500,076			394,216	512,762
1940.....			218	6,541						
1941.....										
1942.....										
Total.....	2,229,095	225,561	21,552	492,188	1,082,764	24,854,292	40,286	508,938	24,129,028	29,931,670

\* No production recorded, or data not available by provinces.

(a) 1874-1885 inclusive—exports.

NOTE.—In 1921 there were produced 16 tons of feldspar, valued at \$117. In 1940 there were produced 17 tons of fluor spar valued at \$365; in 1941 there were 300 tons at \$3,900 and in 1942, 300 tons at \$6,584.

Table 12.—Historical Summary of the Mineral Production of Nova Scotia—Continued

	Iron Ore		Lime		Manganese Ore and Bog Manganese		Quartz	
	tons	\$	bushels	\$	tons	\$	tons	\$
1876	15,274							
1877	16,879							
1878	36,600				97			
1879	29,889				127	5,505		
1880	51,193				145	7,170		
1881	39,843				223	7,931		
1882	42,135				231			
1883	52,410				205			
1884	54,885				150	12,462		
1885	48,129				3024			
1886	44,388				3534			
1887	43,532		16,000	3,800	427			
1888	42,611		49,400	11,442	308	21,260		
1889	54,161		29,450	6,480	106	6,460		
1890	49,206				67	3,947		
1891	53,649		217,944	44,565				
1892	78,258							
1893	102,201							
1894	89,379							
1895	83,702							
1896	58,810				108	6,348		
1897	23,400				1234	3,975		
1898	19,079				151	1,166		
1899	28,000				11	325		
1900	18,940				67	2,328		
1901	18,619							
1902	16,172							
1903	40,335							
1904	61,293							
1905	84,952							
1906	97,820	151,386	50,000	13,600				
1907	89,839	137,161	45,000	16,000				
1908	11,802	17,620	51,068	16,102				
1909			57,730	16,729				
1910	18,134	51,330	55,750	13,490				
1911	22	50	639,200	130,555	54	300		
1912	30,857	168,877	709,596	145,121	75	1,875		
1913	20,436	21,049	854,812	171,339				
1914			517,722	103,748	28	1,120		
1915			915,086	183,017	51	5,760		
1916			911,534	182,506	646	70,371		
1917			986,106	197,344	158	14,836		
1918	130		748,314	149,663				
1919			366,543	73,309	45	3,600		
1920			201,500	40,300	62	4,140		
1921			25,914	6,085	68	3,400		
1922					73	2,044		
1923			42,370	7,199	200	1,400		
1924			2,229	936				
1925			8,243	3,464			1,352	6,760
1926			453,797	59,777			8,333	29,018
1927			873,200	100,254			4,834	16,721
1928			1,032,971	175,876			7,424	28,022
1929			1,200,029	154,187			11,845	31,388
1930			888,971	113,250	4	60	8,057	18,494
1931			526,571	79,418	60	2,400	3,116	6,836
1932			186,657	35,534				
1933			111,829	30,160			1,017	1,447
1934			254,857	67,954			7,292	12,107
1935			323,743	82,698			9,640	13,978
1936			447,543	119,230			6,764	10,819
1937			505,343	150,115			11,732	14,078
1938			352,886	110,648			4,701	8,415
1939			422,314	129,511	4	88	10,547	18,927
1940			628,971	184,094	152	4,315	8,755	15,670
1941			598,314	139,577			11,477	24,100
1942			624,286	226,334	61	91	10,708	23,557
Total							127,594	280,337

Nova Scotia had a production of lead in 1936 which amounted to 1,901,712 pounds valued at \$74,414 and in 1937 there were produced 418,086 pounds valued at \$21,364 and in 1939, 2,545,122 pounds valued at \$80,655.

In 1917 and 1918 there was a small production of molybdenite—some 274 pounds worth \$301.



Table 12.—Historical Summary of the Mineral Production of Nova Scotia—Continued

	Salt		Sand and Gravel		Silica Brick		Silver	
	tons	\$	tons	\$	M	\$	fine oz.	\$
1914.....								
1915.....			388,049	71,821				
1916.....			175,571	84,631				
1917.....			225,457	129,620				
1918.....								
1919.....	174	2,188						
1920.....	3,023	32,000						
1921.....	2,638	23,269						
1922.....	5,053	54,666	154,021	54,974				
1923.....	4,480	39,151	203,416	55,928				
1924.....	4,651	37,469	306,873	60,849			44	29
1925.....	6,508	49,889	286,614	55,362			86	59
1926.....	8,165	68,781	230,307	52,952	1,358	64,461	112	70
1927.....	14,391	102,590	812,978	522,723	1,238	50,978	125	70
1928.....	19,604	118,342	296,266	111,103	1,627	69,179	77	45
1929.....	27,819	157,662	332,599	151,368	2,385	93,207	132	70
1930.....	23,058	130,226	525,683	310,407	2,040	78,259	67	26
1931.....	27,718	143,761	403,858	198,757	621	22,044	48	14
1932.....	31,897	150,708	423,487	136,677			47	15
1933.....	34,278	161,889	282,228	126,031	453	15,834	104	39
1934.....	42,886	191,917	256,572	114,597	2,159	71,215	321	152
1935.....	38,701	161,659	1,423,557	685,973	1,968	73,218	372	241
1936.....	38,774	183,915	1,947,471	†941,366	1,922	70,570	107,642	48,576
1937.....	47,865	216,401	2,992,429	1,457,266	2,926	121,146	26,990	12,113
1938.....	44,950	194,759	2,077,378	1,013,266	1,193	49,811	988	430
1939.....	47,885	213,029	2,139,427	1,225,827	1,890	75,212	173,877	70,399
1940.....	42,495	220,328	1,440,140	867,490	2,809	120,125	725	277
1941.....	54,007	307,637	749,441	332,531	2,828	119,511	673	257
1942.....	50,199	317,798	775,795	371,970	3,090	142,511	446	188
<b>Total.....</b>	<b>621,209</b>	<b>3,286,034</b>			<b>36,507</b>	<b>1,237,281</b>		

† Includes production in Prince Edward Island.

Table 12.—Historical Summary of the Mineral Production of Nova Scotia—Concluded.

	Stone								Zinc		Other Pro- ducts
	Granite		Limestone		Marble		Sandstone				
	tons	\$	tons	\$	tons	\$	tons	\$	pounds	\$	\$
1908.....					(a)	(a)					216,161
1909.....		5,832		161,922				21,850			71,715
1910.....		18,291		192,019				16,425			54,981
1911.....		24,258		245,216				23,440			68,735
1912.....		28,041		275,944				20,645			53,705
1913.....		20,302		258,719				62,490			101,196
1914.....		65,727		94,230				61,124			86,121
1915.....		79,636		255,024				33,264			
1916.....		164,870		263,803				30,625			82,527
1917.....		111,329		433,987				24,005			22,000
1918.....		(b)	(b)	(b)	(b)	(b)	(b)	(b)			119,229
1919.....		(b)	(b)	(b)	(b)	(b)	(b)	(b)			145,099
1920.....		(b)	(b)	(b)	(b)	(b)	(b)	(b)			226,121
1921.....	11,822	47,101	44,269	55,436			2,832	14,065			70,028
1922.....	12,725	44,489	68,122	56,936			7,108	18,067			10,028
1923.....	17,296	54,892	118,222	102,750			3,164	19,448			4,429
1924.....	7,554	33,021	57,069	56,323			2,912	22,490			
1925.....	14,961	54,524	84,939	73,717			2,225	6,445			
1926.....	4,884	41,738	82,753	97,255			4,678	11,799			
1927.....	611	36,770	68,294	75,292			3,546	8,745			
1928.....	39,360	102,295	72,350	79,320	160	2,975	9,298	29,185			
1929.....	76,742	98,357	175,981	199,384	132	2,515	11,851	75,966			
1930.....	7,856	38,107	79,941	88,545			64,666	193,664			
1931.....	24,895	72,009	21,684	69,415			36,602	84,208			
1932.....	3,635	18,461	9,974	27,990			21,052	40,856			
1933.....	8,146	36,675	21,514	43,911			11,790	16,043			
1934.....	325	12,300	105,620	135,962			17,123	23,055			
1935.....	525	23,800	8,988	19,188			202,952	578,844			
1936.....	66,507	99,855	20,860	36,365			167,205	239,109	6,180,219	204,874	
1937.....	16,430	50,966	24,308	35,914			137,893	102,218	5,485,550	268,902	
1938.....	5,765	31,768	20,957	34,696			36,940	80,480			
1939.....	886	20,809	17,239	33,941			31,711	79,167	9,152,856	280,901	
1940.....	87,975	155,458	24,160	46,717			69,316	111,469	4,755,502	162,210	
1941.....	410	30,537	46,973	69,501			66,219	169,307			
1942.....	429	41,985	185,232	645,680			43,856	76,502			
Total.....									25,574,127	916,887	

(a) Included with other products.

(b) Not shown by kinds 1918-1920. Total values for all kinds of stone for those years were: 1918, \$478,721; 1919, \$413,194 and 1920, \$420,175.

In 1918 tungsten concentrates amounting to 1,063 pounds valued at \$372 were produced in Nova Scotia. In 1940, 8,586 pounds valued at \$5,226 and in 1942, 4,300 pounds worth \$3,967.

Table 12.—Historical Summary of the Mineral Production of New Brunswick  
—Continued

—	Clay Products	Coal (a)		Graphite		Grindstones (b)		Gypsum		Iron Ore	
	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1875.....								(c) 5,420	5,420		
1876.....								4,925	6,616		
1877.....								5,030	5,030		
1878.....								16,335	16,435		
1879.....								8,791	8,791		
1880.....								10,375	10,987		
1881.....								10,310	15,025		
1882.....								15,597	24,581		
1883.....								20,242	35,567		
1884.....								21,800	32,751		
1885.....								15,140	27,730		
1886.....	33,218			500	4,000	2,255	22,495	32,421	48,632		
1887.....	46,541	10,040	23,607	300	2,400	3,582	38,988	29,102	29,216		
1888.....	34,364	5,730	11,050	150	1,200	3,793	30,729	44,369	48,764		
1889.....	93,425	5,673	11,733	200	1,600	2,692	23,735	40,866	49,130		
1890.....	70,430	7,110	13,850	150	1,200	4,034	33,804	39,024	30,986		
1891.....	47,071	5,422	11,030	260	1,560	2,499	22,787	36,011	33,996		
1892.....	52,853	6,768	9,375			2,821	23,577	39,709	65,707		
1893.....		6,200	9,837			2,488	17,379	36,916	41,846		
1894.....		6,460	10,264			1,629	16,717	52,992	48,200		
1895.....		0,500	14,250	150	900	2,075	17,932	66,949	63,839		
1896.....		7,500	11,250	45	315	2,203	18,810	67,137	59,024		
1897.....		6,000	9,000	89	890	3,165	24,840	82,658	118,116		
1898.....	113,400	6,160	9,240	260	2,600	3,513	32,425	86,083	121,704		
1899.....	85,600	10,528	15,792			3,133	32,965	116,792	151,296		
1900.....	80,920	10,000	15,000	120	1,440	4,128	40,850	112,294	145,450		
1901.....	50,229	17,630	51,857	240	2,880	4,223	42,490	121,595	189,709		
1902.....	150,945	18,795	39,680	200	2,400	3,559	36,000	124,041	170,153		
1903.....	150,675	16,000	40,000			4,201	38,740	119,182	172,089		
1904.....	150,830	9,112	18,224	60	480	3,620	35,450	120,991	187,524		
1905.....	45,010	29,400	58,800	60	480	4,520	52,175	161,553	232,586		
1906.....	49,220	34,076	68,152			4,340	50,134	131,246	250,960		
1907.....	57,377	34,584	77,814			4,803	55,896	118,106	213,638		
1908.....	75,513	60,000	135,000	40	360	3,370	43,325	81,620	191,312		
1909.....	65,370	49,029	98,496			3,993	51,460	98,716	226,975		
1910.....	56,475	55,455	110,910			3,586	43,700	90,236	215,579	5,336	11,910
1911.....	38,000	55,781	111,562			4,186	49,560	93,205	115,044	31,120	69,404
1912.....	54,910	44,780	89,560			4,038	48,330	82,757	185,821	71,520	127,716
1913.....	62,269	70,311	160,637			4,487	46,425	103,954	278,395	80,416	153,820
1914.....	69,502	98,049	241,075			3,626	49,234	79,083	200,680	4,775	10,841
1915.....	35,780	127,391	309,612			2,295	30,468	74,501	184,929	3,683	8,261
1916.....	42,881	143,540	388,016			3,205	46,982	30,546	153,064		
1917.....	51,304	189,095	708,010			2,148	35,879	38,566	191,631		
1918.....	39,055	268,212	1,331,710			2,816	75,005	27,225	214,114		
1919.....	52,941	100,377	735,386			1,737	51,810	42,409	315,656		
1920.....	73,481	171,610	1,091,440			2,233	79,699	49,505	428,183		
1921.....	66,000	187,192	920,666			1,098	57,077	54,030	360,220		
1922.....	75,425	287,513	1,107,643			903	40,050	82,462	517,698		
1923.....	62,587	276,617	1,196,772			1,758	72,177	104,740	594,680		
1924.....	74,994	217,121	932,185			2,113	99,299	86,738	476,804		
1925.....	69,473	208,012	815,367			1,642	79,661	71,745	408,917		
1926.....	75,851	173,111	710,245			1,684	90,975	59,546	468,411		
1927.....	87,185	203,950	885,038			1,860	97,197	85,293	524,550		
1928.....	72,192	207,738	869,104			1,609	80,451	75,033	501,252		
1929.....	160,006	218,706	909,160			1,731	103,514	70,482	485,982		
1930.....	162,536	209,349	864,118			495	35,689	82,674	513,677		
1931.....	143,348	182,181	743,190			299	12,308	58,957	451,204		
1932.....	68,151	212,695	794,168			250	11,802	38,019	297,520		
1933.....	46,917	312,303	1,041,744			277	12,051	30,391	88,500		
1934.....	59,897	314,750	1,026,345			535	27,091	30,398	104,709		
1935.....	62,478	346,024	1,129,019			456	21,175	30,796	105,960		
1936.....	102,526	368,618	1,190,032			412	17,982	38,470	123,560		
1937.....	123,876	364,714	1,180,811			288	12,139	36,906	131,727		
1938.....	123,625	342,238	1,133,346			175	9,192	48,418	159,203		
1939.....	129,985	468,421	1,566,359			152	9,662	29,765	134,286		
1940.....	171,745	547,094	1,963,012			255	12,000	52,218	192,980		
1941.....	193,643	523,344	2,021,394			188	11,500	56,172	150,530		
1942.....	246,041	435,203	1,826,403			216	10,000	36,623	111,316		
<b>Total.....</b>		<b>8,369,191</b>	<b>30,871,153</b>	<b>2,824</b>	<b>24,705</b>	<b>133,488</b>	<b>2,283,490</b>	<b>4,077,161</b>	<b>12,435,978</b>	<b>202,850</b>	<b>382,012</b>

(a) For the years 1919-1942 the tonnage shown is the total output from all mines. For previous years the figures given include only sales, colliery consumption and coal used by the operators.

(b) Includes pulpstones, etc.

(c) From 1875 to 1885, inclusive, the figures shown are exports.



Table 12.—Historical Summary of the Mineral Production of New Brunswick  
—Continued

—	Lime		Manganese Ore		Manganese Bog		Mineral Waters	Natural Gas		Petroleum	
	bushels	\$	tons	\$	tons	\$	\$	M cu. ft.	\$	barrels	\$
1886	316,380	58,120									
1887	478,410	103,463									
1888	440,225	82,993									
1889	1,005,685	162,157									
1890	814,662	136,586									
1891	67,430	15,285									
1892	(a)	(a)									
1893											
1894											
1895											
1896											
1897											
1898											
1899											
1900											
1901											
1902											
1903											
1904											
1905											
1906	405,450	94,290									
1907	554,330	124,786									
1908	155,748	34,202					14,894				
1909	697,466	154,151					14,003				
1910	470,050	105,593					16,000			1,485	1,826
1911	613,728	132,897					19,843			2,461	3,019
1912	616,835	133,742						173,903	36,549	2,679	3,799
1913	392,985	98,841						828,603	174,147	2,111	3,762
1914	391,730	102,980						425,826	54,249	1,725	2,742
1915	369,117	93,797	150	3,600				430,692	60,383	1,020	1,423
1916	424,113	104,635	(b)	(b)				610,118	79,628	1,345	2,663
1917	532,251	171,248						796,775	103,735	2,341	5,460
1918	482,548	221,935						792,396	107,842	3,006	7,402
1919	468,533	223,193						682,890	120,510	4,225	13,141
1920	701,859	365,030						682,502	130,506	5,148	19,963
1921	562,447	203,084						708,743	139,375	7,479	33,022
1922	560,834	187,895						753,898	148,040	7,778	32,732
1923	329,548	143,814						640,300	126,068	8,826	35,642
1924	208,180	108,890	584	4,088				599,972	113,577	5,561	21,313
1925	202,106	92,216						639,235	122,394	5,376	18,756
1926	477,226	196,477						648,316	128,300	10,544	29,940
1927	343,111	148,321						630,755	124,637	18,244	41,748
1928	321,743	130,784			385	2,237		660,981	324,344	8,043	21,391
1929	443,371	174,553			300	1,800		678,456	333,002	7,499	19,909
1930	357,743	135,304	269	1,296	275	1,650		661,975	325,751	6,758	17,378
1931	321,171	127,054	57	493	77	462		655,891	323,184	6,577	15,461
1932	330,029	109,184						662,452	326,191	6,408	14,332
1933	481,400	134,786						618,033	302,706	8,835	18,111
1934	450,057	126,409						623,601	306,005	11,106	22,277
1935	464,914	124,775	100	800				615,454	303,886	12,954	18,230
1936	509,771	128,016	221	1,598				606,246	298,819	17,112	24,075
1937	568,542	150,362	85	817				576,671	283,922	18,089	25,496
1938	435,629	119,550						577,492	284,689	19,276	27,246
1939	533,571	151,898	392	3,600				606,382	292,403	22,799	32,082
1940	606,743	175,407						616,041	300,543	22,167	31,220
1941	621,486	180,133						653,542	317,437	31,359	44,102
1942	640,771	197,481	374	8,841				619,380	299,688	28,089	39,467
Total								19,477,521	6,392,510	318,428	649,130

(a) No record 1892-1905.

(b) Included with other products.

Table 12.—Historical Summary of the Mineral Production of New Brunswick  
—Concluded

—	Sand and Gravel		Granite		Limestone		Marble		Sandstone		Other Products
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	\$
1908.....							(b)	(b)			85,510
1909.....				11,541		30				30,609	4,200
1910.....				6,880		315				51,793	
1911.....				37,994		110				35,537	
1912.....				22,317						68,260	
1913.....				32,945						70,787	22,868
1914.....				24,525						236,647	25,095
1915.....	323,192	19,014		8,335						145,177	
1916.....	803,014	120,988		59,325		6,800				46,032	69,073
1917.....	518,401	47,062		61,170		22,875				27,105	
1918.....			(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	39,217
1919.....			(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	73,933
1920.....	(b)	(b)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	50,472
1921.....	239,102	24,171	14,325	92,790					800	4,500	
1922.....	448,322	49,509	11,389	95,352					638	9,378	
1923.....	608,528	94,634	11,509	143,473	10,689	21,881			250	629	
1924.....	141,897	23,999	4,921	80,812	14,308	33,299					
1925.....	70,156	12,331	9,027	89,731	16,364	35,012					
1926.....	70,931	11,360	3,824	66,423	15,054	30,722			230	2,400	
1927.....	388,066	118,768	1,634	53,695	26,124	56,146			3,150	11,250	
1928.....	491,471	54,183	5,485	66,435	30,772	57,650			10,075	18,696	
1929.....	525,857	46,167	5,142	91,610	20,710	33,300			1,500	80,000	
1930.....	357,551	41,303	46,209	139,212	40,262	97,841			25,141	47,816	
1931.....	183,475	18,140	2,583	148,881	35,378	73,398			24,364	119,712	
1932.....	569,150	447,239	4,369	102,699	10,707	31,554			1,729	20,065	
1933.....	496,961	331,497	1,792	82,771	14,262	41,904			660	6,695	
1934.....	568,064	322,238	5,984	76,793	30,356	78,441			1,578	5,048	
1935.....	1,813,206	845,981	31,091	103,275	53,213	86,001			840	19,447	
1936.....	970,945	597,797	1,485	73,784	53,781	55,564			4,165	4,410	
1937.....	1,136,033	715,652	936	74,961	51,929	55,600			4,603	8,480	
1938.....	3,833,540	1,825,383	954	71,600	7,985	19,855			4,340	28,870	
1939.....	3,373,303	1,363,051	1,492	72,005	52,505	142,927			21,412	51,175	
1940.....	944,033	278,710	1,326	69,833	159,812	206,916			5,015	33,550	
1941.....	962,483	423,772	1,520	63,184	131,941	274,000			4,678	10,680	
1942.....	923,020	540,541	904	29,334	82,623	281,296			4,350	10,650	

(a) Not recorded by kinds.—Total stone production in 1918 was \$99,044, in 1919 it was 125,294 and in 1920 it was \$280,167.

(b) Included with other products.

NOTE.—In addition to the above items 13,440 pounds of antimony valued at \$2,688 were produced in 1915. In 1917 there were 33,920 pounds of copper valued at \$9,219 and 400 ounces of silver valued at \$326 produced. Also in 1918 tungsten concentrates amounting to 22,000 pounds valued at \$8,693 were produced.

Table 12.—Historical Summary of the Mineral Production of Quebec

Year	Aluminium	Asbestos (b)		Cement		Chromite		Clay Products	Copper	
	pounds	tons	\$	barrels	\$	tons	\$	\$	pounds	\$
1877.....										
1878.....										
1879.....										
1880.....		380	24,700							
1881.....		540	35,100							
1882.....		810	52,650							
1883.....		955	68,750							
1884.....		1,141	75,097							
1885.....		2,440	142,441							
1886.....		3,458	206,251			60	945	83,025	3,340,000	367,400
1887.....		4,619	226,976			38	570	80,117	2,937,900	330,514
1888.....		4,404	255,007					223,161	5,562,864	927,107
1889.....		6,113	426,554					278,845	5,315,000	730,813
1890.....		9,860	1,260,240					458,897	4,710,606	741,920
1891.....		9,279	999,878					500,957	5,401,704	895,469
1892.....		6,082	390,462					489,470	4,883,480	564,042
1893.....		6,331	310,156						4,468,352	480,348
1894.....		7,030	420,825			1,000	20,000		2,176,430	208,067
1895.....		8,756	368,175			3,177	41,300		2,242,462	241,288
1896.....		12,250	429,856			2,342	27,004		2,407,200	201,903
1897.....		30,442	445,368			2,637	32,474		2,474,970	279,424
1898.....		23,785	491,197			2,021	24,252	820,758	2,100,255	252,658
1899.....		25,536	485,849			2,010	21,842	828,868	1,632,560	287,494
1900.....		20,141	748,451			2,335	27,000	866,060	2,220,000	359,418
1901.....	283,737	40,217	1,259,759			1,274	16,744	884,166	1,527,442	246,178
1902.....	1,983,252	40,416	1,148,319			900	13,000	946,755	1,640,000	190,666
1903.....	1,750,599	41,677	1,299,757			3,509	51,129	1,028,246	1,152,000	152,467
1904.....	2,302,178	48,465	1,296,352			6,074	67,146	917,894	760,000	97,455
1905.....	2,590,329	68,263	1,503,250			8,575	93,301	896,000	1,621,243	252,752
1906.....	4,696,949	82,185	2,060,143			9,035	91,859	769,458	1,981,169	381,930
1907.....	5,921,299	90,426	2,505,042			7,196	72,901	1,214,108	1,517,990	303,659
1908.....	972,146	90,773	2,573,335	704,492	984,350	7,225	82,008	893,717	1,282,024	169,330
1909.....	6,083,695	87,300	2,301,775	1,011,194	1,314,550	2,470	26,604	1,153,832	1,088,212	141,272
1910.....	9,647,958	102,215	2,573,603	1,563,714	1,954,046	299	3,734	1,442,842	877,347	111,757
1911.....	9,679,980	127,414	2,943,108	1,614,730	1,903,439	157	2,587	1,341,407	2,436,100	301,503
1912.....	12,020,046	130,301	3,137,279	2,714,685	3,134,499			1,680,400	3,282,210	536,346
1913.....	14,065,028	161,086	3,849,925	2,940,211	3,430,023			1,606,816	3,455,887	527,679
1914.....	14,550,959	117,573	2,909,806	2,846,061	3,331,601	136	1,210	1,267,700	4,201,497	571,488
1915.....	18,368,524	136,842	3,574,985	2,390,724	2,812,797	12,341	179,543	918,425	4,197,482	725,115
1916.....	21,184,791	154,149	3,228,869	2,150,475	2,525,863	27,517	311,460	993,064	5,793,347	1,551,424
1917.....	22,088,067	153,771	7,228,233	2,079,625	3,274,989	36,725	499,682	983,310	5,015,560	1,363,220
1918.....	23,535,689	158,250	8,970,797	1,504,360	3,003,571	21,324	835,727	817,357	5,809,649	1,445,577
1919.....	21,582,264	159,236	10,975,369	2,260,422	4,340,019	8,541	228,898	1,577,576	2,691,665	503,105
1920.....	22,384,702	199,573	14,792,201	3,013,463	6,545,054	11,016	251,379	2,376,029	880,638	153,724
1921.....	6,335,083	92,761	4,906,230	2,135,631	5,410,275	2,798	65,096	1,744,760	352,308	44,045
1922.....	12,867,305	163,706	5,552,723	2,660,935	5,907,300	767	11,503	2,494,236		
1923.....	24,245,766	231,470	7,519,900	3,173,993	6,347,986	3,558	52,650	2,439,598		
1924.....	27,243,004	225,572	6,018,930	2,758,316	4,796,959			2,435,695	1,893,008	246,546
1925.....	31,105,293	290,387	8,987,450	3,365,802	5,689,991			2,426,887	2,510,141	352,474
1926.....	38,910,914	279,389	10,095,488	3,727,377	4,635,380			2,702,298	2,674,058	368,886
1927.....	82,735,938	274,778	10,621,013	4,636,751	5,381,058			2,734,738	3,119,848	403,084
1928.....	82,797,804	273,033	11,238,360	4,913,820	6,305,396			3,097,295	33,097,949	4,909,791
1929.....	63,439,528	306,055	13,172,581	5,169,408	7,120,374			3,187,702	55,337,169	10,019,991
1930.....	76,217,209	242,114	8,306,163	4,865,609	7,031,528			2,464,044	80,310,363	10,425,891
1931.....	66,103,008	194,296	4,812,886	4,942,323	7,092,895			2,360,908	68,376,985	5,723,154
1932.....	39,585,847	122,977	3,039,721	2,210,584	3,155,702	78	1,113	1,064,551	67,336,692	4,296,216
1933.....	35,532,104	158,367	5,211,177	1,517,555	2,128,900	30	343	580,088	69,943,882	5,214,177
1934.....	34,865,362	155,980	4,936,326	1,613,641	2,294,847	71	1,098	632,322	73,968,545	5,487,948
1935.....	46,342,747	210,467	7,054,614	1,751,012	2,472,008	348	5,371	593,162	70,050,900	6,162,350
1936.....	59,280,250	301,287	9,958,183	2,093,130	2,945,074	545	8,508	691,765	65,340,175	6,287,058
1937.....	93,812,065	410,025	14,505,541	2,578,623	3,537,798	210	3,286	1,053,153	94,653,132	12,378,787
1938.....	142,407,743	289,793	12,890,105	2,730,320	3,693,188			1,022,194	112,645,797	11,233,039
1939.....	165,680,869	364,454	15,858,492	3,027,750	4,035,294			1,274,776	117,238,897	11,831,749
1940.....	218,298,565	346,805	15,619,865	3,854,339	5,432,105	335	5,780	1,546,246	134,166,955	13,532,079
1941.....	427,746,534	477,846	21,468,840	4,048,749	5,798,188	2,372	42,679	1,943,358	143,783,978	14,502,052
1942.....	681,192,051	439,459	22,063,283	4,446,416	6,487,078	11,456	343,568	1,741,297	140,911,870	14,212,372
1943.....	901,400,296									
Total.....		8,211,129	314,677,855			292,560	3,555,894		1,451,368,009	154,036,070

Data for cement production are not available prior to 1908. Cement was produced in Quebec as early as 1840.  
(b) 1880 to 1886—exports.



Table 12.—Historical Summary of the Mineral Production of Quebec—Continued

—	Feldspar		Gold		Graphite		Iron Ore†		Iron Oxides Ochre	
	tons	\$	fine oz.	\$	tons	\$	tons	\$	tons	\$
1876										
1877			583	12,057						
1878			868	17,937						
1879			1,160	23,072						
1880			1,605	33,174						
1881			2,741	56,661						
1882			827	17,063						
1883			860	17,787						
1884			422	8,720						
1885			103	2,120						
1886			193	3,981					350	2,350
1887			78	1,604			13,404		485	3,733
1888			181	3,740			10,710		307	7,000
1889			58	1,207	42	1,560	14,533		794	15,280
1890	700	3,500	65	1,350	25	4,000	22,305		275	5,125
1891	685	3,425	87	1,800			14,380		900	17,750
1892	175	525	628	12,987	167	3,763	22,690		390	5,800
1893	575	4,525	759	15,606			22,076		1,070	17,710
1894			1,412	29,196	5	400	19,492		611	8,690
1895			62	1,281	70	5,250	17,783		1,339	14,600
1896	972	2,583	145	3,000	94	9,140	17,630		2,362	16,045
1897	1,400	3,290	44	900	247	12,350	22,436		3,905	23,550
1898	2,500	6,250	295	6,089	100	5,098	17,873		2,226	17,450
1899	3,000	6,000	238	4,916	90	8,000	19,420		3,911	20,000
1900	155	542			302	5,600	19,000		1,966	15,398
1901	534	1,068	145	3,000	229	4,400	15,480		2,233	16,735
1902			391	8,073	100	10,000	18,524		4,055	30,495
1903	18	32	180	3,712			12,035		6,295	32,790
1904			140	2,900	25	2,300	16,152		3,925	24,905
1905			191	3,940			12,681		5,105	34,675
1906			165	3,412	125	8,300	9,033	32,938	6,758	36,125
1907					120	5,000	12,748	34,956	5,828	35,570
1908					1	165	10,103	22,094	4,746	30,440
1909	97	1,719	193	3,990	134	10,176	4,150	5,508	3,940	29,096
1910	90	1,800	124	2,565	155	16,000	4,503	8,252	4,813	33,185
1911	17	255	613	12,672	374	33,084	3,616	6,479	3,612	24,173
1912	100	2,000	642	13,270	604	50,680	1,185	4,232	7,654	32,410
1913	74	1,554	701	14,491	103	9,620	5,102	26,999	5,987	41,774
1914	98	2,156	1,292	26,708	261	18,886			5,890	51,725
1915	572	2,005	1,099	22,720	75	5,431			6,248	48,353
1916	4,610	18,075	1,034	21,375	479	75,776	3,209	8,308	8,811	58,711
1917	1,188	8,204	1,511	31,235	541	106,305	16,488	48,509	9,499	87,905
1918	191	4,279	1,939	40,083	180	40,018	6,330	28,211	17,317	112,440
1919	925	13,073	1,470	30,388	20	400	321	1,005	11,862	113,427
1920	649	10,052	955	19,742	233	31,913	960	3,000	10,128	157,909
1921	9,737	80,180	635	13,127	38	2,423			8,879	62,765
1922	12,472	127,826			24	1,500	526	1,410	7,282	110,489
1923	12,026	102,779	667	13,788	45	2,316	69	180	9,911	123,186
1924	16,147	142,118	883	18,253	46	3,275	1,408	3,771	7,146	88,540
1925	11,287	94,730	1,602	33,116	359	30,900	3,978	11,934	6,985	89,173
1926	13,168	111,136	3,680	76,072	326	29,516	200	600	6,518	100,923
1927	12,730	104,618	8,331	172,217	34	2,043	2,029	8,990	5,931	102,158
1928	12,943	104,789	60,000	1,240,434	50	4,668	2,244	6,732	5,278	106,393
1929	15,790	133,402	90,798	1,876,961	173	12,652	2,748	7,359	8,220	113,932
1930	17,074	163,802	141,747	2,930,170	197	9,850	412	1,239	9,500	83,753
1931	10,381	86,842	300,075	6,471,075			1,509	10,261	5,410	48,205
1932	3,390	39,062	401,105	9,417,572					5,017	44,161
1933	6,183	59,283	382,880	10,950,530	43	2,222			4,192	51,965
1934	9,207	78,853	390,067	13,458,347	129	6,426	2,023	14,161	4,798	64,566
1935	7,002	63,075	470,552	16,558,725	21	1,281	2,288	16,400	5,357	75,388
1936	8,115	75,703	666,005	23,361,683			2,566	18,318	5,458	65,630
1937	12,285	105,612	711,480	24,894,685			4,229	26,432	5,617	77,640
1938	5,874	62,878	881,263	30,998,426			207	1,449	5,387	67,209
1939	5,309	60,923	953,377	34,455,098			3,694	21,267	5,465	82,501
1940	8,548	80,004	1,019,175	39,238,238			5,535	24,510	9,603	107,926
1941	14,218	137,160	1,089,339	41,939,552			12,651	40,110	8,770	139,185
1942	10,802	164,588	1,092,388	42,056,938			10,218	51,841	8,866	147,049
Total.....	260,103	2,285,363	8,693,190	306,717,460	6,377	592,687	465,795		310,156	3,212,748

NOTE:—2 tons of garnets valued at \$150 were produced in 1927. \* Includes a small production from Ontario.

† From 1911 shipments consisted almost entirely of titanium ores; in 1942 included 187 tons of straight iron ore valued at \$935.

Table 12.—Historical Summary of the Mineral Production of Quebec—Continued

—	Kaolin		Lead		Lime		Magnesitic Dolomite		Mica		Mineral Waters (Natural)	
	tons	\$	pounds	\$	bushels	\$	tons	\$	tons	\$	imp.gal.	\$
1886					401,700	75,700				6,991		
1887					424,316	79,137				8,276		
1888					356,646	61,489				(a)		
1889					187,220	36,831			(a)	1,496		
1890			105,000	4,704	116,593	23,274				9,590		
1891			88,665	3,857	506,700	77,462				37,000		
1892										23,000		
1893			3,931	146								
1894												
1895												
1896												
1897			177,084	6,340						26,000		
1898			221,760	8,382						106,375		
1899										133,000		
1900			11,200	490						106,000		
1901			318,052	13,784						120,000		
1902			420,000	17,090					66	34,304		
1903										74,119		
1904										76,487		
1905										109,672		
1906					923,583	201,816			283	150,334		
1907					1,053,856	282,990			318	224,197		
1908					857,700	201,357	120	840	148	82,613		75,533
1909					1,281,827	315,633	330	2,503	128	93,298		68,565
1910					1,227,555	299,126	323	2,160	316	87,295		68,194
1911					1,428,392	356,453	991	5,531	217	69,465		63,637
1912	20	160			1,727,614	474,595	1,714	9,645	196	81,044	92,873	36,736
1913	500	5,000			1,616,446	418,008	516	3,335	626	125,488		30,805
1914	1,000	10,000			1,767,935	389,064	358	2,240	246	62,794		16,566
1915	1,300	13,000	40,401	2,282	1,351,306	274,831	14,770	126,584	217	50,390		18,086
1916	1,750	17,500	698,760	59,485	1,498,845	267,110	54,778	554,304	644	192,343	93,782	16,223
1917	533	9,594	1,378,001	153,468	1,470,486	335,012	58,090	728,275	774	286,730		9,201
1918	863	19,299	2,110,059	195,180	1,527,784	418,888	39,365	1,016,765	481	229,119		7,609
1919	759	13,744	2,280,000	158,825	1,796,822	493,762	11,273	328,465	2,429	218,437		13,257
1920	683	15,022	905,472	80,949	2,108,203	826,044	18,378	512,756	737	281,460	24,219	10,100
1921	124	1,888	595,881	34,215	2,040,451	790,503	2,927	74,109	484	41,172	19,626	7,278
1922	1,197	17,866			2,259,313	689,799	2,849	76,294	1,360	97,748	12,161	3,692
1923	163	2,369	520,041	37,334	2,357,928	634,213	4,801	134,382	1,545	216,684	5,421	2,408
1924			1,058,983	85,820	2,386,445	699,937	3,873	101,356	1,677	185,020	7,683	2,288
1925			2,051,100	167,060	2,542,237	673,330	5,576	122,325	2,415	187,800	7,122	2,961
1926			3,729,636	251,788	2,849,635	766,116	4,571	137,431	1,664	170,118	6,956	2,444
1927			6,496,577	341,461	3,075,819	806,665	7,337	230,306	1,454	99,104	10,330	1,813
1928			6,218,336	284,520	3,200,857	896,782	13,195	348,990	1,101	54,224	15,415	5,608
1929			5,358,304	270,616	4,708,343	1,264,194	18,809	491,170	1,062	72,630	12,205	2,488
1930					3,695,714	967,650	13,336	336,162	430	61,729	12,941	3,727
1931					3,185,600	804,218	11,411	295,579	290	30,601	10,868	4,746
1932					2,680,371	587,901		262,800	41	4,076	15,506	4,897
1933					3,152,400	847,558		360,128	256	39,060	9,024	3,094
1934					3,105,429	631,984		382,927	322	85,967	75,605	16,116
1935			2,047,624	64,156	3,327,800	678,896		486,984	373	74,894	126,614	15,113
1936			2,047,680	80,128	3,807,257	718,585		768,742	272	63,123	131,186	17,599
1937			1,521,182	77,732	4,466,080	909,116		677,207	546	124,594	198,319	19,697
1938					3,923,257	843,331		420,261	218	72,982	159,893	19,033
1939					4,603,200	983,072		474,418	434	122,243	104,029	17,503
1940					4,669,114	1,480,496		897,018	436	202,583	103,025	18,466
1941	2	30			8,757,571	2,062,744		831,041	892	284,593	144,441	58,062
1942	408	6,130	437,634	14,713	9,959,314	2,323,707		1,059,374	1,329	285,203	129,062	60,316
Total	9,362	131,662	46,841,372	3,434,593				12,259,568				723,470

\* Data are not available by provinces from 1892-1905.

(a) No record.

NOTE: One bushel of lime equals 70 pounds.

Table 12.—Historical Summary of the Mineral Production of Quebec—Continued

Year	Molybdenite		Peat		Phosphate (b)		Pyrites (Sulphur content) (c)		Quartz		Sand and Gravel	
	pounds	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1878					9,919	195,831						
1879					6,604	101,470						
1880					11,673	175,664						
1881					9,497	182,330						
1882					16,585	302,019	2,300					
1883					19,866	427,108						
1884					20,946	415,350	42,905					
1885					28,535	490,331						
1886					19,435	288,603	34,600					
1887					19,589	264,452	36,000					
1888					20,396	219,779						
1889					27,552	287,400						
1890					27,172	309,980			200	1,000		
1891					20,244	206,416						
1892					10,231	134,964						
1893					7,650	80,076			100	500		
1894					6,861	41,166						
1895					1,822	9,565						
1896					570	3,420			10	50		
1897					908	3,984						
1898					632	3,190			284	870		
1899					1,279	7,674			600	1,200		
1900					1,270	6,090						
1901					1,033	6,280						
1902					886	4,953						
1903					1,329	8,214						
1904					817	4,590						
1905					1,300	8,425						
1906					600	4,500						
1907					408	3,410						
1908					598	5,900	26,598	159,588				
1909					525	4,800	35,300	130,009				
1910			70	280	1,456	12,386	24,242	102,162	805	1,006		
1911			200	800	586	4,909	39,122	247,555	548	684		
1912			500	2,000	164	1,640	60,849	243,396	556	1,240		243,126
1913			2,000	8,000	385	3,643	87,314	349,265	1,008	2,000		638,778
1914					554	4,875	117,698	470,792	847	847		370,713
1915					200	2,400	142,735	570,940	778	778		290,983
1916					190	2,340	130,639	523,272	1,149	1,436	934,746	212,884
1917	216,693	216,693			123	1,230	122,882	501,351	550	1,788	998,600	265,282
1918	333,318	383,315			140	1,200	124,871	507,802	1,730	5,383	(a)	(a)
1919	83,002	69,203	486	4,811	22	800	52,746	293,222	2,221	7,773	(a)	(a)
1920							14,817	44,451	1,988	5,558		431,926
1921					30	450	1,986	10,463	5,994	29,824	700,660	110,752
1922					131	1,320			10,994	53,023	905,101	156,040
1923					30	600			13,376	68,936	1,055,817	208,175
1924	18,739	9,370					4,032	10,619	17,893	87,267	2,197,145	414,428
1925	22,350	11,170			16	189	12,250	36,750	6,459	30,064	2,261,196	533,850
1926	20,943	10,472			40	800	14,100	42,117	24,550	107,779	5,233,696	1,490,674
1927					31	399	13,021	42,795	49,141	132,615	8,615,738	1,880,931
1928					91	1,126	1,552	12,061	64,577	143,067	8,130,341	1,701,282
1929	16,150	6,400	1,607	8,839	40	800	9,926	73,119	46,444	132,532	6,203,231	1,534,690
1930			2,219	9,330	40	760	12,653	93,038	49,561	119,608	6,581,807	1,750,060
1931			1,170	5,937			14,586	108,617	26,987	69,759	7,657,964	1,952,959
1932			762	2,286	1,316	12,333	17,954	133,838	20,123	71,645	3,458,128	893,896
1933			681	2,549	105	805	19,167	146,261	28,294	109,533	3,350,232	942,429
1934					81	683	4,908	50,398	57,208	229,817	3,672,582	980,454
1935					116	1,043	7,370	47,779	51,948	226,839	5,268,987	1,442,468
1936			45	255	525	4,927	43,084	282,743	78,975	320,634	5,490,280	1,418,231
1937					100	900	28,534	104,496	127,535	448,327	9,476,000	2,637,495
1938					208	1,886	16,580	98,261	85,153	315,251	12,523,404	3,532,873
1939	2,240	600			157	1,712	61,476	275,351	104,827	369,172	10,050,985	2,703,032
1940	22,251	10,280			358	4,039	61,728	212,012	109,090	321,891	12,177,624	3,127,931
1941	196,600	88,470	*7,265	173,639	2,487	33,376	146,826	575,422	147,318	388,048	11,681,390	2,673,300
1942	222,276	131,906	*12,982	197,600	930	12,973	168,832	675,965	203,219	543,817	11,020,249	2,485,853
Total	1,154,562	937,885	29,987	416,286	367,154	4,364,617			1,343,038	4,352,281		

(a) Included with other products.

(b) 1878-1885 exports and include a quantity of Ontario phosphate cleared through Montreal.

(c) 1871-1899 tons of pyrites shipped; data 1800-1907 not recorded by provinces, 1908-1927 tonnage of pyrites shipped 1928-1942 sulphur content of pyrites shipped.

\* Moss only.



Table 12.—Historical Summary of the Mineral Production of Quebec—Continued

Year	Selenium		Silver		Stone									
					Granite (b)		Limestone (b)		Marble (b)		Sandstone (b)		Slate†	
	pounds	¢	fine os.	¢	tons	¢	tons	¢	tons	¢	tons	¢	tons	¢
1884													5,345	64,675
1885													7,357	89,000
1886													5,314	90,689
1887			146,898	143,666									6,935	119,160
1888			149,388	140,425									6,368	100,250
1889			148,517	139,012									5,000	85,000
1890			171,545	179,436									5,180	69,070
1891			185,584	183,357									7,112	90,825
1892			191,910	168,113										75,550
1893			161,675	126,439										58,900
1894			101,318	63,830										53,370
1895			81,753	53,369										58,900
1896			70,000	40,942										53,370
1897			80,475	48,116										42,800
1898			74,932	43,655										40,791
1899			40,231	23,970										33,406
1900			58,400	35,817										12,100
1901			41,459	24,440									715	9,980
1902			42,500	22,168									squares	19,200
1903			28,600	15,287									† 5,510	22,040
1904			15,000	8,583									6,277	23,247
1905			19,620	11,841										21,568
1906			17,086	11,813										24,446
1907			16,000	10,452									4,335	20,056
1908			13,209	7,030						(a)			2,950	13,490
1909			13,233	6,815		257,096		972,253		130,000			4,000	19,000
1910			7,503	4,001		356,257		962,429		151,000			3,959	18,492
1911			18,435	9,827		462,678		1,296,577		135,187		450	1,633	8,248
1912			9,465	5,758		522,114		1,187,751		247,838			1,894	8,939
1913			34,573	20,672		790,896		1,307,428		231,137			1,432	6,444
1914			57,737	31,040		842,845		1,326,943		98,890		17,400	1,075	4,837
1915			63,450	31,524		594,744		1,189,633		145,400		36,417	397	2,039
1916			98,610	64,748		422,297		799,354		118,810		30,004	1,262	6,223
1917			136,104	110,885		281,242		625,711		55,820		28,820	1,422	7,789
1918			178,675	172,907	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	933	5,124
1919			140,926	156,600	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	† 1,632	10,853
1920			61,003	61,552	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)		14,200
1921			38,054	23,861		19,608		378,021		670,446		1,072,572	1,650	172,720
1922						88,169		665,406		884,311		1,420,223	1,912	231,804
1923						29,240		436,902		1,057,284		1,671,309	2,473	201,518
1924			33,000	21,412		42,263		442,933		1,465,237		2,058,432	4,379	322,455
1925			83,814	55,972		491,986		1,303,220		1,677,514		2,160,790	3,046	254,922
1926			214,943	146,451		494,355		863,052		1,784,434		2,316,997	4,709	507,817
1927			375,986	233,513		162,180		757,582		2,251,499		2,863,690	4,609	484,437
1928			740,894	417,625		230,660		1,241,688		2,684,305		3,116,753	6,643	380,307
1929			908,959	528,796		508,471		1,623,860		2,827,740		3,139,389	13,081	397,074
1930			813,821	431,268		711,943		2,042,783		2,811,300		2,774,539	11,619	717,362
1931			571,164	217,922		530,345		158,414		727,354		1,987,589	2,075,186	2,774,060
										14,919		624,356	848,070	507,037

Table 12.—Historical Summary of the Mineral Production of Quebec—Continued

Year	Selenium		Silver		Stone									
	pounds	\$	fine oz.	\$	Granite (b)		Limestone (b)		Marble (b)		Sandstone (b)		Slate†	
					tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1932			628,002	199,184	143,520	541,689	1,622,802	1,337,688	9,832	206,502	470,671	275,022		
1933	22,131	16,600	471,419	178,351	131,837	408,207	1,129,248	940,019	7,983	42,283	73,425	58,231		
1934	48,704	73,146	470,254	223,187	69,428	488,477	1,034,058	953,815	9,302	47,503	86,364	85,822	306	458
1935	206,421	396,328	668,836	433,338	131,096	899,685	1,143,983	1,087,320	10,518	43,455	104,920	122,301	819	1,229
1936	168,417	298,098	724,339	326,872	137,912	429,283	1,265,243	1,058,547	17,866	138,294	92,228	102,388	803	855
1937	208,531	360,759	908,590	407,784	218,743	611,125	1,653,556	1,474,653	14,957	61,348	70,726	65,424	414	471
1938	217,952	378,147	1,189,495	517,157	294,446	757,531	1,850,019	1,672,290	8,838	46,580	42,587	51,010	494	547
1939	23,841	42,175	1,167,444	472,675	503,011	1,276,859	1,904,658	1,726,053	7,600	168,612	112,403	150,792	683	683
1940	43,510	83,104	1,349,450	512,709	366,662	792,708	2,287,384	1,854,423	8,767	50,652	92,378	129,179	639	639
1941	203,162	388,039	1,657,082	634,016	316,372	866,192	3,370,875	2,567,422	10,809	92,916	76,928	82,701	346	346
1942	326,208	626,319	1,655,042	697,865	1,178,765	1,449,840	2,926,964	2,565,029	9,429	58,714	72,894	92,724	158	158
<b>Total</b>	<b>1,448,937</b>	<b>2,662,715</b>	<b>17,869,523</b>	<b>9,025,128</b>										

(b) Data not available prior to 1908.  
recorded in squares.

(c) Data not available by kinds. Total values for all grades were:—1918, \$952,402; 1919, 1,441,919, and 1920, 2,189,425.

†1903 to 1919 inclusive

Table 12.—Historical Summary of the Mineral Production of Quebec—Concluded

	Talc and Soapstone		Tellurium		Zinc (a)		Other Products
	tons	\$	pounds	\$	pounds	\$	\$
1886	50	400					
1887	100	800					
1888	140	280					
1889	195	1,170					
1890	917	1,239					
1891							
1892	1,374	6,240					
1893	717	1,920					
1894	916	1,640					
1895	475	2,138					
1896	410	1,230					
1897	157	350					
1898	405	1,000			788,000	36,011	
1899	450	1,960					
1900					22,400	983	
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							959,920
1909							
1910							
1911							
1912							
1913					670,000	6,700	24,063
1914					1,038,000	10,017	5,180
1915					900,000	16,500	6,300
1916					1,663,200	212,956	129,275
1917					1,786,740	150,038	351
1918					2,802,928	228,691	182,902
1919					1,752,000	128,562	248,707
1920	150	1,050			1,120,200	85,931	
1921							
1922	150	4,950					
1923	590	19,993			366,240	24,197	
1924	449	20,273			2,000,008	184,547	
1925	704	30,130			9,036,000	757,322	
1926	885	38,209			12,904,176	950,199	
1927	1,276	51,594			17,189,046	1,064,600	
1928		40,171			21,057,700	1,156,745	
1929		47,986			19,653,440	1,058,731	
1930		50,168			9,754,160	351,150	
1931		34,439					
1932		46,751					
1933		47,680					
1934		44,297					
1935		32,051	1,708	3,410	6,322,844	164,955	
1936		32,770	19,502	34,519	6,896,123	228,696	
1937		40,513	26,439	45,739	8,506,927	419,051	
1938		35,038	41,577	71,812	5,315,852	163,350	
1939		41,471	2,940	4,769	28,758,759	882,606	
1940		74,005			27,090,721	944,735	
1941		155,925			46,380,581	1,582,349	
1942	14,369	136,529			73,940,811	2,522,121	(b)
<b>Total</b>		<b>1,047,172</b>	<b>92,166</b>	<b>159,955</b>		<b>13,347,649</b>	<b>1,556,788</b>

(a) 1898-1900, pounds of zinc contained in ore or concentrates shipped from the mines; 1913-1915, pounds of ore shipped from the mines; 1916-1942, pounds of zinc recovered by Canadian smelters and estimated recoveries by foreign smelters.

\* 101 tons barite valued at \$808 and 989 pounds tungsten concentrates worth \$627.

(b) Includes:—6,349,074 pounds arsenic valued at \$428,562; 141,081 pounds magnesium (produced in Ontario from Quebec brucite) valued at \$62,076 and 2,981 pounds tungsten concentrates worth \$2,612.



Table 12.—Historical Summary of the Mineral Production of Ontario

—	Actinolite		Arsenic		Asbestos		Barite		Bismuth		Cement (d)	
	tons	\$	pounds	\$	tons	\$	tons	\$	pounds	\$	barrels	\$
1885			880,000	17,600								
1886			240,000	5,480								
1887			60,000	1,200								
1888			60,000	1,200								
1889												
1890			50,000	1,000								
1891			40,000	1,000								
1892												
1893												
1894			14,000	420								
1895												
1896												
1897	205	1,845										
1898												
1899			114,000	4,872								
1900			606,000	22,725								
1901	521	3,126	1,390,000	41,676								
1902	550	4,400	1,600,000	48,000								
1903	550	3,108	514,000	15,420								
1904												
1905												
1906			402,000	14,058								
1907			690,000	36,209								
1908			1,431,000	41,000							1,510,630	1,010,630
1909			2,258,000	64,100							2,462,027	3,084,218
1910	30	330	3,004,000	75,328							2,504,450	3,150,479
1911	67	736	4,194,000	70,237							3,040,786	3,741,039
1912	92	1,000	4,090,000	89,262							3,044,713	3,372,897
1913	66	720	3,384,000	101,403							3,992,988	4,311,183
1914	119	1,304	3,474,000	104,015							2,775,142	3,062,120
1915	220	2,420	4,792,000	147,830							2,407,670	2,597,807
1916	250	2,750	4,372,000	202,349							2,230,386	2,312,677
1917	120	1,320	5,312,000	658,231	10	2,150					1,676,904	2,267,610
1918	228	2,508	4,064,000	529,525			60	1,020			1,220,003	1,976,815
1919	80	880	5,718,000	488,706							2,023,280	3,650,585
1920	100	1,160	3,662,000	425,617							2,015,594	4,377,814
1921	78	975	2,982,000	233,763							2,723,071	6,424,356
1922	50	575	4,116,000	299,940							3,104,386	6,393,696
1923	53	583	5,158,617	582,785	6	2,600	200	4,180			3,290,428	5,855,589
1924	90	1,225	3,745,225	313,281	172	91,900			12,863	27,913	3,564,499	5,668,671
1925	40	500	2,150,441	113,324	2	901			19,667	18,566	3,462,358	5,253,911
1926	80	1,000	4,055,477	135,549	14	3,935			6,440	6,440	3,398,860	4,702,857
1927	86	1,075	4,961,178	197,698					2,072	1,003	3,751,786	5,144,326
1928	70	875	4,097,226	178,149					14,002	5,067	3,911,705	5,520,897
1929	30	375	3,742,913	154,887					27,446	23,413	4,024,712	6,608,246
1930	34	437	2,750,887	109,932					12,732	6,366	3,042,690	5,770,404
1931	35	456	3,575,936	135,170					7,331	3,532	3,470,050	5,006,626
1932			2,424,342	98,714					16,708	7,289	1,599,342	2,288,975
1933			1,408,022	56,534			20	60	7,580	3,731	1,095,845	1,587,812
1934	30	365	1,647,513	56,432					7,532	3,444	1,702,128	2,403,590
1935			2,558,780	75,326					7,079	6,796	1,243,830	1,752,148
1936			1,365,606	42,491					3,552	3,516	1,542,463	2,180,895
1937			1,389,426	41,032	1	250			5,711	5,654	2,050,652	3,657,067
1938			2,175,646	56,538					9,516	9,754	1,818,032	2,555,214
1939			1,741,917	52,257	18	720		3,639			1,709,263	2,437,777
1940			2,093,275	62,798			305	4,577	17,789	24,620	2,355,352	3,518,247
1941			1,482,000	64,171					7,499	10,379	2,748,854	4,019,656
1942			1,504,049	152,331					2,333	3,219	2,784,792	3,998,294
Totals	3,874	36,048	118,477,485	6,479,115	223	102,456	585	13,476	187,862	170,762	31,485,263	132,661,207

In 1925 Ontario produced 1,751 pounds of antimony valued at \$206 and in 1926 some 1,596 pounds worth \$281 were produced.

In 1929 4,456 pounds beryl crystals, \$114.

(d) Data not available prior to 1908; cement was produced in Ontario as early as 1867.

Table 12.—Historical Summary of the Mineral Production of Ontario—Continued

	Chromite		Clay Products	Cobalt		Copper		Corundum		Diatomite	
	tons	\$	\$	pounds	\$	pounds	\$	tons	\$	tons	\$
1886			881,039			165,000	18,150				
1887			1,187,453			322,524	36,284				
1888			1,123,671								
1889			1,192,397			1,466,752	201,678				
1890			1,347,278			1,303,065	205,233				
1891			1,076,154			4,127,697	531,234				
1892			1,313,877			2,203,795	254,538				
1893						3,641,504	391,461				
1894						5,207,679	497,854				
1895						4,576,337	492,414				
1896						3,167,256	344,598				
1897						5,500,652	621,023				
1898			1,449,536			8,375,223	1,007,539				
1899			1,828,936			5,723,324	1,007,877				
1900			2,009,915			0,740,058	1,091,215	3	300		
1901			2,222,620			8,695,831	1,401,507	387	46,415		
1902			2,149,451			7,408,202	864,278	768	84,465		
1903			2,402,520			7,172,533	949,285	703	77,510		
1904			2,306,200	32,000	19,060	4,913,594	630,070	693	100,545		
1905			2,696,500	236,000	100,000	8,779,259	1,368,686	1,044	149,153		
1906			3,136,870	642,000	80,704	10,638,231	2,050,838	2,274	204,973		
1907			3,123,372	1,478,000	104,426	14,104,337	2,821,432	1,802	177,922		
1908			2,476,152	2,448,000	111,118	15,005,171	1,981,883	1,089	100,308		
1909			3,425,841	3,066,000	94,965	15,746,699	2,044,237	1,401	162,492		
1910			3,667,810	2,196,000	54,699	19,259,016	2,453,213	1,870	198,680		
1911			3,916,575	1,704,000	170,890	17,932,263	2,219,207	1,472	161,873		
1912			4,864,700	1,868,000	314,381	22,250,601	3,635,671	1,960	239,061		
1913			5,220,467	1,642,000	420,386	25,885,929	3,652,522	1,177	137,036		
1914			3,979,000	889,027	571,710	28,948,211	3,937,536	548	72,176		
1915			2,254,863	504,212	636,268	39,361,464	6,799,693	262	33,138		
1916			2,145,036	840,536	924,590	44,997,035	12,240,094	67	10,307		
1917			2,575,304	1,079,572	1,727,315	42,807,774	11,651,461	188	32,153		
1918			2,434,215	1,347,544	3,368,890	47,074,475	11,593,502	137	26,112		
1919			4,574,796	530,371	1,325,928	24,346,628	4,550,627				
1920			5,613,488	546,023	1,305,058	32,059,993	5,596,392	166	24,547		
1921			5,183,125	251,986	755,058	12,821,385	1,602,930	403	55,965		
1922			6,944,218	569,960	1,852,370	10,043,636	1,464,477				
1923			6,270,615	888,061	2,530,974	31,656,800	4,565,227				
1924			5,089,299	948,704	1,682,395	37,113,193	4,833,622				
1925			5,195,084	1,116,492	2,328,517	39,718,777	5,577,311				
1926			5,356,469	664,778	1,136,014	41,312,867	4,828,964				
1927			5,853,035	880,590	1,764,534	45,341,295	4,946,533				
1928			6,177,664	954,860	1,671,900	66,607,510	8,770,149				
1929			6,830,162	920,415	1,801,915	88,879,853	14,622,572				
1930			5,221,214	694,163	1,144,007	127,718,871	15,187,259			10	140
1931			3,552,800	521,051	651,179	112,882,625	9,096,463			60	840
1932			1,639,508	490,031	587,957	77,055,413	4,407,928			11	309
1933			1,024,579	466,702	597,752	145,594,729	10,118,847			28	1,298
1934	40	480	1,261,006	594,071	592,497	205,050,539	14,822,704			46	1,020
1935		9,576	1,370,225	681,419	512,705	252,027,928	19,295,965			100	4,600
1936		5,070	1,573,930	887,501	804,678	287,014,078	26,808,920			40	2,000
1937		39,964	2,033,845	507,064	848,145	322,039,208	41,716,304			38	1,888
1938			2,083,496	459,226	790,913	309,030,106	30,405,500				
1939			2,346,638	732,501	1,213,454	328,429,685	32,637,305			5	280
1940			2,508,540	704,359	1,235,220	347,931,013	34,742,229				
1941			3,087,616	263,257	255,904	333,829,767	33,192,644				
1942			2,549,480	83,871	88,444	308,282,414	30,625,404				
Totals		55,090		35,130,697	36,125,688	4,022,068,770	443,892,939	19,524	2,104,251	338	13,255

\* Exclusive of cobalt in ore placed on government stock pile at Deloro, Ontario.

Table 12.—Historical Summary of the Mineral Production of Ontario—Continued

	Feldspar		Fluorspar		Gold		Graphite		Gypsum†	
	tons	\$	tons	\$	fine oz.	\$	tons	\$	tons	\$
1875.....									120	180
1876.....										
1878.....									489	675
1879.....									579	720
1880.....									575	1,240
1881.....									657	1,040
1882.....									1,249	1,946
1883.....									462	837
1884.....									688	1,254
1885.....									525	787
1886.....									5,826	12,000
1887.....					327	6,700			8,560	11,715
1888.....									6,700	10,200
1889.....									7,382	13,128
1890.....									6,200	8,075
1891.....					97	2,000			5,660	18,300
1892.....					344	7,118			4,320	5,399
1893.....					708	14,637			2,898	10,193
1894.....					1,917	39,624			2,369	6,187
1895.....					3,015	62,320			2,420	4,840
1896.....					5,503	115,000	650	13,000	3,305	7,788
1897.....					9,157	189,294	100	3,000	1,461	4,661
1898.....					12,863	265,889	300	6,000	1,087	4,201
1899.....					20,394	421,591	1,220	10,179	1,020	3,978
1900.....	163	570			14,391	297,495	1,500	24,000	1,095	4,331
1901.....	4,816	9,632			11,844	244,837	1,750	31,500	1,504	5,692
1902.....	5,576	15,152			11,118	229,828	795	15,900	1,917	7,699
1903.....	13,910	18,934			9,096	188,038	728	23,745	2,720	21,988
1904.....	11,083	22,166			1,935	40,000	367	8,980	2,390	18,350
1905.....	11,700	23,400	12	84	4,402	91,000	481	16,255	1,853	23,834
1906.....	16,948	40,890			3,202	66,193	202	10,000	2,965	24,420
1907.....	12,584	29,819			3,212	66,398	459	11,000	10,404	52,417
1908.....	7,877	21,099			3,212	66,398	210	5,040	10,380	42,456
1909.....	12,686	38,664			1,569	32,425	730	37,624	11,731	48,278
1910.....	15,719	45,897	2	15	3,089	63,849	1,237	58,087	15,055	67,229
1911.....	17,706	51,684	34	238	2,062	42,625	895	30,402	27,399	98,018
1912.....	13,633	28,916	40	240	86,523	1,788,596	1,456	66,442	53,119	176,056
1913.....	16,716	59,241			219,801	4,543,690	2,059	80,662	62,315	208,029
1914.....	17,002	68,068			268,264	5,545,509	1,386	88,317	81,219	204,033
1915.....	13,987	55,796			406,577	8,404,693	2,560	118,792	81,172	190,422
1916.....	14,878	53,332	1,284	10,238	492,481	10,180,485	3,476	249,586	30,068	110,086
1917.....	18,274	81,622	4,249	68,756	423,201	8,749,581	3,173	296,587	48,947	130,138
1918.....	18,591	108,449	7,187	150,779	411,976	8,516,269	2,934	208,852	38,214	151,564
1919.....	13,754	73,158	3,425	59,281	505,739	10,454,553	1,340	99,821	58,899	278,120
1920.....	37,224	270,843	3,758	68,475	564,995	11,679,483	1,957	133,704	74,707	404,162
1921.....	20,115	150,457	116	1,744	706,213	14,640,062	890	63,439	84,790	433,053
1922.....	15,255	120,576	284	3,905	1,000,340	20,678,862	573	29,853	110,227	621,668
1923.....	17,199	134,822		597	971,704	20,086,904	1,068	65,557	99,958	542,317
1924.....	28,657	216,422	76	1,343	1,241,728	25,668,795	1,288	72,842	88,121	467,097
1925.....	17,394	141,059	12	200	1,461,639	30,202,357	2,210	127,863	82,020	491,833
1926.....	22,783	199,102			1,497,215	30,950,180	2,401	165,344	89,987	496,059
1927.....	17,119	154,533			1,627,050	33,634,108	1,795	109,613	83,998	500,688
1928.....	18,954	180,153			1,578,434	32,629,126	1,047	52,373	85,811	553,271
1929.....	21,737	206,979	70	1,120	1,622,267	33,535,234	1,288	90,522	100,347	832,689
1930.....	9,722	104,667	80	1,240	1,736,012	35,886,532	1,338	86,542	94,946	776,089
1931.....	7,062	100,119	40	620	2,085,814	44,980,280	548	32,149	53,358	374,469
1932.....	3,657	42,920	32	464	2,280,105	53,534,743	346	18,483	35,655	186,175
1933.....	4,387	45,350	73	1,064	2,155,519	61,647,843	362	16,145	24,400	112,319
1934.....	7,302	61,665	160	2,100	2,105,339	72,634,105	1,389	64,908	33,234	141,389
1935.....	8,656	75,003	75	900	2,220,336	78,133,624	1,761	78,500	38,247	164,807
1936.....	8,409	70,840	75	900	2,378,503	83,318,900		88,812	40,191	182,783
1937.....	9,061	72,610	150	2,550	2,587,065	90,522,454		125,343	53,780	233,895
1938.....	8,106	65,964	217	3,906	2,896,477	101,883,578		41,590	57,603	242,470
1939.....	7,061	51,056	240	4,995	3,086,076	111,538,573		61,684	59,440	260,792
1940.....	12,907	98,619	4,437	58,962	3,261,688	125,574,988		94,038	75,271	313,512
1941.....	11,822	107,124	5,234	95,867	3,194,308	122,980,858		132,924	80,569	276,459
1942.....	5,468	49,353	4,340	113,957	2,763,819	106,407,032		117,904	82,706	304,170
Totals.....	581,529	3,567,295	35,756	652,530	47,962,215	1463,498,614		3,396,093	2,254,264	10,916,648

† 1876 to 1885, inclusive, exports.

Garnets..1923—1,245 tons, value \$100,000

1924—360 " " 7,200

Garnet schist 1941—16 tons, value \$160

1942—17 " " 176

Grinding pebbles—1920—560 tons, value not available.

1925—105 " " 945

1926—64 " " 576



Table 12.—Historical Summary of the Mineral Production of Ontario—Concluded

	Iron Ore		Lead		Lime		Mica		Mineral Waters (Natural)	
	tons	\$	pounds	\$	bushels	\$	tons	\$	imp. gals	\$
1886	16,032				783,450	140,290		22,017		
1887	16,598				1,239,451	178,153		21,540		
1888	16,894				1,296,343	199,194	15	30,207		
1889					1,622,832	136,814		27,222		
1890					1,234,975	185,902		58,484		
1891					1,227,681	152,286		44,510		
1892								81,745		
1893										
1894										
1895										
1896	15,270				1,880,000	222,000				
1897	2,770							50,000		
1898	21,111				2,620,000	308,000		12,000		
1899	25,120				4,342,500	535,000		29,475		
1900	82,950				3,983,000	544,000		60,000		
1901	272,538				4,100,000	550,000		40,000		
1902	359,288				4,300,000	617,000	993	101,600		
1903	209,634		50,000	2,119	3,400,000	520,000		103,738		
1904	141,601		585,000	38,133	2,600,000	406,800		84,200		
1905	193,404		284,212	13,378	3,100,000	424,700		68,503		
1906	141,078	337,918	2,200,000	124,454	2,885,000	496,785	201	144,579		
1907	207,709	488,324			2,333,879	393,474	456	88,402		
1908	216,177	528,475			2,087,731	358,807	288	57,258	61,526	
1909	21,956	61,954			2,619,553	434,147	241	51,484	92,610	
1910	90,979	257,781			2,988,020	476,137	442	103,090	111,369	
1911	5,379	12,577			3,360,265	538,002	373	59,212	136,778	
1912	14,567	28,125			3,376,193	573,260	384	62,932	131,529	
1913	110,135	237,978	33,000	1,537	3,254,482	573,209	478	68,816	138,072	
1914	55,635	124,459			3,393,078	559,850	349	45,267	115,215	
1915	86,047	173,120	88,985	4,983	1,903,014	328,515	200	41,516	95,788	
1916	137,390	385,381	688,932	58,393	2,031,396	367,115	364	62,896	110,333	
1917	152,764	542,097	1,586,711	176,712	2,840,850	698,368	392	72,121	135,231	
1918	109,942	404,188	1,684,366	155,894	2,660,791	762,975	285	42,431	145,400	
1919	5,562	45,520	1,487,580	103,625	3,578,834	1,143,973	1,466	94,562	14,473	
1920	6,983	54,266	2,255,520	201,643	5,109,935	1,962,088	218	28,891	308,647	
1921	48	242	3,312,493	190,203	3,530,547	1,344,188	1,989	54,515	299,072	
1922			2,890,397	180,210	4,980,183	1,767,543	1,980	110,290	227,030	
1923	5,358	18,878	4,401,494	315,983	6,002,621	1,893,663	2,414	172,252	201,670	
1924			5,055,368	409,687	5,419,307	1,840,152	1,605	82,663	183,012	
1925			7,209,534	657,510	6,304,831	2,044,125	881	59,086	208,400	
1926			7,398,795	580,730	6,522,747	2,051,446	1,284	75,183	293,280	
1927			7,990,709	528,729	6,946,630	2,198,239	2,559	32,944	253,630	
1928			6,814,757	402,289	7,919,600	2,467,843	2,991	45,919	309,700	
1929			4,769,506	294,431	10,575,943	3,364,411	740	34,275	214,200	
1930			2,193,856	116,034	7,201,886	2,177,587	1,049	23,465	197,540	
1931			985,633	41,647	4,218,857	1,222,270	268	2,752	61,208	
1932			86,477	1,828	4,762,943	1,273,230	666	9,371	29,794	
1933			29,910	692	4,176,943	1,227,197	618	9,059	21,775	
1934			21,558	525	6,548,314	1,536,289	255	7,144	19,900	
1935			22,532	706	6,289,714	1,696,867	529	11,433	23,100	
1936			17,442	683	7,045,514	1,946,060	399	9,137	26,700	
1937			29,849	1,525	8,413,343	2,162,444	252	6,445	28,416	
1938			22,363	748	7,727,943	1,989,259	564	22,978	19,140	
1939	123,598	341,594	39,130	1,240	8,635,973	2,236,952	458	31,962	31,638	
1940	414,603	1,211,305	345,455	11,614	10,646,086	2,752,787	794	47,047	36,623	
1941	516,037	1,426,057	1,622,823	54,559	12,317,857	3,246,648				
1942	545,110	1,516,142	3,183,159	107,018	11,877,085	3,125,574	1,400	89,243	28,023	
Totals	4,340,111	8,258,379	69,684,552	4,779,380	239,225,378	60,729,126		2,955,361		1,578,638

10 tons iron oxides at \$160 in 1911.

The value of molybdenite produced to the end of 1938 totalled \$157,811, including the following outputs: 1838: 14,000 lb. value \$4,500. 1937: 15,000 lb. value \$8,147. 1931: 1,222 lb. value \$280. 1918: 42,931 lb. value \$49,371. 1917: 68,213 lb. value \$68,213. 1916: 23,300 lb. value \$23,800 and \$1,500 worth in 1914. 482 pounds valued at \$216 were produced in 1939 and 423 pounds valued at \$150 in 1942. Magnesium metal was produced in Ontario for the first time in 1942, the recovery from Ontario dolomite totalling 473,910 pounds worth \$208,520.

Table 12.—Historical Summary of the Mineral Production of Ontario—Continued

	Natural Gas		Nepheline Syenite	Nickel		Peat		Petroleum		Phosphate (a)	
	M cu. ft.	\$	\$	pounds	\$	tons	\$	barrels	\$	tons	\$
1870.										1,200	13,600
1871.										200	2,100
1872.											
1873.											
1874.											
1875.											
1876.											
1877.											
1878.										824	12,278
1879.										1,842	20,565
1880.										1,387	14,422
1881.								368,987		2,471	39,117
1882.								389,573		568	6,338
1883.								472,866		50	500
1884.								571,000		763	8,890
1885.								587,563		434	5,962
1886.								584,061	525,655	1,060	15,735
1887.								713,728	556,708	4,101	55,363
1888.								605,203	713,095	2,680	22,506
1889.				830,477	408,280			704,690	653,600	3,436	20,262
1890.				1,435,742	933,232			785,030	902,734	4,581	51,065
1891.				4,035,347	2,421,208			755,298	1,010,211	3,344	35,187
1892.		150,000		2,413,717	1,399,958			779,763	984,438	1,701	22,460
1893.		376,233		3,982,982	2,071,151			798,406	874,255	240	1,886
1894.		313,754		4,907,430	1,870,958			820,104	835,322		
1895.		423,032		3,888,525	1,300,984			726,138	1,086,738		
1896.		276,301		3,397,113	1,188,960			720,822	1,155,647		
1897.		325,873		3,097,647	1,399,176			709,857	1,011,546		
1898.		322,123		5,517,690	1,820,838			758,301	1,061,747	101	505
1899.		387,271		5,744,000	2,067,840			808,570	1,202,020	1,721	10,324
1900.		417,094		7,080,227	3,327,797	400	1,200	710,498	1,151,007	145	1,015
1901.		339,476		9,180,047	4,594,523	220	606	622,392	1,008,275		
1902.		195,992		10,093,410	5,025,003	475	1,663	530,624	951,190		
1903.		196,535		12,505,510	5,002,204	1,100	3,300	486,637	1,048,874		
1904.		233,624		10,547,883	4,219,153	800	2,400	503,474	935,895		
1905.		316,476		18,876,315	7,550,526	80	260	634,065	856,028		
1906.		533,446		21,490,955	8,948,834	474	1,422	509,753	701,760	250	1,875
1907.		746,499		21,189,793	9,535,407	50	200	788,872	1,057,088	416	2,608
1908.		949,297		19,143,111	8,231,538	60	180	527,987	747,102	998	8,894
1909.		1,145,307		20,282,091	9,401,877	60	240	420,755	559,604	473	3,254
1910.		1,271,303		37,271,033	11,181,310	771	2,324	314,410	386,724	22	102
1911.	10,863,871	1,807,513		34,098,744	10,229,623	1,263	3,017	288,631	354,054	35	297
1912.	12,529,463	2,036,245		44,841,542	13,452,463	200	900	240,657	341,251		
1913.	12,474,745	2,055,768		49,076,772	14,903,032	600	2,100	225,969	402,677		
1914.	14,094,521	2,215,868		45,517,937	13,655,381	685	2,470	212,693	338,182	400	2,400
1915.	15,211,523	2,622,938		68,308,657	20,492,597	300	1,050	214,444	299,140	17	102
1916.	17,953,109	2,765,105		82,058,564	29,035,497	300	1,500	196,778	389,621	13	174
1917.	19,868,035	3,641,487		84,330,280	33,732,112			202,091	473,477	26	256
1918.	13,029,524	2,884,460		92,507,293	37,002,917			288,692	777,737		
1919.	11,024,041	2,690,400		44,544,883	17,817,953	500	1,750	210,804	625,342	2	31
1920.	10,529,374	2,920,731		61,335,706	24,534,282	4,550	18,650	180,071	726,286		
1921.	8,422,774	3,080,130		19,293,060	6,752,571	1,666	6,664	172,859	550,198		
1922.	8,060,114	4,076,290		17,597,123	6,158,003	3,000	14,500	164,731	526,316	59	476
1923.	8,128,413	4,066,244		62,453,843	18,332,077			150,406	478,149		
1924.	7,150,078	3,798,381		69,536,350	19,470,178			154,368	441,052		
1925.	7,143,962	3,958,090		73,857,114	15,946,672	1,370	8,394	143,134	389,655		
1926.	7,764,990	4,409,593		65,714,294	14,374,163			137,850	370,221		
1927.	7,311,215	4,331,780		66,798,717	15,262,171			130,600	288,347	82	824
1928.	7,632,800	4,535,312		96,755,578	22,318,907	1,497	5,845	134,094	249,737		
1929.	8,580,475	4,959,695		110,275,012	27,115,461	1,000	4,500	121,194	253,678		
1930.	7,965,761	5,034,828		103,768,857	24,455,133	628	1,602	117,302	235,746		
1931.	7,419,534	4,035,497		65,666,320	15,267,453	504	1,096	122,365	210,993		
1932.	7,386,154	4,719,297		30,327,968	7,179,862	2,486	5,307	130,343	247,468		
1933.	7,166,659	4,523,085		83,204,658	20,130,480	450	900	136,068	253,486		
1934.	7,682,851	4,741,368		128,687,340	32,139,425	1,878	7,343	141,385	299,874		
1935.	8,158,825	4,038,084		138,516,240	35,345,103	1,340	5,761	165,041	346,156	70	60
1936.	10,006,733	6,052,294	37,426	169,739,303	43,876,525	1,206	7,121	165,498	350,767		
1937.	10,746,344	6,588,708	121,481	224,790,974	59,469,423	478	2,676	165,205	356,000		
1938.	10,952,806	6,460,764	142,737	210,572,738	53,914,464	620	3,500	172,641	350,268		
1939.	11,996,581	7,261,928	226,105,895	50,920,305	59,822,591	445	2,445	206,379	401,430		
1940.	13,053,403	7,745,834	117,849	245,557,871	59,822,591	30	75	187,644	397,078		
1941.	11,828,703	7,140,130	227,583	282,258,253	68,656,705	(b) 4,670	44,863	160,238	337,760		
1942.	10,476,770	6,809,901	246,893	285,211,803	(c) 69,998,427	(b) 9,699	148,933	143,845	306,242	334	4,458
<b>Total</b>		<b>148,447,236</b>	<b>1,034,117</b>	<b>3,619,291,576</b>	<b>995,874,667</b>	<b>45,845</b>	<b>316,751</b>	<b>24,496,414</b>		<b>35,455</b>	<b>391,983</b>

(a) No record of production 1872-1877. (b) Includes 4,315 tons of moss valued at \$42,708. (c) Includes 9,427 tons of moss valued at \$147,729.

\* Exports.

Table 12.—Historical Summary of the Mineral Production of Ontario—Continued

—	Platinum		Palladium		Other Platinum Metals		Quartz (a)		Salt	
	Fine oz.	\$	Fine oz.	\$	Fine oz.†	\$	Tons	\$	Tons	\$
1890							200	1,000		
1891										
1892										
1893							100	500		
1894										
1895										
1896							10	50		
1897										
1898							284	570	57,142	248,639
1899							600	1,260	59,339	254,390
1900									62,055	279,458
1901									59,428	262,328
1902			4,411	86,014					64,456	292,581
1903			3,177	61,952					62,452	297,517
1904			952	18,564					69,477	321,778
1905			1,562	28,116					67,340	320,858
1906			314	5,652					48,376	65,765
1907									56,585	124,148
1908									44,741	52,830
1909									56,921	71,285
1910									87,400	90,945
1911									59,978	83,181
1912									99,688	193,976
1913									77,252	107,842
1914									52,947	83,628
1915									95,771	143,257
1916									94,519	167,636
1917									177,983	362,251
1918									216,539	474,772
1919	25	1,447	62	3,534					60,055	179,549
1920	578	36,961	913	58,392	513	31,815	90,433	321,063	206,832	1,512,724
1921	269	20,184	591	38,267	57	9,690	72,068	220,896	161,987	1,649,626
1922	458	44,709	724	47,090	391	31,280	81,528	118,054	176,741	1,573,667
1923	1,210	141,010	1,732	138,560	304	45,000	225,110	493,285	197,917	1,674,365
1924	9,181	1,090,858	8,923	811,993	593	51,120	111,645	192,855	203,428	1,337,311
1925	8,692	1,027,477			8,288	648,969	188,560	324,526	226,315	1,352,504
1926	9,471	919,340			10,024	640,178	192,733	330,304	252,345	1,388,672
1927	11,217	716,653			11,545	554,199	159,150	266,304	254,181	1,510,777
1928	10,452	704,360			13,087	605,563	191,503	308,608	279,841	1,377,029
1929	12,474	843,928			17,141	802,453	187,973	316,050	302,445	1,420,424
1930	34,000	1,542,172			34,040	894,511	197,487	274,674	248,637	1,558,405
1931	44,725	1,595,117			46,918	1,217,717	97,888	148,642	231,329	1,760,388
1932	27,284	1,097,021			37,613	90,890	66,135	93,574	231,138	1,789,751
1933	24,746	858,190			31,009	645,043	66,562	89,146	244,107	1,755,087
1934	116,177	4,438,712			83,932	1,609,282	89,838	134,572	276,751	1,734,106
1935	105,335	3,444,455			84,772	1,962,937	83,034	129,005	320,003	1,698,508
1936	131,551	5,319,922			103,671	2,483,075	884,585	218,037	330,044	1,557,078
1937	139,355	6,751,750			119,829	3,179,782	1,142,372	633,073	407,701	1,539,599
1938	181,310	5,196,279			130,893	3,677,342	1,173,259	597,037	388,130	1,637,140
1939	148,877	5,221,712			135,402	4,190,622	1,333,342	665,148	370,843	2,200,189
1940	108,464	4,239,424			91,522	3,520,749	1,581,367	810,285	412,401	2,371,780
1941	124,257	4,747,890			97,432	3,396,304	1,745,244	899,687	477,170	2,512,166
1942	Censored		Censored		Censored		1,367,733	914,266	558,407	2,793,328
Totals...			23,361	1,298,104	1,058,976	30,387,509	12,532,500	10,718,336	8,743,918	56,791,451

†Other platinum metals include palladium from 1925 to 1942.

(a) From 1936 includes low grade silica fluxing sand.



Table 12.—Historical Summary of the Mineral Production of Ontario—Continued

—	Sand and Gravel		Selenium		Silica Brick		Silver	
	Tons	\$	Pounds	\$	M	\$	Fine oz.	\$
1887							190,495	186,304
1888							208,064	195,580
1889							181,609	169,086
1890							158,715	166,066
1891							225,633	222,026
1892							41,581	36,425
1893								8,689
1894								
1895								
1896								
1897							5,000	2,990
1898							85,000	49,521
1899							202,000	120,352
1900							161,650	99,140
1901							151,400	89,250
1902							145,000	75,632
1903							17,777	9,502
1904							206,875	119,376
1905							2,451,356	1,479,442
1906							5,401,766	3,607,894
1907							9,982,363	6,521,173
1908							19,398,545	10,254,847
1909							24,822,099	12,784,126
1910							30,366,366	16,241,755
1911							30,540,754	16,279,443
1912							29,214,025	17,772,352
1913							28,411,261	16,987,377
1914							25,139,214	13,779,055
1915	3,033,383	727,426					22,748,699	11,302,419
1916	3,711,231	818,947					21,608,158	14,188,133
1917	4,283,076	1,170,052					19,301,835	15,714,975
1918	(c)	(c)					17,198,737	16,043,562
1919	(c)	(c)					12,117,878	13,465,628
1920		1,931,924					9,907,626	9,999,798
1921	6,273,173	1,406,729					9,791,607	6,116,037
1922	6,285,123	2,184,174					10,811,903	7,300,305
1923	8,146,433	2,036,958					10,540,843	6,838,226
1924	6,174,284	2,041,959					11,272,567	7,527,933
1925	5,201,604	1,779,129					10,529,131	7,271,044
1926	6,483,163	2,292,678			1,307	66,241	9,274,965	5,700,402
1927	7,512,763	2,405,729			553	28,549	9,307,953	5,246,893
1928	10,389,408	2,230,307			1,597	86,323	7,242,601	4,213,456
1929	11,358,598	3,462,379			1,566	80,374	8,890,726	4,711,462
1930	12,027,082	3,783,830			378	19,120	10,205,083	3,893,876
1931	7,465,017	2,592,477	16,899	32,108	279	13,702	7,438,951	2,222,014
1932	6,994,447	1,971,239			93	4,304	6,335,788	2,009,648
1933	5,967,994	2,517,230	26,090	53,745	183	7,351	4,535,080	1,715,975
1934	7,880,959	1,821,689	51,574	91,286	369	14,730	5,321,100	2,525,470
1935	8,770,117	2,211,400	75,363	144,697	493	22,976	5,161,651	3,344,229
1936	8,498,153	2,227,620	106,300	188,151	471	26,715	5,219,366	2,355,343
1937	8,832,526	3,613,854	116,696	201,884	818	59,980	4,693,047	2,106,286
1938	8,531,281	3,046,043	54,577	94,691	595	50,592	4,318,837	1,877,701
1939	9,350,875	3,537,216	126,930	224,539	603	49,695	4,689,422	1,898,053
1940	9,678,745	4,025,026	136,350	260,429	629	62,661	5,563,101	2,127,831
1941	11,509,382	4,524,463	142,498	272,171	1,283	118,922	4,977,476	1,904,432
1942	8,420,358	3,433,986	76,000	145,920	1,183	120,495	4,452,787	1,877,562
Totals			929,277	1,709,621	12,400	832,630	471,136,736	283,412,398

(c) Included with Other Products, data not available by provinces.

Table 12.—Historical Summary of the Mineral Production of Ontario—Continued

	STONE									
	Granite		Limestone		Marble		Sandstone		Slate	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1909.....		42,700		639,674		3,441		62,824		
1910.....		109,678		722,763		4,100		62,247		
1911.....		131,816		680,461		25,996		54,032		
1912.....		174,946		862,052		12,926		59,240		
1913.....		324,062		1,196,130		18,238		54,738		
1914.....		309,720		853,906		30,300		59,923		
1915.....		140,894		634,728		10,927		19,588		
1916.....		135,826		688,114				33,083		
1917.....		119,301		808,658				64,516		
1918.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)		
1919.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)		
1920.....	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)		
1921.....	165,418	233,353	2,547,625	3,927,830			3,037	6,393		
1922.....	185,738	412,995	2,128,769	2,547,561			2,758	9,370		
1923.....	188,998	293,454	2,436,453	2,542,320			5,473	23,378		
1924.....	214,691	208,219	2,614,911	2,551,111			10,571	30,038		
1925.....	203,567	242,160	2,750,115	2,530,621			9,030	44,562		
1926.....	398,253	359,217	3,214,544	2,742,424	586	13,755	8,659	41,892		
1927.....	390,679	294,098	3,854,421	3,716,419			9,860	50,192		
1928.....	605,275	506,601	3,967,098	3,421,064			9,556	53,903		
1929.....	850,927	926,977	4,380,706	3,759,357			8,039	49,929		
1930.....	856,124	876,110	4,624,001	3,876,527	7,345	51,088	8,103	46,806		
1931.....	133,905	232,557	3,215,667	2,594,325	4,323	29,173	5,439	25,386		
1932.....	73,272	186,357	1,825,793	1,419,049	2,065	40,175	4,008	9,435		
1933.....	19,650	39,433	1,222,752	910,419	2,614	21,083	8,890	12,333		
1934.....	75,526	128,386	2,370,339	1,788,107	4,331	20,556	10,104	28,458	120	600
1935.....	44,473	93,465	2,061,200	1,080,810	4,726	35,210	12,536	54,407		
1936.....	402,227	582,603	2,205,992	1,773,764	4,765	29,204	3,436	10,805	260	2,080
1937.....	625,160	769,860	3,582,175	2,841,469	6,685	27,247	8,680	22,934	300	2,258
1938.....	254,917	351,941	2,242,964	1,911,841	10,537	40,694	4,662	16,220	211	2,469
1939.....	495,619	625,880	1,931,285	1,624,618	6,519	30,642	4,124	16,322	47	619
1940.....	529,440	704,421	3,302,596	2,649,809	4,792	22,157	3,446	11,008		
1941.....	152,426	388,325	3,353,856	2,832,056	6,540	30,365	13,420	27,190		
1942.....	90,530	288,828	2,992,885	2,636,431	4,295	27,675	18,835	33,004		

(a) 1918-1920, total values of all kinds of stone—1918, \$1,079,745; 1919, \$1,936,268; 1920, \$4,035,478.

Table 12.—Historical Summary of the Mineral Production of Ontario—Concluded

	Sulphur (b)		Talc (a)		Tellurium		Zinc (e)		Other Products
	tons	\$	tons	\$	pounds	\$	pounds	\$	\$
1886.....			50	400					
1887.....			100	800					
1888.....			140	280					
1889.....			195	1,170					
1890.....			917	1,239					
1891.....									
1892.....			1,374	6,240					
1893.....			717	1,920					
1894.....			916	1,640					
1895.....			475	2,138					
1896.....			410	1,230					
1897.....			157	350					
1898.....			405	1,000					
1899.....			450	1,960			814,000	46,805	
1900.....			1,420	6,365			190,400	8,359	
1901.....			259	842					
1902.....			889	1,804			142,200	6,882	
1903.....			990	2,730			900,000	48,600	
1904.....			840	1,875			477,565	24,350	
1905.....			500	1,800					
1906.....			1,234	3,030			500	6,700	
1907.....			1,534	4,602			217	3,000	
1908.....	20,738	65,236	1,016	3,048			452	3,215	(e)(d) 319,563
1909.....	29,344	92,812	4,350	10,300			895	8,950	(e) 393,875
1910.....	29,628	84,902	7,112	22,308			576	5,760	(e) 632,644
1911.....	43,544	118,265	7,300	22,100					408,110
1912.....	20,677	70,689	8,270	23,132			10	375	363,668
1913.....	71,252	171,925	12,250	45,980					638,771
1914.....	110,616	273,716	10,808	40,418					833,635
1915.....	143,303	414,250	11,885	40,554					
1916.....	177,552	555,523	13,051	48,575					17,956
1917.....	288,058	1,080,860	15,778	76,130					
1918.....	268,507	1,133,963	18,169	119,197					1,316,426
1919.....	117,011	285,532	18,542	115,705			147,692	10,838	1,192,516
1920.....	148,652	618,283	21,411	162,784			13,950	1,070	
1921.....	27,785	101,306	9,967	140,390					
1922.....	11,233	39,763	12,854	178,728					
1923.....	25,134	99,719	9,531	125,124					
1924.....	11,429	44,542	10,718	130,577					
1925.....	685	8,799	13,678	174,116			179,545	13,088	
1926.....	371	4,912	14,882	178,980					
1927.....	463	6,977	15,138	181,981					
1928.....	4,974	54,100	14,925	179,187			58,724	3,226	
1929.....	4,570	51,516	15,463	180,492			5,510,800	297,190	
1930.....	7,277	73,855	11,664	133,213			3,527,894	127,004	
1931.....	6,508	65,080	11,806	122,044					
1932.....	3,332	33,320	12,064	111,585					
1933.....	8,196	81,960	15,114	142,134					
1934.....	14,598	145,980	13,934	135,978	5,130	25,599			
1935.....	13,292	132,920	13,710	138,161	14,275	28,550			
1936.....	14,152	141,520	14,461	143,701	10,187	18,049			
1937.....	14,009	140,090	12,457	123,301	6,651	11,506	120,011	5,883	
1938.....	16,897	168,970	10,853	109,810					
1939.....	16,126	161,260	13,144	128,595					
1940.....	18,688	186,880	15,166	154,734	3,401	5,007			(f) 690
1941.....	10,057	100,570	18,171	204,884	11,453	18,894	1,100,949	37,553	(f) 2,432
1942.....	18,034	186,340	15,499	174,295	9,500	15,200	4,710,394	150,671	(f) 145,241
Totals.....	1,717,391	6,995,738	458,913	4,065,770	68,697	122,905		820,116	6,255,577

(a) Includes some soapstone from 1925 to 1931.

(b) 1908 to 1927, sulphur content of pyrites shipped; 1928 to 1942, sulphur content of pyrites shipped plus sulphur recovered from smelter gas.

(c) Includes sand-lime brick and sand and gravel. (d) Includes peat.

(e) 1898 to 1904, pounds of zinc contained in ores or concentrates shipped; 1905 to 1915, tons of ore or concentrates shipped; 1916 to 1942, pounds of zinc recovered by Canadian smelters and estimated recoveries by foreign smelters.

(f) Tungsten concentrates: 1940, 1,064 pounds at \$690; 1941, 3,830 pounds at \$2,432, and 1942, 162,185 pounds valued at \$145,241.

NOTE.—In 1919 Ontario produced 48 tons of strontium minerals valued at \$336, in 1920, 75 tons worth \$2,675 were produced, and in 1941, 27 tons worth \$280.



Table 12.—Historical Summary of the Mineral Production of Manitoba

—	Cadmium		Cement		Clay Products	Coal		Copper		Feldspar	
	pounds	\$	brls.	\$	\$	tons	\$	pounds	\$	tons	\$
1886					14,475						
1887					8,125						
1888					2,400						
1889					19,636						
1890					15,300						
1891					13,300						
1892					87,450						
1893					.						
1894					.						
1895					.						
1896					.						
1897					.						
1898					34,000						
1899					25,000						
1900					25,000						
1901					20,000						
1902					(a) 150,000						
1903					(a) 150,000						
1904					(a) 150,000						
1905					588,735						
1906					517,065						
1907					496,432						
1908			11,234	16,851	265,091						
1909			8,600	8,600	559,008						
1910			18,501	21,995	781,605						
1911			21,350	28,280	834,428						
1912			12,127	16,068	1,018,051						
1913			179,342	326,856	514,358						
1914			492,131	737,046	317,488						
1915			339,554	625,369	93,674						
1916			427,233	794,897	104,248						
1917			544,949	1,175,689	114,651			1,116,000	303,329		
1918			500,302	1,283,948	116,417			2,339,751	576,234		
1919					131,737			3,348,000	625,775		
1920					206,764			3,062,577	534,604		
1921					208,982						
1922			429,352	1,126,137	210,740						
1923			320,218	817,664	160,134						
1924			286,948	746,750	117,450						
1925			407,395	1,037,929	173,794						
1926			612,155	1,572,401	248,497						
1927			551,098	1,378,121	201,464						
1928			693,450	1,685,084	291,701						
1929			1,000,258	2,350,606	362,240						
1930			977,906	2,268,742	215,967			2,087,609	215,018		
1931			544,160	1,267,853	122,628	1,306	3,797	45,821,442	3,835,254		
1932			242,112	549,594	49,773	1,552	3,684	52,706,861	3,362,863		
1933			129,540	295,351	20,966	3,880	9,214	38,163,181	2,844,989	88	484
1934			181,166	411,247	37,916	4,113	8,952	30,867,141	2,290,126	1,793	6,763
1935			266,457	604,857	74,755	3,100	7,408	38,011,371	2,963,146	2,084	6,252
1936	149,133	131,838	348,042	783,095	55,564	4,029	9,625	29,853,220	2,829,190	1,822	7,932
1937	164,223	209,326	328,518	745,736	95,531	3,172	7,709	44,920,855	5,874,747		
1938	115,166	92,543	330,889	754,427	105,334	2,016	5,690	65,582,772	6,539,914	78	451
1939	73,830	52,029	343,717	773,363	78,892	1,138	3,110	70,458,890	7,110,711	40	330
1940	57,742	67,154	572,408	1,287,918	102,906	1,697	4,037	75,267,957	7,591,524		
1941	61,085	71,714	576,648	1,274,392	84,817	1,246	3,411	67,018,563	6,759,492		
1942	29,236	34,498	654,855	1,374,498	80,890	1,265	3,763	47,595,586	4,800,491		
Total...	649,415	719,102	12,263,335	28,141,393	10,425,469	28,520	70,270	618,221,726	59,657,347	5,405	22,212

\* Data not available by provinces.

(a) Includes production of Alberta and Saskatchewan.

Table 12.—Historical Summary of the Mineral Production of Manitoba—Continued

	Gold		Gypsum		Lime		Natural Gas		Quartz		Salt	
	fine oz.	\$	tons	\$	bushels	\$	M cu. ft.	\$	tons	\$	tons	\$
1901.			600	7,800	1884—2,000	460						
1902.			1,554	20,202	1887—32,800	8,500						
1903.			3,160	20,510	1888—57,600	8,940						
1904.			4,000	14,000	1889—52,460	8,646						
1905.			4,500	31,500	1890—60,550	10,700						
1906.			2,500	22,500	1905—1801	Nil						
1907.					620,201	119,792						
1908.			14,500	111,500	431,548	84,703						
1909.			17,000	170,000	138,786	24,102						
1910.			19,500	195,000	423,954	64,670						
1911.			43,000	372,000	506,679	100,808						
1912.			66,500	481,250	706,888	140,620						
1913.			65,100	479,500	818,237	168,257						
1914.			53,423	382,553	576,938	107,291						
1915.			20,278	139,721	526,167	92,898						
1916.			28,489	191,283	281,432	71,372						
1917.	440	9,095	33,347	258,934	355,301	83,754						
1918.	1,926	39,814	37,483	341,352	393,982	92,932						
1919.	724	14,966	32,903	371,337	462,544	134,725						
1920.	781	16,145	44,371	487,894	476,452	147,131						
1921.	207	4,279	40,859	480,282	805,399	210,984	200	60				
1922.	156	3,225	34,072	440,914	413,283	136,375	200	60				
1923.	31	641	31,575	386,554	525,184	163,799	200	60				
1924.	1,180	24,393	29,375	348,212	524,128	161,226	200	60				
1925.	4,424	91,452	35,088	417,868	394,229	121,618	200	60				
1926.	188	3,886	35,172	451,461	450,315	170,230	200	60				
1927.	182	3,762	39,895	512,038	685,389	251,269	200	60				
1928.	19,813	409,571	51,285	609,039	648,975	246,279	200	60				
1929.	22,455	464,186	67,209	631,051	523,194	319,699	200	60	(a)	1		
1930.	23,180	479,350	34,157	298,297	921,314	301,104	600	180	10,045	35,610		
1931.	102,969	2,220,512	23,070	231,121	260,325	600,325	600	180				
1932.	122,507	2,876,350	12,710	113,739	600,400	207,401	600	180	67,214	76,621		
1933.	125,310	3,583,806	0,830	65,471	521,000	172,110	600	180	87,453	102,493	508	7,002
1934.	132,321	4,505,075	9,657	81,553	515,200	167,640	600	180	7,736	23,507	1,409	18,388
1935.	142,613	5,018,551	10,500	85,885	473,371	163,608	600	180	931	3,031	1,464	20,137
1936.	139,273	4,878,733	12,064	87,076	531,857	185,517	600	180	147	220	1,538	18,765
1937.	157,949	5,526,636	13,941	88,095	621,714	211,035	600	180	90	45	2,498	32,151
1938.	185,706	6,532,209	14,571	92,129	445,629	215,165	600	180			3,391	43,405
1939.	180,875	6,537,063	15,961	98,578	566,400	198,685	600	180			2,920	34,979
1940.	152,295	5,863,357	23,108	137,651	572,343	196,190	600	180			2,453	35,888
1941.	150,553	5,796,290	27,601	162,822	633,343	217,547	600	180			3,676	45,731
1942.	136,226	5,244,701	29,218	179,780	774,286	273,492	(b)	(b)			13,051	115,367
					754,971	265,079	(b)	(b)			22,709	397,101
<b>Total</b>	<b>1,804,293</b>	<b>60,298,117</b>	<b>1,090,201</b>	<b>10,167,835</b>	<b>20,623,937</b>	<b>6,349,757</b>	<b>9,000</b>	<b>2,700</b>	<b>173,617</b>	<b>241,800</b>	<b>55,304</b>	<b>709,664</b>

(a) Rose quartz. (b) No reports received; estimated in previous years.

NOTE.—In 1935 there were produced 19,179 lb. of lead, valued at \$601; in 1937 lithium minerals valued at \$1,604 were also produced.

Table 12.—Historical Summary of the Mineral Production of Manitoba—Concluded

—	Sand and Gravel		Selenium		Silver		Stone					
	tons	\$	lb.	\$	fine oz.	\$	Granite		Limestone		Marble	
							tons	\$	tons	\$	tons	\$
1909								3,245		328,554		
1910								3,643		328,029		
1911								2,268		315,782		
1912		101,653						1,523		381,572		
1913		197,719						6,920		382,984		
1914		314,081						15,654		346,258		
1915	484,244	203,668						351		153,113		
1916	1,157,605	243,542								372,894		
1917	638,802	289,061								301,968		
1918					7,201	5,863						
1919					13,316	12,886	(a)	(a)	(a)	(a)	(a)	(a)
1920					20,700	23,069	(a)	(a)	(a)	(a)	(a)	(a)
1921					15,510	15,649	(a)	(a)	(a)	(a)	(a)	(n)
1922					33	20			16,868	56,666		
1923	780,231	207,415			20	14			34,356	100,038		
1924	595,549	123,478			5	3			51,304	118,277		
1925	359,535	81,897			140	93			54,065	93,876		
1926	727,152	196,601			477	329			52,770	188,496		
1927	989,581	178,059			18	11			101,571	357,884		
1928	1,333,580	228,665			12	7			154,666	318,556		
1929	1,653,929	262,006			1,763	1,026	114,000	114,000	121,864	494,217		
1930	1,782,085	322,430			2,644	1,401			191,506	885,826	603	9,191
1931	1,253,103	453,944			94,653	36,114			140,316	1,075,485	762	9,994
1932	871,986	294,178	3,870	7,353	836,547	249,877			152,858	636,226	390	6,423
1933	440,309	188,974			1,030,497	328,275	18	232	78,405	290,050		
1934	288,214	108,828			1,101,578	416,758	332	2,987	32,858	71,240		
1935	334,026	95,426	4,127	6,490	1,252,929	594,647	213	2,702	42,014	50,843		
1936	1,399,659	404,730	65,074	124,942	1,206,454	781,660	387	4,630	146,100	183,892	127	1,233
1937	1,852,606	545,130	50,760	89,845	791,489	357,175	185	2,038	49,261	69,837	60	90
1938	1,380,957	551,464	43,920	75,982	905,179	406,253	138	1,790	41,053	63,432		
1939	1,216,084	645,812	57,788	100,262	1,198,315	520,991	329	6,120	39,049	95,497		
1940	1,363,593	514,404	(b)	(b)	1,028,485	416,413	174	3,544	35,969	80,401		
1941	1,851,645	839,993	(b)	(b)	1,033,512	395,308	218	4,324	48,488	74,116		
1942	1,503,901	429,996	32,179	61,462	966,105	369,641	244	4,155	38,103	60,743		
	1,443,001	427,150	21,209	40,721	821,824	346,530	133	2,452	43,355	69,514		
Total	8,450,312	278,927	566,757	12,335,397	5,280,613							

(a) Totals by kinds not available. Total values all kinds of stone: 1918, \$238,251; 1919, \$89,067; 1920, \$374,280.

## MANITOBA

Year	Tellurium		Zinc		Other Products
	pounds	\$	pounds	\$	\$
1908					(a) 145,000
1909					
1910					
1911					
1912					
1913					
1914					
1915					
1916					
1917					
1918					294,493
1919					1,340,449
1920					2,179,341
1921					1,047,453
1922					
1923					
1924					
1925					
1926					
1927					
1928					
1929					
1930					
1931			3,882,141	139,757	
1932			35,173,749	808,338	
1933			41,730,690	1,004,016	
1934			43,516,037	1,397,082	
1935			47,294,342	1,438,538	
1936	340	680	51,129,980	1,584,513	
1937	3,928	6,953	36,744,951	1,218,095	
1938	5,124	8,865	36,221,314	1,775,509	
1939	4,454	7,661	46,864,575	1,440,148	
1940	(b)	(b)	40,302,747	1,236,591	
1941	(b)	(b)	35,103,373	1,197,378	
1942	(b)	(b)	34,870,239	1,189,731	(c) 32,342
	361	578	29,908,179	1,020,168	(c) 65,832
Total	14,207	24,737	482,727,227	15,540,222	5,094,910

(a) Includes building stone, etc.

(b) No commercial recovery reported by smelter; sometimes recovered by copper refiner but presumed not paid for.

(c) 1,457 tons of peat moss valued at \$32,342 in 1941 and 2,224 tons at \$35,832 in 1942.

NOTE.—In addition there were 177 pounds of tungsten concentrates valued at \$42 shipped in 1918 and 1,399 pounds at \$1,300 in 1942



Table 12.—Historical Summary of the Mineral Production of Saskatchewan

—	Cadmium		Clay Pro- ducts (b)	Coal*		Copper		Gold (e)		Natural Gas	
	pounds	\$	\$	tons	\$	pounds	\$	fine oz.	\$	M cu. ft.	\$
1886.....			9,400								
1887.....			4,300	(d) 400	800						
1888.....			1,650								
1889.....			9,210								
1890.....			10,000	200	200						
1891.....			23,003								
1892.....			24,937	5,406	9,325						
1893.....				8,325	12,485						
1894.....				(e) 15,051	15,153						
1895.....				15,709	31,538						
1896.....				19,706	25,050						
1897.....				25,000	37,500						
1898.....				25,000	37,500						
1899.....				25,000	37,500						
1900.....				40,500	60,750						
1901.....				45,000	72,000						
1902.....			(a)	70,400	112,640						
1903.....			(a)	116,703	169,618						
1904.....			(a)	124,885	187,021						
1905.....				103,278	107,590						
1906.....				130,022	108,398						
1907.....				125,450	151,232						
1908.....				87,506	150,556						
1909.....				145,516	192,125						
1910.....				160,550	181,156						
1911.....				226,958	206,779						
1912.....				332,943	225,342						
1913.....				189,820	212,897						
1914.....				98,349	232,209						
1915.....				44,406	240,107						
1916.....				78,668	281,300						
1917.....				78,251	355,445						
1918.....				133,935	346,847						
1919.....				270,989	379,347						
1920.....				471,448	335,232						
1921.....				166,244	335,632						
1922.....				134,704	382,437						
1923.....				119,405	438,100						
1924.....				137,280	479,118						
1925.....				95,952	471,965						
1926.....				214,113	439,803						
1927.....				311,240	470,216						
1928.....				377,896	471,713						
1929.....				502,522	540,189						
1930.....				340,283	570,424						
1931.....				160,257	602,836						
1932.....				109,739	887,139			11	258		
1933.....				92,207	927,649	1,285,906	3,223,941	240,338	5,400	154,440	
1934.....				90,997	909,288	1,241,130	6,618,013	491,077	5,405	180,472	13,781
1935.....				98,150	921,785	1,293,668	11,429,452	890,974	14,323	504,026	75,558
1936.....	111,749	99,457	95,584	1,020,792	1,463,680	14,071,609	1,418,859	48,981	1,715,805	90,839	33,985
1937.....	144,553	237,067	115,330	1,049,348	1,494,337	22,436,843	2,934,290	65,889	2,805,351	100,380	35,130
1938.....	73,630	59,166	118,713	1,022,166	1,380,416	18,156,157	1,810,532	50,021	1,750,489	90,285	34,136
1939.....	66,608	46,930	148,774	959,595	1,255,142	18,133,149	1,829,997	77,120	2,787,194	96,423	36,640
1940.....	71,594	83,264	184,828	1,097,517	1,408,540	20,484,954	2,066,112	102,925	3,062,613	100,773	30,232
1941.....	108,832	127,769	224,897	1,322,763	1,713,478	32,324,512	3,260,250	138,015	5,313,578	106,168	31,850
1942.....	147,314	173,831	271,325	1,301,116	1,760,065	56,781,460	5,720,979	178,871	6,886,533	117,124	45,585
<b>Total.....</b>	<b>734,289</b>	<b>827,193</b>	<b>6,872,359</b>	<b>20,971,578</b>	<b>32,673,113</b>	<b>294,560,396</b>	<b>20,669,498</b>	<b>686,958</b>	<b>25,575,759</b>	<b>791,331</b>	<b>259,936</b>

\* For the years 1919-1942 the tonnage shown is the total output from all mines; for previous years the figures given include only sales, colliery consumption, and coal used by the operators.

(a) See Manitoba.

(b) Includes production from Alberta 1886-1892.

(c) Includes a small quantity from Manitoba.

(d) From Turtle Mountain district, Manitoba.

NOTE.—In 1907 there were produced 3,700 bush. of lime valued at \$1,480; in 1912, 4,000 bush. valued at \$1,440; and in 1913, 35,000 valued at \$10,000.

In 1920 there were produced 2 tons magnesium sulphate, valued at \$103; and in 1921, 2 tons valued at \$120.

(e) Complete data relating to recovery of placer gold are not available.

## DOMINION BUREAU OF STATISTICS

Table 12.—Historical Summary of the Mineral Production of Saskatchewan  
—Concluded

—	Quartz*		Salt		Sand and Gravel		Selenium		Silver		Sodium Sulphate	
	Tons	\$	Tons	\$	Tons	\$	Pounds	\$	Fine oz.	\$	Tons	\$
1911.												
1912.						255,453						
1913.						236,377						
1914.						222,019						
1915.					111,019	38,206						
1916.					328,110	60,079						
1917.					943,970	112,275						
1918.												
1919.											15	450
1920.											811	19,496
1921.			33	790							623	18,850
1922.					924,944	306,733					504	11,980
1923.					438,319	59,541					733	10,189
1924.					702,713	97,045					1,083	6,004
1925.					579,901	88,805					3,876	19,380
1926.					863,901	145,296					6,775	13,550
1927.					1,517,801	263,100					5,659	11,319
1928.					2,225,524	431,475					6,016	68,804
1929.					3,496,679	687,646					5,018	64,112
1930.					3,680,553	751,779					31,571	293,847
1931.					1,388,594	396,707					44,957	421,097
1932.					362,841	66,942			14	4	22,465	271,736
1933.	59,506	59,506	231	4,510	104,406	19,731			114,004	43,358	50,080	485,416
1934.	92,447	88,748	452	8,703	533,575	169,033	450	689	87,551	41,552	66,821	587,086
1935.	77,177	59,060	101	2,046	502,732	171,170	19,507	37,569	201,608	130,622	44,817	343,764
1936.	76,080	49,458			714,910	284,531	25,389	44,923	642,497	289,940	75,598	552,681
1937.	95,809	33,533			822,447	470,343	28,080	48,578	821,818	368,840	79,804	617,548
1938.	116,898	40,914			1,037,753	662,511	28,612	49,642	898,413	390,603	62,920	552,180
1939.	134,192	46,967			1,913,995	408,199	(a)	(a)	1,141,600	462,211	71,455	627,965
1940.	159,090	55,681			1,472,885	731,353	(a)	(a)	1,601,540	646,097	94,250	829,539
1941.	148,208	51,873			1,220,801	406,835	29,091	55,564	2,047,164	783,266	115,600	931,522
1942.	155,699	54,495			679,979	435,798	71,952	138,148	2,664,132	1,123,358	131,258	1,079,692
<b>Total</b>	<b>1,115,115</b>	<b>540,244</b>				<b>7,988,982</b>	<b>203,141</b>	<b>375,112</b>	<b>10,310,941</b>	<b>4,280,751</b>	<b>922,710</b>	<b>7,839,167</b>

\* Low grade silica sand for fluxing purposes.

(a) No commercial recovery reported by smelter; sometimes recovered by copper refiner but presumably not paid for

	Tellurium		Volcanic Dust		Zinc		Other Products
	pounds	\$	tons	\$	pounds	\$	
1908.							(a) 71,856
1909.							(a) 15,591
1910.							(a) 43,349
1911.							(a) 64,700
1912.							
1913.							
1914.							
1915.							
1916.							
1917.							
1918.							158,572
1919.							415,402
1920.							491,718
1921.							105,036
1922.							
1923.							
1924.				245		1,103	
1925.				160		1,380	
1926.				90		630	
1927.				105		735	
1928.				485		9,795	
1929.				300		6,000	
1930.				242		4,840	
1931.				128		2,560	
1932.				180		3,600	
1933.				118		2,360	
1934.				1		20	
1935.						2,162,038	89,563
1936.	102	204			8,974,720		278,126
1937.	1,904	3,476			27,662,889		918,019
1938.	3,276	5,667			32,750,010		1,605,449
1939.	2,206	3,794			29,962,597		920,751
1940.	(c)	(c)			37,278,001		1,144,002
1941.	(c)	(c)			44,452,595		1,516,278 (b)
1942.	(c)	(c)			62,142,288		2,119,673
	1,223	1,957			84,461,520		2,880,983
<b>Total</b>	<b>8,771</b>	<b>15,098</b>	<b>2,054</b>	<b>33,023</b>	<b>332,668,121</b>	<b>11,538,735</b>	<b>1,366,389</b>

(a) Includes sand-lime brick, etc.

(b) 33 tons grinding pebbles valued at \$165 in 1940.

(c) No commercial recovery reported by smelter; sometimes recovered by copper refiner but presumably not paid for.

Table 12.—Historical Summary of the Mineral Production of Alberta

	Bituminous Sands		Cement		Clay Products	Coal*		Gold		Lime	
	tons	\$	barrels.	\$	\$	tons	\$	fine oz.	\$	bushels	\$
1886						43,220	81,112				
1887						74,152	157,577				
1888						115,124	183,354	58	1,290		
1889						97,364	179,640	987	20,000		
1890						128,753	198,298	193	4,000		
1891						174,131	437,243	290	5,500		
1892						178,970	460,005	508	10,595		
1893						230,070	586,260	466	9,640		
1894						184,940	473,827	726	15,000		
1895						169,885	382,526	2,419	50,000		
1896						209,162	581,832	2,661	55,000		
1897						242,163	630,408	2,419	50,000		
1898						315,088	787,720	1,209	25,000		
1899						309,600	774,000	726	15,000		
1900						311,450	778,625	242	5,000		
1901						310,275	850,087	726	15,000		
1902						402,819	960,601	484	10,000		
1903						495,893	1,117,541	48	1,000		
1904						601,732	1,404,524	24	500		
1905					191,287	931,917	1,993,915	121	2,500		
1906					180,217	1,246,360	2,014,762	39	800	240,000	56,200
1907					353,672	1,591,579	3,836,286	33	637	173,040	41,225
1908					240,384	1,085,891	4,127,311	50	1,037	135,000	34,500
1909					442,480	1,994,741	4,838,109	25	525	281,125	67,350
1910			323,079	774,473	753,232	2,894,469	7,065,736	89	1,850	303,214	69,268
1911			512,171	1,241,535	1,052,751	1,511,038	3,979,264	10	207	434,038	100,407
1912			821,165	1,775,898	1,356,184	3,240,577	8,113,525	73	1,509	704,035	169,520
1913			956,169	1,947,933	893,408	4,014,755	10,418,941			465,250	115,355
1914			941,305	1,212,342	462,199	3,683,015	9,350,392	48	992	280,252	58,321
1915			233,648	415,009	115,696	3,360,818	8,283,079	105	4,026	74,152	14,445
1916			275,727	477,832	225,140	4,559,054	11,386,577	82	1,695	78,019	20,033
1917			259,423	567,969	399,991	4,738,308	14,153,685			104,840	35,518
1918			200,401	528,672	381,074	5,972,816	20,537,287	27	558	80,408	44,141
1919			(c)	(c)	571,043	4,933,660	18,205,205	24	500	109,067	41,276
1920			(c)	(c)	786,430	9,907,765	30,186,933			139,433	72,477
1921			(c)	(c)	710,477	5,900,217	27,246,514	49	1,013	107,083	48,332
1922			358,209	838,208	700,093	5,990,911	24,351,913			130,627	71,328
1923			318,756	740,940	599,565	6,854,397	28,018,303			87,753	37,999
1924	531	2,127	416,534	945,700	540,477	5,189,729	18,884,318			90,214	36,279
1925	1,148	4,594	395,857	913,529	618,890	5,809,031	20,021,484			98,638	39,852
1926	528	2,112	423,766	873,621	804,933	6,503,705	20,886,103			108,309	39,517
1927	2,706	10,824	631,699	1,303,880	889,358	6,934,162	21,982,058	42	868	130,596	46,947
1928	94	374	834,067	1,732,582	1,162,264	7,336,330	25,532,414	68	1,496	190,629	69,588
1929	989	3,956	808,795	1,770,789	1,342,427	7,150,693	22,928,192	5	103	219,457	79,560
1930	2,067	8,268	525,289	1,144,160	997,685	5,755,528	18,063,225			146,743	49,525
1931	1,015	4,060	626,483	1,286,080	520,716	4,564,015	13,342,675	195	4,205	146,220	46,785
1932	343	1,372	193,571	399,922	329,584	4,870,648	13,520,309	83	1,949	189,771	56,877
1933	466	1,662	149,206	299,530	198,373	4,718,788	12,307,258	324	0,267	214,314	82,037
1934	862	3,449	163,946	325,253	246,677	4,753,810	12,556,099	393	13,558	213,000	65,697
1935	40	160	219,555	426,914	329,679	5,462,894	14,094,706	159	5,279	188,114	57,108
1936			243,534	482,197	315,777	5,696,960	14,659,705	109	3,818	200,829	78,259
1937	35	142	267,106	531,541	338,638	5,562,839	14,563,911	46	1,610	304,314	83,478
1938	(d)	(d)	304,373	611,790	377,337	5,251,233	13,698,470	305	10,728	344,371	107,012
1939	(d)	(d)	377,849	744,357	461,079	5,519,208	14,415,281	359	12,974	357,115	108,632
1940	(d)	(d)	414,183	832,598	838,856	6,293,839	16,377,959	215	8,277	482,057	149,720
1941	(d)	(d)	492,515	985,039	952,144	6,969,002	19,382,471	215	8,277	512,887	151,296
1942	(d)	(d)	668,043	1,307,353	1,013,497	7,754,053	22,021,410	34	1,309	537,743	155,780
Total					22,601,566	188,771,334	579,581,244	17,652	395,961	8,662,636	2,588,331

(c) Included in other products.

(d) Now included under petroleum.

\* For the year 1919-1942 the tonnage shown is the total output for all mines; for previous years the figures recorded include only sales, colliery consumption and coal used by operators.



Table 12.—Historical Summary of the Mineral Production of Alberta—Continued

—	Natural Gas		Petroleum		Salt		Sand and Gravel		Silver*	
	M cu. ft.	\$	barrels.	\$	tons	\$	tons	\$	fine oz.	\$
1903		5,675								
1904		74,852								
1905		63,085								
1906		50,077								
1907		68,533								
1908		63,363								
1909		61,722								
1910		75,168								
1911		110,165								
1912		289,906								
1913	7,174,400	1,079,466						148,704		
1914	7,172,157	1,214,670	387	2,200				265,165		
1915	4,481,947	1,022,814	(a)	(a)				273,115		
1916	6,904,231	1,113,296	(a)	(a)			390,617	47,197		
1917	6,744,130	1,299,976	8,500	63,302			407,500	67,142		
1918	6,318,389	1,358,638	13,040	100,004			709,745	71,216		
1919	8,230,839	1,365,127	16,437	97,841			(b)	(b)		
1920	5,633,442	1,181,345	11,032	75,986			(b)	(b)		
1921	4,945,884	1,374,599	7,203	49,313			(b)	(b)		
1922	5,868,439	1,622,105	6,559	52,124			1,139,961	221,001		
1923	7,161,670	1,692,246	1,943	8,227			888,216	199,256		
1924	7,131,086	1,796,618	1,844	4,135			615,594	115,969		
1925	9,119,500	2,752,545	183,491	845,394			534,892	107,436		
1926	10,794,697	3,019,221	216,050	902,504	833	8,304	1,754,965	412,430		
1927	13,434,621	3,586,533	318,741	1,185,948	2,037	22,696	1,392,752	293,674	4	3
1928	14,288,005	3,754,466	482,047	1,764,172	100	1,300	2,575,708	489,406	7	4
1929	18,112,931	4,684,247	988,675	3,458,177			1,721,930	447,993		
1930	20,748,583	4,929,226	1,398,160	4,780,696			1,626,989	433,221		
1931	17,798,698	4,067,893	1,413,631	3,976,220			1,050,988	313,616	29	9
1932	15,370,968	3,853,794	906,751	2,751,541			734,067	250,025	9	3
1933	15,352,811	3,886,263	995,832	2,844,157			281,122	85,577	32	12
1934	14,841,491	3,707,276	1,253,966	3,104,823			650,232	196,898	35	17
1935	16,000,349	4,113,436	1,263,510	3,102,227			653,511	146,092	16	10
1936	17,407,820	4,376,720	1,312,368	3,019,930			894,380	339,928	9	4
1937	20,955,506	4,766,437	2,749,085	4,961,002			711,966	312,687	4	2
1938	21,822,108	4,807,346	6,751,312	8,775,094	4,045	46,035	702,760	525,175	23	10
1939	22,513,660	4,915,821	7,576,932	9,362,363	3,319	37,526	817,168	619,105	32	13
1940	27,459,808	4,923,409	8,362,203	10,694,394	6,742	185,430	1,722,465	1,069,667	20	8
1941	30,905,440	5,175,364	9,918,577	13,985,906	16,617	260,995	956,484	433,504	21	8
1942	34,482,585	6,146,146	10,117,073	15,514,665	22,360	335,960	481,644	218,914	2	1
Total		94,449,649	56,274,349	95,482,349	56,653	898,216				

\* Data not available prior to 1927.

(a) Small output but no record.

(b) Included with other products.

Table 12.—Historical Summary of the Mineral Production of Alberta—Concluded

—	Sodium Sulphate		Limestone		Sandstone		Other Products
	tons	\$	tons	\$	tons	\$	\$
1908.....							(d) 690,410
1909.....						90,383	(c) 614,222
1910.....						240,858	(b) 84,893
1911.....						158,344	
1912.....						81,391	
1913.....				20,000		136,984	
1914.....						60,272	2,200
1915.....						890	
1916.....				257			
1917.....				672		6,810	† 2,695
1918.....			(a)	(a)	(a)	(a)	152,444
1919.....			(a)	(a)	(a)	(a)	702,999
1920.....			(a)	(a)	(a)	(a)	1,575,569
1921.....					2,962	13,750	1,118,231
1922.....					554	7,300	
1923.....							
1924.....			16,418	16,762	280	2,555	
1925.....			3,979	6,868			
1926.....			3,545	5,826	214	8,064	
1927.....			3,367	7,830			
1928.....			4,852	15,240	158	9,500	
1929.....			4,975	12,046	208	12,500	
1930.....			7,786	17,236	117	4,500	
1931.....			2,429	5,842	67	3,800	
1932.....			1,428	2,985			
1933.....			1,472	4,317	78	4,500	
1934.....			2,737	8,104			
1935.....			2,242	6,981			
1936.....			13,876	26,188	40	3,200	
1937.....	80	480	13,182	24,935	43	2,254	
1938.....	89	1,127	1,691	6,148			
1939.....	39	186	2,888	8,166	155	5,314	(e) 800
1940.....	10	50	3,081	11,999			
1941.....	8	32	7,942	24,303			(f) 5,055
1942.....			12,028	40,436			(f) 1,380
<b>Total.....</b>							<b>4,950,898</b>

† Includes a small value for copper, zinc and silver.

(a) Data by kinds not available; total values of all kinds of stone produced were: 1918-\$569; 1919-\$3,189; 1920-\$4,415.

(b) Includes lime and sand-lime brick.

(c) Includes cement, lime, etc.

(d) Includes cement, lime, stone, etc.

(e) Marble: 1939-5 tons valued at \$800.

(f) Peat moss: 1942-58 tons valued at \$1,380; 1941-421 tons at \$5,055. In previous years included under manufacture.

Table 12.—Historical Summary of the Mineral Production of British Columbia

—	Arsenic		Bismuth		Cadmium		Cement		Chromite		Clay Products
	lb.	\$	lb.	\$	lb.	\$	barrels	\$	tons	\$	\$
1886.											41,150
1887.											19,480
1888.											42,532
1889.											62,317
1890.											67,201
1891.											79,475
1892.											129,234
1893.											.
1894.											.
1895.											.
1896.											.
1897.											.
1898.											100,000
1899.											100,000
1900.											105,000
1901.											101,996
1902.											76,313
1903.											152,748
1904.											158,874
1905.											98,886
1906.											123,277
1907.											306,137
1908.											344,446
1909.											470,402
1910.											562,360
1911.							401,000	601,500			875,505
1912.							511,539	787,038			996,568
1913.							574,258	980,560			684,904
1914.							491,151	833,606			413,909
1915.							309,436	520,042			229,763
1916.							285,679	436,459			292,698
1917.	250,000	11,200					207,587	438,000			334,685
1918.	2,156,000	43,114					106,415	283,497	670	31,395	357,921
1919.	1,060,000	21,218					†				293,478
1920.	1,256,000	22,231					†				506,172
1921.							†				415,869
1922.	1,036,000	21,097					391,690	1,173,270			447,452
1923.	1,217,970	41,780					795,637	1,302,482			426,138
1924.	495,250	19,768					472,327	1,240,331			460,594
1925.	1,277,696	16,978					485,185	1,151,344			523,931
1926.	1,019,200	11,262					544,863	1,239,018			592,495
1927.	1,231,790	13,611					523,831	1,182,552			679,788
1928.	1,334,997	14,903			491,894	341,374	670,796	1,495,204			706,039
1929.	1,487,175	16,433	166,883	283,701	773,976	675,294	680,907	1,487,223	126	900	866,427
1930.	1,773,333	19,595			456,582	337,871	721,044	1,480,233			687,516
1931.			110,876	154,118	323,139	180,958	578,636	1,172,549			498,505
1932.			57	51	65,425	26,824	253,112	536,528			216,355
1933.			70,723	77,795	246,041	78,733	115,288	225,342			174,205
1934.			246,092	297,771	293,611	95,665	122,345	232,009			194,437
1935.			6,718	6,449	580,530	441,203	167,226	314,116			216,636
1936.			360,613	357,007	526,034	468,170	281,549	516,931			280,891
1937.					436,431	715,747	344,072	623,725			349,640
1938.					510,342	410,090	335,488	626,731			365,132
1939.			409,449	466,362	799,251	563,241	272,679	520,420			371,140
1940.			40,740	56,384	778,791	905,734	363,366	704,567			529,883
1941.			12	17	1,081,374	1,269,533	501,945	986,322			558,426
1942.	(a)7,114,751	71,148	345,223	476,408	972,413	1,147,447	571,945	1,198,014			560,746
<b>Total.</b>	<b>22,726,162</b>	<b>344,338</b>	<b>1,757,386</b>	<b>2,176,063</b>	<b>8,335,836</b>	<b>7,657,884</b>	<b>12,080,494</b>	<b>21,284,622</b>	<b>796</b>	<b>32,295</b>	<b>18,139,676</b>

(a) Arsenic content of gold ores exported; arsenic content not paid for.

• Data not available by provinces.

† Included with other products.



Table 12.—Historical Summary of the Mineral Production of British Columbia  
—Continued

	Coal (a)		Copper		Diatomite		Fluorspar		Gold	
	tons	\$	lb.	\$	tons	\$	tons	\$	fine oz.	\$
1858.									34,104	705,000
1859.									78,129	1,615,072
1860.									107,806	2,225,543
1861.									128,973	2,608,118
1862.									128,528	2,656,903
1863.									189,318	3,913,563
1864.									180,722	3,735,550
1865.									168,887	3,491,205
1866.	(b) 214,410	765,748							128,770	2,662,106
1867.	34,988	124,956							120,012	2,480,868
1868.	49,286	170,020							114,792	2,372,972
1869.	40,098	143,208							85,805	1,774,978
1870.	33,424	119,372							64,675	1,339,955
1871.									87,048	1,799,440
1872.	166,274	503,836							77,931	1,610,972
1873.									63,166	1,305,749
1874.	90,788	243,183							89,233	1,844,618
1875.	109,361	292,932							119,724	2,474,904
1876.	157,007	420,555							86,429	1,786,048
1877.	159,455	419,070							77,796	1,608,182
1878.	213,750	572,544							61,688	1,275,204
1879.	260,277	697,170							62,407	1,290,958
1880.	305,045	817,086							49,044	1,013,827
1881.	257,056	688,542							50,636	1,046,737
1882.	323,201	865,710							40,154	954,085
1883.	240,075	643,059							38,422	794,252
1884.	441,130	1,181,598							35,612	736,165
1885.	372,087	999,072							34,527	713,738
1886.	375,415	1,005,570							43,714	903,651
1887.	486,142	1,302,165							33,558	693,709
1888.	539,467	1,445,001							20,834	616,731
1889.	630,439	1,704,747							28,489	588,923
1890.	767,580	2,056,035							23,918	494,436
1891.	1,130,227	3,027,528							20,792	429,811
1892.	1,937,218	5,210,400							19,327	399,525
1893.	1,003,980	2,930,304							18,369	379,535
1894.	1,112,628	2,980,254	*324,680	31,039					25,064	530,530
1895.	1,058,045	2,834,049	*952,840	102,526					61,289	1,260,954
1896.	1,003,769	2,688,660	*3,818,556	415,459					86,504	1,788,206
1897.	1,019,390	2,730,510	*3,325,180	604,213					131,805	2,724,657
1898.	1,203,980	3,384,858	*7,271,078	874,783					142,215	2,939,582
1899.	1,431,101	3,833,307	*7,722,591	1,359,948					203,205	4,202,473
1900.	1,791,833	4,799,553	*9,077,080	1,615,289					228,916	4,732,105
1901.	1,919,488	5,141,487	*27,603,746	4,448,896					257,292	5,318,703
1902.	1,808,441	4,844,040	*29,630,057	3,445,488					288,383	5,961,409
1903.	1,676,581	4,490,844	*34,359,921	4,547,735					284,108	5,873,036
1904.	1,862,025	4,989,174	*35,710,128	4,579,110					275,075	5,704,908
1905.	1,945,452	5,211,030	*37,692,251	5,876,222					283,529	5,902,402
1906.	2,146,262	5,748,915	*42,990,488	8,287,700					269,886	5,579,039
1907.	2,364,898	7,399,306	*40,832,720	8,168,177					236,216	4,883,020
1908.	2,333,708	7,292,838	37,041,115	4,892,390					286,558	5,929,880
1909.	2,600,127	8,144,147	35,658,952	4,629,245					250,320	5,174,579
1910.	3,330,745	10,408,580	35,270,906	4,492,693					231,386	4,803,218
1911.	2,642,532	7,945,413	35,279,558	4,366,198					208,490	4,930,145
1912.	3,208,997	10,028,116	50,526,656	8,256,501					251,815	5,205,485
1913.	2,714,420	8,482,562	45,791,579	6,991,916					207,469	4,140,027
1914.	2,239,799	6,990,374	41,219,202	5,606,636					252,730	5,224,393
1915.	2,065,613	6,455,041	56,692,988	9,793,714					273,376	5,661,184
1916.	2,584,061	8,075,190	63,642,550	17,312,046					219,033	4,540,216
1917.	2,433,888	8,235,716	57,739,959	15,691,276					133,742	2,764,693
1918.	2,568,580	11,404,681	62,865,681	15,482,580			175	5,250	180,163	3,724,300
1919.	2,649,516	13,512,532	8,317,884	9,317,884			1,638	38,556	167,252	3,457,406
1920.	3,085,011	18,105,814	45,319,771	7,911,019			7,477	171,971	124,808	2,580,010
1921.	2,890,291	16,070,774	34,447,127	4,306,580			5,403	134,523	150,792	3,117,147
1922.	2,927,033	14,622,317	31,936,182	4,273,700			4,219	98,233	207,370	4,280,718
1923.	2,823,306	13,813,520	55,224,737	7,963,959			75	1,135	200,140	4,137,261
1924.	2,193,657	10,601,998	65,451,246	8,524,370					245,719	5,079,412
1925.	2,742,252	11,720,373	69,221,600	9,720,097			3,874	10,034	219,227	4,531,824
1926.	2,713,719	10,612,915	89,108,017	12,292,450					225,866	4,669,065
1927.	2,646,243	10,934,777	91,686,297	11,845,870					183,994	3,784,889
1928.	2,804,594	11,094,353	102,283,210	14,902,664	160	4,800			196,017	4,064,434
1929.	2,490,378	10,160,789	103,003,738	18,772,778	175	5,250	17,800	267,000	154,204	3,187,080
1930.	2,083,818	8,421,572	93,318,885	12,114,657	146	5,147			104,331	3,397,023
1931.	1,876,400	7,160,996	65,223,348	5,459,194	66	2,270			160,069	3,451,865
1932.	1,681,490	6,302,891	50,580,104	3,227,111	47	440			199,004	4,672,429
1933.	1,382,272	5,306,287	43,146,724	3,216,502	14	410			238,995	6,835,257
1934.	1,485,969	5,351,108	48,246,924	3,570,583	6	190			206,196	10,218,762
1935.	1,331,287	5,043,510	38,478,043	2,999,525	57	1,880			391,633	13,781,665
1936.	1,489,171	5,493,425	21,169,343	2,006,219	10	350			451,038	15,831,388
1937.	1,598,843	5,803,849	45,797,988	5,989,461	124	1,349			505,857	17,099,936
1938.	1,440,287	5,237,077	65,759,265	0,557,514	14	362			605,617	21,302,578
1939.	1,637,905	5,404,061	73,253,408	7,392,734	17	447			626,970	22,659,323
1940.	1,867,840	6,167,250	77,742,582	7,841,117	7	171			617,011	23,754,924
1941.	2,020,844	6,492,672	66,327,166	6,689,758	105	2,625			608,203	23,415,810
1942.	2,168,541	7,566,822	50,015,521	5,044,565	147	2,547	1,559	25,498	474,339	18,262,052
Total	112,405,447	401,171,678	2,278,080,467	322,818,136	1,095	29,235	42,220	761,200	15,564,706	396,684,362

NOTE.—In 1928 1,730 pounds of cobalt were produced, valued at \$420.

\*Metal content of ores shipped as published by British Columbia Department of Mines.

(a) The tonnage shown for 1919-1942 inclusive, is the total output from all mines. For previous years the figures include only sales, colliery consumption and coal used by operators.

(b) 1836-1866 inclusive.

Table 12.—Historical Summary of the Mineral Production of British Columbia  
—Continued

—	Gypsum		Iron Ore		Iron Oxides		Lead		Lime		Magnesium Sulphate	
	tons	\$	tons	\$	tons	\$	lb.	\$	bushels	\$	tons	\$
1886.			3,941						4,000	2,500		
1887.			2,796				204,800	9,216	10,080	2,688		
1888.			8,372				674,800	29,813	13,000	3,900		
1889.			15,487				165,100	6,488	60,000	15,200		
1890.									30,000	8,000		
1891.			950									
1892.			2,300				808,420	33,004				
1893.			1,325				2,131,092	79,490				
1894.			1,120				5,703,222	187,636				
1895.			1,222				16,461,794	531,716				
1896.			196				24,199,977	721,159				
1897.			2,099				38,841,135	1,390,513				
1898.			280				31,693,559	1,198,017				
1899.			2,071				21,802,436	977,250				
1900.			1,110				63,158,621	2,760,031				
1901.			7,000				51,582,906	2,235,603				
1902.			10,019				22,530,381	917,005				
1903.			2,290				18,089,283	766,443				
1904.							36,646,244	1,579,086				
1905.							58,580,703	2,663,254				
1906.							52,408,217	2,964,733	106,192	26,694		
1907.			2,500				47,738,703	2,542,080	159,963	49,847		
1908.							43,195,733	1,814,221	170,435	44,027		
1909.							45,857,424	1,692,139	231,269	75,076		
1910.							32,987,508	1,216,249	190,878	72,657		
1911.	780	1,875					23,784,969	827,717	351,011	117,756		
1912.							35,763,476	1,597,554	517,320	181,905		
1913.	200	1,300					37,626,899	1,753,037	362,571	115,365		
1914.							30,289,845	1,625,422	151,680	56,767		
1915.							45,377,064	2,541,116	152,237	49,725		
1916.							39,157,701	3,333,406	194,042	66,301		
1917.	10	20					29,483,725	3,283,612	232,955	58,997	929	4,645
1918.			2,200	8,600			47,594,328	4,402,475	401,562	143,097	1,949	14,565
1919.			1,200				40,060,113	2,790,587	351,253	187,963	738	9,115
1920.			1,212	7,272			32,792,725	2,931,070	561,305	341,632	1,947	39,886
1921.	40	100	1,010	3,030	169	845	60,298,603	3,462,346	199,341	252,630	2,029	39,506
1922.	100	500	1,255	3,528	3	120	67,063,266	5,430,265	516,830	284,641	1,021	24,017
1923.	323	1,615	243	1,215	513	6,450	99,541,818	7,146,107	690,971	388,494	121	6,580
1924.	30	150	28		120	2,620	168,467,628	13,652,617	636,348	370,829		
1925.	240	865			133	2,740	242,454,502	22,111,860	640,858	364,435		
1926.	20,916	156,964			108	920	286,812,461	18,012,509	728,633	416,882		
1927.	24,493	201,764			194	1,350	292,770,544	15,388,020	688,800	376,683		
1928.	20,982	229,843			136	1,815	317,722,146	14,537,377	1,004,257	473,996		
1929.	24,606	243,814			298	2,000	307,999,153	15,555,189	1,131,171	510,592		
1930.	32,128	248,458			6	129	321,803,725	12,637,232	1,043,343	335,057		
1931.	20,544	176,173			110	1,000	261,992,236	7,097,812	852,171	277,269		
1932.	10,728	84,084			223	2,000	252,007,574	5,326,432	490,057	160,001		
1933.	5,107	46,004			165	1,485	263,345,776	6,298,178	591,914	162,928	120	3,360
1934.	9,661	48,081			161	1,600	344,467,138	8,362,597	562,486	153,856	42	1,100
1935.	7,618	52,335			159	1,687	330,784,326	10,552,059	457,257	99,960	340	7,965
1936.	14,078	77,258			396	4,000	376,645,367	14,738,133	690,257	134,785	654	13,712
1937.	15,764	108,478			580	6,000	403,589,913	20,623,445	792,543	154,037	727	14,456
1938.	17,451	100,080			434	4,569	413,706,307	13,834,339	561,571	174,161	470	9,400
1939.	18,150	100,641			550	5,917	378,440,666	11,992,784	652,886	197,259	550	9,900
1940.	19,987	120,043			376	3,948	466,849,112	15,695,467	811,086	234,534		
1941.	23,862	141,320			275	2,884	456,840,454	15,358,976	1,014,343	244,051	265	7,343
1942.	23,313	146,154			438	4,604	507,199,704	17,052,054	886,686	238,904	1,140	38,760
Total	311,201	2,287,999			5,547	58,665	7,608,201,622	326,297,676	19,916,673	7,623,751	13,042	244,310

NOTE.—There was a production of 803 tons of magnesite, valued at \$7,211 in 1921; and in 1916, 635 tons, valued at \$9,525. Also in 1941, 10,905 pounds of magnesium metal in powder form were produced from B.C. magnesite, at Trail, valued at \$2,944; the corresponding output in 1942 was 193,727 pounds at \$85,240.

Table 12.—Historical Summary of the Mineral Production of British Columbia  
—Continued

	Antimony		Manganese Bog		Mercury (a)		Mica*		Mineral Waters	Natro-Alunite		Phosphate	
	lb.	\$	tons	\$	lb.	\$	lb.	\$	\$	tons	\$	tons	\$
1895...					71	2,343							
1896...					58	1,940							
1897...					9	324							
1907...	63,850	5,108			flasks (a)								
1909...	61,207	4,285											
1919...									4,000				
1911...									3,500				
1912...									4,200				
1913...									4,800				
1914...									2,330				
1915...									1,400				
1916...		13,003							1,250				
1917...									1,382				
1918...			440	6,230					1,455				
1919...			610	10,559					1,800				
1920...			587	6,889									
1921...										30	1,500		
1922...										50	2,500		
1923...										15	750		
1924...													
1925...										20	1,000		
1926...													
1927...										7	248	38	494
1928...												550	7,150
1929...			1	30								1,145	4,580
1930...													
1931...													
1932...													
1933...												2,109	4,679
1934...								46,000	853				
1935...								114,000	2,045				
1936...													
1937...													
1938...					760	760		96,250	1,562				
1939...	1,224,385	151,321			436	1,228	(b)	(b)					
1940...	2,594,492	396,468			153,830	369,317		160,000	2,600				
1941...	3,185,077	445,911			536,304	1,335,697		296,000	3,678				
1942...	3,041,030	516,975			1,035,914	2,943,807		562,000	9,061				
<b>Total..</b>			<b>1,644</b>	<b>23,798</b>		<b>4,655,414</b>	<b>1,274,250</b>	<b>19,799</b>	<b>26,117</b>	<b>122</b>	<b>5,998</b>	<b>3,842</b>	<b>16,894</b>

(a) 1895-1897—recorded as flasks, 1987 to 1906 no production; 1908—no production. (b) Not published.

\* 1899—Production valued at \$525 included in Dominion total as Ontario and Quebec.

NOTE.—1937—Nickel production valued at \$37,753; and in 1936 a relatively small tonnage of nickel ore exported; no data available.

1918—Molybdenite production of 1,600 pounds, valued at \$1,840; 1917—3,705 pounds, valued at \$3,705 and in 1916 production valued at \$13,003, including antimony. In 1942 there were 4,887 pounds of molybdenite concentrates valued at \$2,907 shipped to the Quyon plant, Quebec, from an old stock pile in Renfrew county, Ontario.



Table 12.—Historical Summary of the Mineral Production of British Columbia  
—Continued

	Platinum		Other Platinum Metals (Palladium, Rhodium, etc.)		Quartz		Sand and gravel		Silver		Sodium Carbonate	
	fine oz.	\$	fine oz.	\$	tons	\$	tons	\$	fine oz.	\$	tons	\$
1887		5,600							17,690	17,301		
1888		6,000							79,789	74,993		
1889		3,500							53,192	49,787		
1890		4,500							70,427	73,666		
1891		10,000							3,306	3,266		
1892		3,500							77,160	67,592		
1893		1,800								195,000		
1894		950							746,379	470,219		
1895		3,800							1,496,522	976,930		
1896		750							3,135,343	2,102,561		
1897		1,600							5,472,971	3,272,289		
1898		1,500							4,292,401	2,500,753		
1899		825							2,939,413	1,751,302		
1900									3,968,176	2,427,548		
1901	457								5,161,333	3,036,711		
1902	190								3,917,917	2,043,586		
1903									2,906,204	1,601,471		
1904	420								3,222,481	1,843,935		
1905	500								3,439,417	2,075,757		
1906									2,990,262	1,997,226		
1907									2,745,448	1,793,519		
1908									2,631,389	1,391,058		
1909									2,049,141	1,364,387		
1910									2,407,887	1,287,883		
1911									1,887,147	1,005,924		
1912									2,651,002	1,612,737		
1913	18	489						385,946	180,863	1,980,483		
1914								391,731	3,159,807	1,731,971		
1915	23	1,063			30,559	61,118	868,240	256,454	3,565,852	1,771,658		
1916	15	600			41,077	82,154	578,424	230,197	3,392,872	2,227,794		
1917	57	3,823			37,755	132,143			2,655,994	2,162,430		
1918	39	2,560			49,886	149,658			3,921,336	3,794,755		
1919	25	2,150			32,715	340,313			3,713,537	4,126,556		
1920	17	719			35,876	141,200			3,327,028	3,356,071		
1921	23	1,726			22,288	62,317			3,350,357	2,099,133	197	14,775
1922	12	1,154			17,425	37,521	960,251	304,071	7,150,937	4,828,384	202	3,027
1923	7	816			25,509	47,029	434,104	266,119	0,113,327	3,965,899	265	3,975
1924	6	569			21,358	43,034	1,105,459	344,937	8,153,003	5,444,657	510	5,173
1925	6	715			853	2,262	1,415,232	446,896	8,579,458	5,925,403	1,120	8,140
1926	50	4,258			6,466	77,000	1,486,254	357,985	10,625,816	6,599,376	505	5,370
1927	11	960			20,839	80,824	1,379,143	342,021	11,040,445	6,223,499	805	9,995
1928	80	4,549	520	22,270	16,017	43,876	2,334,270	529,669	10,043,367	6,366,413	519	4,922
1929	45	2,828	177	6,836	9,642	45,947	2,425,996	665,132	10,150,408	5,382,155	600	8,100
1930	24	1,089	52	1,356	1,095	5,291	2,494,743	819,739	11,825,930	4,512,065	364	4,550
1931	50	1,783			519	1,297	2,726,704	014,322	8,061,599	2,408,000	712	7,351
1932	59	2,372			15,621	8,435	1,487,513	525,604	7,293,462	2,300,958	495	5,450
1933	40	1,400			22,668	17,681	961,672	332,962	6,737,057	2,548,817	559	5,773
1934	53	2,051			24,847	13,990	658,149	335,142	8,729,721	4,143,204	244	1,920
1935	39	1,275			11,056	4,771	1,381,720	481,620	9,178,400	5,946,677	242	2,430
1936	20	809			146	788	1,753,415	596,796	9,748,715	4,399,303	192	1,677
1937	22	1,066					1,648,963	733,935	11,540,177	5,174,859	286	2,574
1938	16	516					2,211,682	751,491	11,186,563	4,863,582	252	2,268
1939	25	877					2,284,995	870,208	10,648,031	4,311,175	306	2,400
1940	24	938					2,087,878	809,075	11,885,556	4,540,106	220	1,760
1941	60	2,293			631	1,579	2,960,924	1,151,322	11,233,788	4,298,160	186	1,488
1942	Censored				815	2,037	2,599,861	1,091,202	10,596,204	4,467,996	256	2,048
Total			749	30,462	445,764	1,402,325		14,115,499	290,849,567	156,954,870	9,121	105,166

NOTE.—In addition there was produced in 1931-731 pounds of selenium valued at \$1,389.

Table 12.—Historical Summary of the Mineral Production of British Columbia  
—Continued

## STONE

	Granite		Limestone		Marble		Sandstone		Grindstones, pulpstones		Slate	
	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$	tons	\$
1909		134,310		37,258		25,000		168,513				
1910		244,767		43,121		3,679		130,825				
1911		460,851		56,748		1,600		179,580				
1912		624,178		55,617				99,816				
1913		469,666		38,830		600		71,783				
1914		618,131		61,435		3,343		51,774				
1915		701,503		79,583		1,700		14,000				
1916		404,949		92,769				6,500				
1917		66,170		89,808				110,000				
1918	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)				
1919	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)				
1920	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)				
1921	108,225	186,629	33,816	42,536								
1922	159,904	208,008	36,566	44,583			1,200	12,000				
1923	151,389	230,582	13,711	19,284								
1924	150,522	248,360	27,053	21,881			650	83,500	240	19,000		
1925	192,177	204,910	58,172	54,059			5,877	18,227	461	27,781		
1926	103,077	244,197	81,844	106,220			8,140	7,830	700	45,116		
1927	174,945	241,412	81,008	107,984	600	18,600			360	27,600		
1928	201,030	275,947	18,179	83,193	950	31,400	1,280	1,280	246	20,509		
1929	286,883	340,011	119,222	143,319	196	5,282	2,630	23,043	210	2,730		
1930	229,000	283,739	122,409	145,443	6,363	31,141	3,319	258,172	329	26,222	150	3,000
1931	302,150	322,014	159,198	152,209	810	8,761	9,559	502,740	322	25,795	250	5,000
1932	266,008	261,144	138,132	109,399	482	4,029	3,020	3,480	60	3,500	250	3,750
1933	94,967	109,512	150,805	130,706	300	2,547	4,200	10,760	200	9,000	250	3,750
1934	48,809	73,081	161,755	142,560	150	1,416			402	17,625	312	3,744
1935	118,782	100,432	215,933	180,381	604	5,471	21,576	63,006	202	10,829	310	3,100
1936	243,427	131,750	122,535	123,607	175	2,110	18,434	135,944	87	4,500	184	2,479
1937	273,692	318,725	176,513	177,939			13,220	52,561	87	4,875	186	2,790
1938	148,896	160,457	125,842	124,322			13,325	41,825			274	3,295
1939	101,214	120,404	205,045	200,842			6,460	29,060			419	5,428
1940	162,126	157,666	282,170	282,095	180	2,600	6,320	20,337			474	6,883
1941	129,941	140,403	201,359	229,702	300	2,800	8,640	15,650			950	12,216
1942	95,604	133,810	199,496	230,139	100	1,820	13,930	13,930			1,211	16,643
Total									3,946	245,062	5,320	72,078

(a) Data by kinds not available; total values of all kinds of stone were:—1918—\$187,842; 1919—\$217,006; 1920—\$276,505.

Table 12.—Historical Summary of Mineral Production of British Columbia  
—Concluded

	Peat moss		Sulphur*		Talc		Zinc†		Other products
	tons	\$	tons	\$	tons	\$	tons	\$	\$
1905.....							9,413	139,200	
1906.....							654	17,100	
1907.....							1,356	46,100	
1908.....									(d) 643,534
1909.....							(a) 17,476	233,749	(c) 330,201
1910.....							4,487	114,243	(b) 494,197
1911.....							2,590	101,072	
1912.....							6,405	211,399	
1913.....							7,554	180,127	
1914.....							9,924	252,546	671
1915.....							14,595	538,438	15,833
							lb.		
1916.....			1,060	5,300	53	848	21,701,560	2,778,067	
1917.....			5,709	28,545	25	400	27,861,441	2,479,947	241,661
1918.....			18,238	63,454			32,280,247	2,633,745	103,739
1919.....			6,730	33,650	100	500	30,295,015	2,223,048	373,193
1920.....			11,275	56,376	110	3,100	38,729,782	2,970,960	1,270,298
1921.....			3,597	4,557	167	4,175	53,080,356	2,471,310	925,361
1922.....			6,908	34,540	191	4,780	56,290,000	3,217,536	
1923.....			3,457	13,304	245	5,390	60,050,000	3,067,504	
1924.....			8,091	40,459	165	3,630	96,000,009	6,090,244	
1925.....			2,670	13,350	92	1,589	99,152,966	7,557,439	
1926.....			3,374	16,870			137,033,929	10,154,214	
1927.....			37,379	140,516	107	2,620	148,306,470	9,186,103	
1928.....			32,063	254,872			163,630,890	8,983,079	
1929.....			28,276	226,208	46	720	172,096,841	9,270,857	
1930.....			17,800	147,942	177	2,835	250,479,310	9,017,255	
1931.....			29,013	255,760	30	600	202,071,702	5,160,911	
1932.....			31,886	302,856	39	702	130,646,958	3,140,438	
1933.....			30,010	282,078	67	1,022	152,826,264	4,006,487	
1934.....			32,031	319,124	25	502	249,152,403	7,583,202	
1935.....			46,784	453,536	93	1,318	255,222,315	7,900,314	
1936.....			64,896	608,792	47	799	255,668,574	8,475,413	
1937.....			88,370	820,406			287,192,877	14,078,195	
1938.....			78,918	777,586			299,363,564	9,199,443	
1939.....	(e)	(e)	133,676	1,230,814			279,041,497	8,563,784	
1940.....	(e)	(e)	90,214	899,120			312,020,671	10,643,025	
1941.....	14,345	390,509	103,140	1,626,704			367,860,579	12,548,031	
1942.....	28,520	658,771	116,248	1,134,586			387,236,469	13,208,636	(f) 4,710
<b>Total...</b>			<b>1,031,812</b>	<b>9,290,461</b>	<b>1,779</b>	<b>35,638</b>		<b>190,252,761</b>	<b>4,463,398</b>

NOTE.—1934—Production of 30 tons of volcanic dust, valued at \$600.

\*Sulphur content of pyrites shipped and sulphur content salvaged smelter gas 1928-1942; figures for previous years represent tonnages and value of pyrites shipped.

†1905-1915 tons of ore or concentrates shipped from mines; 1916-1942 refined zinc made in Canada plus concentrated zinc in ores exported.

(a) Includes 7,424 tons shipped late in 1908.

(b) Includes cement sand-lime brick, etc.

(c) Includes cement, sand-lime brick, and a small value in refined antimony.

(d) Includes stone, etc.

(e) Included with manufactures.

(f) 471 pounds of iridium valued at \$4,710.



Table 12.—Historical Summary of the Mineral Production of Yukon

—	Coal (d)		Copper		Gold (c)		Lead		Silver	
	tons	\$	pounds	\$	fine oz.	\$	pounds	\$	fine oz.	\$
1885										
1886					4,837	100,000				
1887					3,380	70,000				
1888					1,035	40,000				
1889					8,466	175,000				
1890					8,466	175,000				
1891					1,953	40,000				
1892					4,233	87,500				
1893					8,514	176,000				
1894					6,047	125,000				
1895					12,094	250,000				
1896					14,513	300,000				
1897					120,937	2,500,000				
1898					483,750	10,000,000				
1899					774,000	16,000,000			230,000	137,034
1900					1,077,553	22,275,000			290,000	177,857
1901	(e) 5,864	86,230			870,750	18,000,000			195,000	114,953
1902	4,910	37,280			701,437	14,500,000			185,900	96,955
1903	1,849	20,584			592,504	12,250,000			156,000	83,362
1904					507,938	10,500,000			133,170	76,201
1905	7,000	21,000			381,001	7,870,000			89,630	54,093
1906	7,000	25,000	(b) 156,000	23,400	270,900	5,600,000			63,665	42,522
1907	15,000	60,000	511,838	102,388	152,381	3,150,000			35,888	23,510
1908	3,847	21,158	112,264	14,828	174,150	3,600,000			63,000	33,304
1909	7,364	49,502			191,565	3,960,000			45,000	23,176
1910	16,185	110,925	286,000	36,431	211,001	4,570,362			87,418	46,756
1911	2,840	12,780			224,197	4,634,574			112,706	60,078
1912	9,245	44,958	1,772,060	289,070	268,447	5,549,290			81,068	49,318
1913	19,722	65,045	1,843,530	281,489	282,838	5,840,780	2,804	131	87,620	52,392
1914	13,443	53,760	1,367,050	185,946	247,940	5,125,574	47,920	2,146	92,073	50,959
1915	9,724	38,898	533,216	92,113	230,173	4,758,098	810,000	45,360	248,049	123,241
1916	3,300	13,200	2,807,096	763,586	212,700	4,396,900	955,222	81,318	360,101	230,446
1917	4,872	(20,232	2,400,079	605,650	177,067	3,672,703	127,844	14,238	119,606	97,379
1918	2,900	11,600	619,878	152,063	102,474	2,118,325	9,249	856	71,815	69,594
1919			165,184	30,874	90,705	1,875,039			27,556	30,621
1920			277,712	48,478	72,778	1,504,455			19,180	19,363
1921	233	2,472			65,994	1,364,217	2,472,615	141,978	393,092	246,288
1922	465	4,650			54,450	1,125,705	3,323,508	207,221	663,403	447,997
1923	313	1,485			60,144	1,243,287	6,771,113	486,098	1,914,438	1,241,953
1924	1,121	8,205			34,825	719,897	903,620	73,221	226,755	151,429
1925	730	7,147			47,817	988,465	1,875,442	171,040	904,893	624,964
1926	316	800			25,601	529,220	5,860,373	395,634	2,095,027	1,301,159
1927	414	2,052			30,935	639,483	4,165,331	218,929	1,647,295	928,580
1928	414	2,015	(a) 107,377	15,645	34,304	710,367	7,191,449	329,045	2,830,633	1,651,985
1929	458	1,848			35,802	741,954	8,395,603	424,012	3,279,530	1,737,922
1930	653	3,110	42,628	5,534	35,517	734,202	8,809,582	349,369	3,746,326	1,429,373
1931	904	5,039			44,310	955,539	4,454,013	120,724	3,694,728	1,103,615
1932	808	3,491			40,608	953,438	3,853,327	81,444	3,014,755	954,822
1933	862	3,670			39,493	1,120,500	3,099,505	74,128	2,204,237	833,925
1934	638	2,217			38,798	1,338,531	1,783,349	43,450	515,542	244,681
1935	835	3,483			35,707	1,256,520	218,513	6,846	54,715	35,450
1936	510	2,286			50,358	1,704,041	2,568,699	100,513	783,416	353,532
1937	84	812			47,982	1,678,890	6,440,454	329,107	3,956,504	1,775,719
1938	361	3,400			72,368	2,545,544	5,108,990	173,854	2,844,659	1,236,772
1939					87,745	3,171,102	7,544,632	239,089	3,830,804	1,551,040
1940					80,458	3,097,633	4,655,689	156,524	2,259,343	864,176
1941					70,959	2,731,922	1,703,728	57,280	856,772	327,810
1942					63,246	3,204,971	1,322,065	44,448	482,133	203,296
Totals.....	145,184	803,192	13,062,512	2,711,695	9,621,987	208,425,933	94,652,139	4,368,003	45,063,712	20,945,632

(a) Includes small quantities produced in 1925, 1926 and 1927.

(b) 1906 and all previous production.

(c) Placer gold but includes a small production from lode mines in 1926 and for the years 1910-1923.

(d) For the years 1919-1938 the tonnage shown is the total output from all mines; for previous years the figures shown include only colliery consumption, sales and coal used by operators.

(e) Partly mined in 1900.

(f) Value estimated.

NOTE.—In addition there were produced in 1918 some 3,848 pounds of tungsten concentrates valued at \$2,593 and in 1916, 20 tons of antimony ore valued at \$160; also in 1941 tungsten concentrates totalled 1,560 pounds valued at \$980 and in 1942, 968 pounds valued at \$840. Antimony ore exported in 1942 totalled 78 pounds worth \$13.

Table 12.—Historical Summary of the Mineral Production of Northwest Territories

—	Pitch- blende Products	Copper		Gold		Lead		Natural Gas		Petroleum		Silver (a)	
	\$	pounds	\$	fine oz.	\$	pounds	\$	M cu. ft.	\$	barrels	\$	fine oz.	\$
1931..												(*)	(*)
1932..										910	9,251	38,433	12,172
1933..	247,900									4,608	23,037	23,239	8,792
1934..	159,400					3,531	86			4,438	22,188	37,778	17,930
1935..	413,700			200	7,038	12,905	404			5,115	25,575	146,506	94,921
1936..	605,500			1	35			1,100	245	6,399	26,995	317,014	143,059
1937..	676,540							1,500	335	11,371	56,855	135,442	60,788
1938..	1,045,458	75,567	7,535	6,800	239,190			1,500	335	22,855	68,565	581,902	252,993
1939..	1,121,553	42,382	4,277	51,914	1,876,224			1,500	335	20,191	50,477	483,874	195,911
1940..	410,176			55,159	2,123,621			1,500	335	18,633	37,265	59,505	22,760
1941..	925,196	32,727	3,301	74,417	2,865,054			1,500	335	23,664	47,328	15,327	5,864
1942..	(b)	74,963	7,561	99,394	3,826,669			1,500	335	75,789	108,477	22,531	9,500
<b>Total</b> .....		<b>225,639</b>	<b>22,674</b>	<b>287,885</b>	<b>10,937,831</b>	<b>16,436</b>	<b>490</b>	<b>10,100</b>	<b>2,255</b>	<b>192,973</b>	<b>476,613</b>		

(a) Includes recoveries from silver-pitchblende ores.

(\*) See Yukon.

Production of tungsten concentrates totalled 41,972 pounds valued at \$13,220 in 1941 and 98,218 pounds worth \$23,725 in 1942.

(b) Not available for publication.

Table 12 (A).—Tonnage of Ore Mined and Rock Quarried in the Canadian Mining Industry, 1922, 1941 and 1942

	1922	1941	1942
Gold quartz ores.....	17,722,866	20,031,734	2,431,340
Copper-gold-silver ores.....	8,575,626	9,263,071	1,004,097
Nickel-copper ores.....	12,081,545	9,974,272	259,569
Silver-cobalt ores.....	25,550	11,507	426,445
Silver-lead-zinc ores.....	2,951,480	2,810,974	505,774
Miscellaneous metals.....	1,120,478	883,851	
Asbestos.....	8,233,516	7,707,367	2,562,933
Feldspar.....	77,040	57,891	
Feldspar and nepheline syenite.....	487,664	335,085	126,245
Quartz.....	794,886	1,532,228	484,629
Gypsum.....	30,376	38,067	
Talc and soapstone.....	15,629	15,917	
Iron oxides.....	457,251	412,159	
Other non-metals.....	7,978,066	7,940,801	3,639,081
Stone, all kinds, quarries (exclusive of stone used for cement and lime).....	2,155,750	2,086,781	1,600,000
Stone used for the manufacture of cement (estimated from 1922-1929).....	1,574,508	1,530,200	561,000
Estimate rock for the manufacture of lime.....			
<b>Total (other than coal).....</b>	<b>64,282,240</b>	<b>64,637,877</b>	<b>13,666,113</b>
<b>Total coal.....</b>	<b>18,865,030</b>	<b>19,225,921</b>	<b>15,157,431</b>

For years 1923 to 1940, see Annual Mineral Production Report, year 1941.

# MINERAL PRODUCTION OF CANADA

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Table 13.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1938-1942

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (d)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
<b>Metal Mining Industries</b>							
<b>ALLUVIAL GOLD MINES</b>							
1938.....	111	113	12,846,973	1,071	2,056,936	288,370	3,753,052
1939.....	98	104	9,841,524	830	1,439,765	318,613	4,204,974
1940.....	125	126	9,933,894	840	1,680,779	298,680	3,820,109
1941.....	108	110	10,755,706	797	1,954,278	332,361	3,800,142
1942.....	80	80	10,071,917	471	1,283,274	206,635	4,114,995
<b>ACRIFEROUS QUARTZ MINES</b>							
1938.....	535	550	251,203,802	29,647	50,462,092	28,674,805	114,472,106
1939.....	455	474	248,692,569	30,622	53,206,225	30,380,927	129,633,245
1940.....	428	438	250,919,160	31,405	55,205,090	32,076,741	146,713,744
1941.....	338	357	243,138,864	32,551	62,150,810	33,124,349	145,978,833
1942.....	223	227	245,240,997	20,030	54,388,872	24,625,881	131,938,902
<b>COPPER-GOLD-SILVER MINES</b>							
1938.....	37	30	65,416,729	5,577	8,921,465	20,544,691	28,795,492
1939.....	28	30	58,867,620	6,083	9,920,591	24,978,891	26,182,577
1940.....	25	26	60,446,948	6,115	10,777,427	25,370,357	**27,804,419
1941.....	21	22	84,521,002	5,866	10,695,023	34,408,742	30,220,331
1942.....	26	28	84,776,243	5,646	11,097,412	35,459,148	33,688,642
<b>SILVER-COBALT MINES</b>							
1938.....	34	30	2,696,217	297	386,851	446,070	288,293
1939.....	36	43	2,461,556	323	412,728	237,096	653,632
1940(e).....	48	44	337,080	123	158,024	57,347	809,263
1941.....	24	14	439,877	182	229,984	126,372	662,443
1942.....	13	14	358,691	192	283,980	150,043	600,207
<b>SILVER-LEAD-ZINC-MINES*</b>							
1938.....	107	108	30,386,714	1,640	3,027,915	5,068,253	18,483,945
1939.....	82	83	23,684,620	1,646	2,803,057	4,699,242	13,555,609
1940.....	82	83	19,969,198	1,585	3,052,532	4,380,568	16,439,530
1941.....	63	64	17,717,334	1,666	3,452,199	3,624,765	20,653,212
1942.....	44	44	19,484,442	2,185	4,730,370	4,268,352	23,504,642
<b>NICKEL-COPPER MINES</b>							
1938.....	8	11	35,363,940	5,342	9,916,179	5,174,237	25,491,028
1939.....	4	7	35,307,319	5,759	10,960,710	6,117,331	32,250,124
1940.....	3	6	36,765,154	6,372	12,256,863	6,783,621	34,240,489
1941.....	3	6	41,730,329	6,490	13,680,994	7,214,448	41,525,277
1942.....	4	8	48,303,780	7,147	15,365,207	8,186,777	50,801,633
<b>MISCELLANEOUS METAL MINES</b>							
1938.....	19	19	1,380,035	129	145,551	16,900	-7,997
1939.....	31	31	3,074,999	331	455,278	175,573	349,404
1940.....	36	36	2,720,642	445	628,025	720,173	1,309,105
1941.....	46	47	2,931,695	725	1,141,244	1,355,503	2,073,323
1942.....	68	67	3,956,427	1,352	2,396,731	1,519,686	3,996,555
<b>NON-FERROUS METAL SMELTING AND REFINING</b>							
1938.....	10	13	184,337,126	12,788	19,540,963	(b)200,204,359	† 87,091,374
1939.....	9	13	192,186,465	12,449	19,372,119	(b)182,544,602	† 80,057,833
1940.....	9	13	234,826,742	13,466	21,706,197	(b)207,301,250	† 98,059,258
1941.....	9	13	309,963,342	16,014	27,482,689	(b)259,585,076	† 119,736,294
1942.....	10	15	356,052,965	21,162	37,340,556	(b)321,736,152	† 125,881,047
<b>Total Metal Mining Industries</b>							
1938.....	861	883	583,631,536	56,491	91,466,952	260,417,691	278,367,293
1939.....	743	785	571,099,672	58,043	98,570,473	219,152,335	286,895,798
1940.....	756	772	615,918,818	60,351	105,325,343	276,988,716	**329,196,007
1941.....	612	633	708,190,019	61,291	126,787,221	339,972,576	364,619,855
1942.....	(f)468	483	768,245,162	64,145	126,886,402	400,152,674	374,526,623

\*Contains data relating to silver-pitchblende ores in the Northwest Territories. †Value added by smelting.

(b) Includes fuel and electricity used for metallurgical purposes and cost of ores, etc., treated which were \$173,070,377 in 1938, \$154,879,498 in 1939, \$174,274,655 in 1940, \$213,542,005 in 1941 and \$258,903,818 in 1942.

(d) See end of table.

(e) The large decrease in capital employed in the Silver-Cobalt industry in 1940 resulted largely from the leasing of the O'Brien mine and the cessation of mining operations by M. J. O'Brien Ltd. Delinquent returns, received after completion of these totals show 83 employees receiving \$88,105 in salaries and wages in the Silver-Cobalt industry also capital was increased by \$154,109.

(f) 371 producing. \*\*Revised data.



## DOMINION BUREAU OF STATISTICS

Table 13.—Principal Statistics of the Mineral Industry in Canada, by Industries,  
1938-1942—Continued

1	2	3	4	5	6	7	8
Year	Number of active firms	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (d)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
<b>Total Non-Metal Mining Industries Including Fuels</b>							
<b>*FUELS</b>							
<b>COAL</b>							
1938.....	462	498	111,495,137	27,074	28,699,781	7,926,328	34,207,513
1939.....	467	510	109,072,484	26,472	30,720,991	8,203,815	38,062,870
1940.....	491	527	103,634,890	26,434	34,043,162	8,996,231	43,552,679
1941.....	417	469	106,498,356	26,330	38,149,602	9,680,614	45,780,856
1942.....	380	419	108,766,897	26,205	42,091,137	10,965,528	49,473,229
<b>NATURAL GAS</b>							
1938.....	218	3,325	79,143,830	1,966	2,506,121	82,887	9,748,677
1939.....	222	3,352	78,409,338	1,990	2,536,220	98,397	10,634,146
1940.....	236	3,438	80,487,766	2,189	2,748,740	94,354	11,108,749
1941.....	231	3,424	81,280,541	2,161	2,841,795	108,204	11,114,899
1942.....	212	3,566	82,768,602	1,940	2,826,811	104,802	11,251,548
<b>PETROLEUM</b>							
1938.....	310	2,400	51,685,038	1,894	2,656,112	1,141,762	8,986,071
1939.....	348	2,389	52,102,077	1,780	2,567,983	1,432,055	9,310,922
1940.....	300	2,360	53,216,853	1,741	2,835,410	1,467,995	10,018,083
1941.....	272	2,312	58,206,944	1,644	3,254,817	803,798	14,207,526
1942.....	242	2,253	54,707,282	1,972	3,648,965	1,207,463	16,668,660
<b>TOTAL FUELS</b>							
1938.....	880	6,223	242,324,005	50,934	55,862,014	9,150,977	52,942,261
1939.....	1,037	6,251	239,585,899	50,242	55,855,194	9,734,267	58,007,938
1940.....	1,027	6,325	237,330,509	50,364	59,627,312	10,558,580	64,679,511
1941.....	920	6,205	245,985,881	50,335	64,246,214	10,592,616	71,103,281
1942.....	834	6,258	246,242,681	50,117	68,568,913	12,277,793	76,393,457
<b>OTHER NON-METAL MINING INDUSTRIES</b>							
<b>ASBESTOS</b>							
1938.....	8	9	22,008,771	3,711	4,024,363	3,187,725	9,702,407
1939.....	8	9	22,489,233	3,784	4,347,064	3,463,513	12,395,699
1940.....	8	9	19,799,280	3,886	4,728,702	3,720,968	11,903,688
1941.....	9	10	21,325,558	3,760	4,990,101	4,246,246	17,229,399
1942.....	8	10	18,741,364	3,749	5,299,454	4,393,973	18,277,235
<b>FELDSPAR, QUARTZ, AND NEPHELINE SYENITE</b>							
1938.....	32	32	1,605,136	375	342,248	168,509	1,065,138
1939.....	43	43	1,591,015	338	330,170	178,721	1,173,950
1940.....	44	46	2,174,258	400	377,254	214,517	1,294,482
1941.....	38	38	2,314,582	506	610,489	250,983	1,587,071
1942.....	36	38	2,563,248	533	782,903	412,029	1,586,968

\* Production of peat since 1929 included with the other non-metallics.

(d) See footnote at end of table.

Table 13.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1938-1942—Continued

1 Year	2 Number of active firms	3 Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	4 Capital employed (excluding ore reserves or other unmined material)  \$	5 Number of employees	6 Salaries and wages  \$	7 Cost of process supplies, purchased electricity and fuel also freight and smelter charges (d)  \$	8 Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries  \$
OTHER NON-METAL MINING INDUSTRIES—Continued (GYPSUM)							
1938.....	9	15	7,325,412	623	528,027	239,306	1,262,959
1939.....	10	17	6,806,907	714	692,159	299,319	1,635,808
1940.....	9	16	4,648,662	694	717,666	418,339	1,647,594
1941.....	8	15	5,175,821	648	745,008	452,008	1,790,420
1942.....	7	13	4,386,531	510	657,620	244,139	1,010,043
IRON OXIDES (OCHRE)							
1938.....	6	6	200,057	37	31,557	8,124	63,645
1939.....	7	7	215,445	38	26,916	8,194	80,224
1940.....	7	7	195,263	46	38,842	18,033	93,841
1941.....	4	4	189,877	44	42,152	21,394	120,675
1942.....	5	5	104,541	47	44,288	26,615	125,038
MICA							
1938.....	40	40	159,758	156	74,424	19,247	61,742
1939.....	61	61	230,337	224	112,653	19,014	128,307
1940.....	65	65	259,168	218	134,705	27,829	209,316
1941.....	81	81	1,180,097	246	181,800	39,529	295,759
1942.....	106	106	1,460,769	361	258,605	37,313	346,254
PEAT (e)							
1940.....	(f)	(f)	(f)	(f)	(f)	(f)	(f)
1941.....	22	22	825,154	667	486,110	17,472	628,936
1942.....	35	35	3,212,921	1,316	1,380,142	277,086	1,031,211
SALT							
1938.....	9	9	4,270,799	562	786,720	309,080	1,603,833
1939.....	9	9	4,447,204	547	741,738	1784,778	2,173,204
1940.....	9	9	4,993,914	586	830,506	1800,768	2,461,482
1941.....	9	9	5,559,307	668	1,018,652	1,175,966	2,676,533
1942.....	9	9	5,687,511	675	1,114,574	1,419,248	3,173,785
TALC AND SOAPSTONE							
1938.....	6	6	212,491	75	59,426	23,907	120,941
1939.....	6	6	239,835	65	60,512	22,332	147,734
1940.....	8	8	319,398	94	80,879	37,130	192,509
1941.....	8	8	695,581	148	128,820	55,206	305,603
1942.....	10	10	567,665	115	113,601	59,113	251,711
MISCELLANEOUS							
1938.....	50	50	2,787,671	394	475,567	409,229	779,093
1939.....	46	47	3,128,035	465	539,143	394,357	964,565
1940.....	46	46	2,491,527	547	703,501	608,028	1,508,728
1941.....	61	63	2,648,830	683	878,700	797,564	1,645,184
1942.....	61	64	4,919,871	811	1,142,072	952,860	2,053,307

(d) See footnote at end of this table.

(e) Includes data on peat fuel, peat moss and peat humus.

(f) Peat moss included with manufactures; peat fuel under miscellaneous non-metals.

‡ Value of containers is included from 1939.

## DOMINION BUREAU OF STATISTICS

Table 13.—Principal Statistics of the Mineral Industry in Canada, by Industries,  
1938-1942—Continued

1 Year	2 Number of active firms	3 Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	4 Capital employed (excluding ore reserves or other unmined material)  \$	5 Number of employees	6 Salaries and wages  \$	7 Cost of process supplies, purchased electricity and fuel also freight and smelter charges (d)  \$	8 Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries  \$
<b>TOTAL OTHER NON-METAL MINING INDUSTRIES</b>							
1938.....	160	167	58,570,095	5,833	6,322,532	4,365,127	14,659,821
1939.....	190	199	39,148,011	6,175	6,850,552	5,170,228	18,699,491
1940.....	198	206	34,881,470	6,471	7,618,055	5,905,612	19,311,640
1941.....	240	250	39,914,807	7,370	9,087,838	7,056,568	26,285,580
1942.....	277	290	41,734,421	8,117	10,793,259	7,822,375	27,855,522
<b>Total Non-Metal Mining Industries, Including Fuels</b>							
1938.....	1,150	6,390	280,894,100	36,867	40,184,346	13,516,104	67,602,082
1939.....	1,227	6,450	278,731,910	36,417	42,675,546	14,904,495	76,707,429
1940.....	1,223	6,531	272,220,979	36,835	47,245,367	16,464,192	83,091,151
1941.....	1,160	6,455	285,900,688	37,705	53,334,052	17,648,984	97,388,561
1942.....	1,111	6,528	287,977,002	38,234	59,360,172	20,100,168	104,248,959
<b>Clay Products and Other Structural Materials</b>							
CLAY PRODUCTS							
Brick, Tile and Sewer Pipe							
1938.....	140	147	17,756,732	2,125	2,009,836	1,039,148	3,284,486
1939.....	133	141	17,614,307	2,055	2,072,351	1,093,160	3,852,837
1940.....	132	136	16,569,424	2,343	2,488,390	1,402,681	4,581,541
1941.....	127	132	16,734,645	2,557	2,981,278	1,748,511	5,323,433
1942.....	111	115	17,181,503	2,152	2,777,171	1,420,355	5,016,090
<b>STONEWARE AND POTTERY</b>							
1938.....	5	5	311,810	117	100,397	14,701	197,749
1939.....	8	8	326,435	110	89,337	14,338	190,901
1940.....	7	7	577,019	214	186,861	19,547	340,774
1941.....	10	10	642,908	324	246,507	20,062	443,330
1942.....	8	8	612,428	371	295,540	30,844	614,394
<b>TOTAL CLAY PRODUCTS*</b>							
1938.....	145	152	18,068,542	2,242	2,110,233	1,053,849	3,482,235
1939.....	141	149	17,940,742	2,165	2,161,688	1,107,498	4,043,758
1940.....	139	143	17,146,443	2,557	2,675,251	1,422,228	4,922,519
1941.....	137	142	17,377,553	2,881	3,227,785	1,768,573	5,808,763
1942.....	119	123	17,793,931	2,523	3,073,011	1,451,239	5,680,484
<b>OTHER STRUCTURAL MATERIALS†</b>							
CEMENT							
1938.....	3	8	52,209,046	1,034	1,305,331	2,293,544	5,947,766
1939.....	3	8	51,251,358	1,001	1,297,542	2,238,039	6,273,172
1940.....	3	8	50,370,276	1,062	1,515,766	4,291,221	8,715,422
1941.....	3	8	51,108,294	1,235	1,860,931	5,044,208	9,279,164
1942.....	3	8	51,121,894	1,241	2,059,337	5,414,487	10,213,916

(\*) Includes kaolin and other clays.

(†) A considerable proportion of the values shown for lime and stone sales represents shipments for chemical purposes—see chapter 9.



Table 13.—Principal Statistics of the Mineral Industry in Canada, by Industries, 1938-1942—Concluded

1 Year	2 Number of active firms	3 Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	4 Capital employed (excluding ore reserves or other unmined material) \$	5 Number of employees	6 Salaries and wages \$	7 Cost of process supplies, purchased electricity and fuel also freight and smelter charges (d) \$	8 Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
<b>OTHER STRUCTURAL MATERIALS—Concluded</b>							
<b>LIME</b>							
1938	48	53	4,881,214	867	795,068	639,989	2,602,663
1939	54	59	4,802,983	937	849,468	1,052,012	2,951,502
1940	50	55	5,107,739	962	1,003,671	1,601,546	3,593,009
1941	45	50	4,633,946	1,105	1,321,671	2,196,529	4,161,412
1942	44	48	4,742,066	1,022	1,312,320	2,598,560	3,932,279
<b>SAND AND GRAVEL</b>							
1938	1,339	6,094	3,286,340	6,959	4,482,916	254,595	11,747,959
1939	1,403	6,215	2,735,690	6,120	3,081,913	274,509	10,966,593
1940	1,458	5,596	3,456,502	4,243	3,744,585	291,008	11,468,237
1941	1,399	5,407	4,287,789	3,252	2,995,526	474,647	9,901,076
1942	1,419	5,217	4,477,547	2,141	2,404,755	677,149	8,328,265
<b>STONE</b>							
1938	420	550	11,187,274	2,815	2,298,154	890,350	4,066,676
1939	452	573	12,213,030	3,076	2,816,578	1,081,884	5,393,812
1940	482	560	12,127,271	2,886	2,770,703	1,204,375	6,194,584
1941	457	539	11,162,030	2,758	2,896,100	1,283,183	6,717,501
1942	412	490	10,988,011	2,697	3,454,263	1,517,160	7,229,425
<b>TOTAL OTHER STRUCTURAL MATERIALS</b>							
1938	1,819	6,705	71,653,874	11,675	8,882,469	4,378,518	24,064,064
1939	1,918	6,855	71,003,061	11,154	8,945,501	4,646,444	25,888,079
1940	1,993	6,219	71,061,788	8,143	9,043,726	7,388,160	29,971,268
1941	1,904	6,004	71,192,065	8,350	9,074,128	8,998,567	30,069,163
1942	1,878	5,763	71,329,518	7,101	9,230,675	10,207,365	29,703,886
<b>Total Clay Products and Other Structural Materials</b>							
1938	1,961	6,857	89,722,416	13,917	10,992,702	5,432,367	28,416,299
1939	2,053	7,001	88,943,803	13,299	11,107,189	5,733,942	29,628,817
1940	2,132	6,362	88,268,231	11,700	11,718,976	8,810,378	31,893,571
1941	2,041	6,146	88,569,618	11,231	12,301,913	10,767,110	35,865,916
1942	1,997	5,886	89,123,449	9,624	12,303,696	11,638,604	35,334,369
<b>GRAND TOTAL OF ALL INDUSTRIES</b>							
1938	3,975	11,130	954,248,052	107,275	145,644,000	279,366,162	374,415,674
1939	4,023	11,239	941,775,385	107,759	152,353,208	276,116,772	393,232,644
1940	4,111	13,665	976,348,028	108,886	164,489,686	302,263,316	*148,680,729
1941	3,813	14,231	1,082,669,355	113,227	186,423,186	368,388,700	197,901,632
1942	3,576	12,897	1,115,315,913	112,043	198,550,260	431,941,116	511,109,951

NOTE.—The net value as given in column 8 represents the gross value as given by the operator less the cost of items indicated in column 7.

\* Revised data.

Table 14.—Principal Statistics of the Mineral Industry in Canada, by Provinces, 1938-1942

1	2	3	4	5	6	7
Year	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (b) (d)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries (*)
		\$		\$	\$	\$
NOVA SCOTIA						
1938.....	810	52,594,162	15,591	15,959,095	5,259,556	20,224,347
1939.....	914	52,580,559	15,202	17,371,518	5,450,671	23,504,419
1940.....	666	48,080,422	14,954	19,285,662	6,041,154	26,189,233
1941.....	622	48,356,346	15,240	21,388,809	6,684,110	24,535,707
1942.....	694	49,480,020	14,304	22,169,053	6,594,557	25,174,960
NEW BRUNSWICK						
1938.....	409	4,310,273	3,042	2,074,273	273,978	3,506,250
1939.....	426	4,460,757	3,263	2,311,835	329,538	3,600,454
1940.....	423	4,522,307	2,240	1,039,160	376,192	3,024,317
1941.....	428	4,420,485	2,262	2,097,842	421,785	3,231,658
1942.....	433	4,401,029	1,718	1,855,798	404,750	3,176,007
QUEBEC						
1938.....	4,161	179,013,810	20,829	24,485,254	79,226,191	69,593,807
1939.....	4,137	179,371,057	20,872	25,689,382	81,840,188	81,600,118
1940.....	3,857	213,363,729	21,726	29,025,418	93,034,012	⊕ 100,134,979
1941.....	3,780	298,678,687	23,140	34,008,021	127,618,884	127,640,905
1942.....	3,442	329,023,834	27,235	42,901,445	169,770,830	138,100,940
ONTARIO						
1938.....	6,342	389,031,046	35,791	58,926,900	136,143,954	181,897,886
1939.....	6,380	397,025,573	37,233	63,220,042	119,307,190	188,867,969
1940.....	6,406	405,063,185	38,774	66,395,845	135,879,424	209,277,055
1941.....	6,196	408,374,770	40,406	74,902,555	154,713,109	219,459,986
1942.....	6,324	438,130,467	36,866	72,868,161	168,749,548	212,351,819
MANITOBA						
1938.....	276	44,564,907	2,840	4,303,270	14,478,826	15,144,672
1939.....	260	36,516,216	3,027	4,541,992	16,217,955	12,401,404
1940.....	136	39,640,423	3,145	5,107,054	16,016,832	14,065,270
1941.....	185	41,780,442	3,101	5,312,075	18,966,154	11,898,109
1942.....	173	33,172,231	2,512	4,600,171	12,476,881	9,508,569
SASKATCHEWAN						
1938.....	260	18,695,606	2,267	2,470,530	5,345,294	7,029,842
1939.....	256	18,838,439	2,026	2,847,264	6,749,197	6,391,404
1940.....	252	17,008,171	1,961	2,573,878	7,033,060	8,652,006
1941.....	249	22,851,100	1,977	3,105,529	12,689,122	9,336,756
1942.....	219	34,755,279	2,450	4,401,181	22,710,389	14,487,408

Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

\*See footnote, preceding table.

(b) Includes fuel and electricity used for metallurgical purposes.

(d) See footnote, preceding table.

⊕ Revised data.

Table 14.—Principal Statistics of the Mineral Industry in Canada, by Provinces, 1938-1942—Concluded

1	2	3	4	5	6	7
Year	Number of operating mines, oil and gas wells, quarries, gravel pits, etc.	Capital employed (excluding ore reserves or other unmined material)	Number of employees	Salaries and wages	Cost of process supplies, purchased electricity and fuel also freight and smelter charges (b) (d)	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries (*)
		\$		\$	\$	\$
ALBERTA						
1938.....	678	120,140,472	10,612	12,811,075	2,967,269	24,931,056
1939.....	709	121,311,648	10,548	13,097,818	3,508,845	26,040,861
1940.....	729	120,234,760	10,628	14,535,789	3,832,268	29,503,293
1941.....	742	129,681,643	11,141	17,065,351	3,612,114	36,167,469
1942.....	723	126,642,796	11,440	19,628,105	4,736,312	40,604,704
BRITISH COLUMBIA						
1938.....	1,158	129,667,163	15,179	21,975,143	33,686,771	49,519,855
1939.....	1,130	119,437,585	14,587	21,608,690	34,754,310	45,419,651
1940.....	1,169	115,240,764	14,420	23,227,719	38,730,717	52,513,427
1941.....	1,008	114,213,762	14,801	25,797,418	42,582,946	60,323,299
1942.....	845	110,267,057	14,323	27,166,996	45,101,414	64,378,171
NORTHWEST TERRITORIES						
1938.....	17	4,186,077	310	584,619	407,710	(a)—(e)
1939.....	16	2,110,344	273	468,996	354,228	1,592,779
1940.....	16	3,037,930	441	890,414	623,965	1,539,266
1941.....	12	4,267,299	553	1,174,903	565,197	2,355,624
1942.....	29	8,888,280	701	1,737,398	951,183	3,017,569
YUKON						
1938.....	11	12,044,536	704	1,962,941	1,577,613	2,667,051
1939.....	10	10,117,207	728	1,605,671	1,598,650	3,803,985
1940.....	11	10,141,337	617	1,518,747	695,692	3,091,943
1941.....	12	10,035,921	501	1,570,683	535,279	2,946,119
1942.....	15	10,578,920	398	1,221,932	415,582	3,309,804
Canada						
1938.....	14,130	954,248,052	107,275	145,644,000	279,366,167	374,415,674
1939.....	14,239	941,775,385	107,759	152,353,208	270,110,772	393,232,614
1940.....	13,665	976,348,028	108,886	164,489,686	302,263,316	⊕ 418,698,729
1941.....	13,234	1,082,669,355	113,227	186,423,186	368,388,700	497,904,633
1942.....	12,897	1,145,345,913	112,043	198,550,260	431,911,446	514,109,951

Plants in the provinces do not add to Canada total, owing to the fact that a plant located on the Manitoba-Saskatchewan boundary is counted but once.

\*See footnote, preceding table.

(a) Value of pitchblende not included.

(b) Includes fuel and electricity used for metallurgical purposes.

(d) See footnote, preceding table.

(e) Northwest Territories showed a loss of \$56,931 in 1937 and \$99,092 in 1938 owing to the fact that pitchblende is not included. These amounts should be subtracted from the total net value by provinces to give the total net value for Canada. The value of refinery products is credited to the non-ferrous smelting and refining industry of Ontario.

⊕ Revised data.



Table 15.—Summary, by Nine Main Branches, of the Net Value of Commodity Production in Canada, 1939-1941 (\*)

—	1939	1940	1941	Percentage of Total Net Value	
				1941	1940
	\$	\$	\$	%	%
Agriculture.....	826,390,000	885,115,000	951,025,000	20.14	23.15
Forestry.....	271,723,416	370,121,275	421,419,139	8.93	9.68
Fisheries.....	34,378,681	38,106,690	51,769,638	1.10	1.00
Trapping.....	7,919,412	11,207,930	15,138,040	0.32	0.29
Mining (Total).....	393,232,044	446,080,729	497,904,632	10.55	11.67
Auriferous quartz.....	129,633,245	146,713,744	145,978,833	3.10	3.84
Other mining.....	263,598,799	299,366,985	351,925,799	7.45	7.83
Electric power.....	149,803,892	163,750,757	183,146,426	3.88	4.28
Construction.....	183,706,338	206,893,892	269,561,885	5.71	5.41
Custom and repair.....	96,652,386	110,745,000	135,287,000	2.87	2.90
Manufactures, n.e.s.....	1,277,269,130	1,591,625,600	2,194,821,573	49.50	41.62
<b>Grand Total†</b> .....	<b>3,241,131,299</b>	<b>3,823,676,973</b>	<b>4,720,073,333</b>	<b>100.00</b>	<b>100.00</b>
<b>Manufactures, Total†</b> .....	<b>1,531,051,901</b>	<b>1,914,412,381</b>	<b>2,605,119,788</b>	<b>55.19</b>	<b>50.07</b>

\*Business Statistics Branch, Dominion Bureau of Statistics (1941 Survey of Production Report.)

†The difference between "manufactures, total" and "manufactures, n.e.s." is the amount of the duplication between primary and second industries. The sum of "manufactures, n.e.s." and the eight other main branches is regarded as the grand total.

Table 16.—Provincial Distribution of the Net Value of Commodity Production in Canada, 1939-1941 (x)

Province	1939	1940	1941	Percentage of total net value, 1941
				%
Prince Edward Island.....	12,554,392	13,826,491	13,200,776	0.28
Nova Scotia.....	109,739,925	132,038,545	139,856,241	2.90
New Brunswick.....	77,156,799	90,119,421	103,968,110	2.20
Quebec.....	841,474,236	1,011,051,952	1,279,353,703	27.10
Ontario.....	1,365,101,538	1,642,788,599	2,087,958,441	44.24
Manitoba.....	156,371,495	176,734,411	205,348,561	4.35
Saskatchewan.....	212,101,124	219,066,345	228,318,037	4.84
Alberta.....	200,850,313	234,388,768	270,898,177	5.87
British Columbia.....	1256,781,477	1302,762,441	1379,925,005	8.05
Yukon and Northwest Territories.....			5,246,282	0.17
<b>Canada</b> .....	<b>3,241,131,299</b>	<b>3,823,676,973</b>	<b>4,720,073,333</b>	<b>100.00</b>

†Includes Yukon.

\*Business Statistics Branch, Dominion Bureau of Statistics (1941 Survey of Production Report.)

Table 17.—Proportion Contributed by Mining to Total Net Value of Production in Each Province, 1939-1941

Province	1939		1940		1941	
	Mining net	Percentage of net value provincial production	Mining net	Percentage of net value provincial production	Percentage of net value provincial production	
					All mines	Auriferous quartz mines only
	\$	%	\$	%	\$	%
Prince Edward Island.....						
Nova Scotia.....	23,504,419	22.36	26,189,233	19.83	24,535,707	17.9
New Brunswick.....	3,600,454	4.74	3,024,317	3.36	3,231,658	3.1
Quebec.....	81,600,118	9.75	98,134,979	9.71	127,649,905	10.0
Ontario.....	188,867,969	13.69	209,277,055	12.74	219,459,986	10.5
Manitoba.....	12,401,404	8.29	14,065,270	7.96	11,898,109	5.8
Saskatchewan.....	6,391,404	2.82	8,652,006	3.93	9,336,756	4.1
Alberta.....	26,049,861	11.82	29,593,293	12.63	36,167,469	13.1
British Columbia.....	150,816,415	19.74	157,144,576	18.87	60,323,299	15.9
Yukon and Northwest Territories.....					5,301,743	0.06
<b>Canada</b> .....	<b>393,232,044</b>	<b>12.05</b>	<b>446,080,729</b>	<b>11.67</b>	<b>497,904,632</b>	<b>10.5</b>

†Includes Yukon and Northwest Territories.

## RECENT TAX CHANGES OF INTEREST TO THE MINING INDUSTRY (Department of Finance)

With a view to stimulating exploration and development of mineral resources in Canada, certain exemptions from income tax have been granted from time to time to new or re-opened mines coming into production. An amendment to the Income War Tax Act, made in May, 1936, provided that any metalliferous mine coming into production between May 1, 1936 and January 1, 1940 would be exempt from income tax for its first three fiscal periods following the commencement of production. The Minister of National Revenue, having regard to the production of ore in reasonable commercial quantities, determines which mines, whether new or old, qualify for this exemption, and a certificate is issued accordingly. In the 1939 session of Parliament an amendment to the Income Tax Act extended for a further three years the qualifying period for the above three-year exemption from January 1, 1940 to January 1, 1943.

In order to stimulate the production of wartime metals, Parliament in the 1942 session provided a three-year exemption from the excess profits tax for the profits of any company derived from the operation of any base metal or strategic mineral mine coming into production in the three years following after January 1, 1943. The Minister of National Revenue was given power to determine what mines, whether new or old, and what types of minerals would qualify for this exemption. Section 89 of the Income War Tax Act was not extended and will have application only to the period now mentioned in the statute.

Provision is made for an exemption from tax in respect of dividends paid to a company incorporated in Canada by a company which has never paid a tax by reason of the three-year exemption. It might be explained that under the Income Tax Act a corporation is exempt from tax on dividends received from another corporation if the paying corporation has already paid corporation income tax on its earnings. This is to avoid double taxation of corporate earnings. It is seen, therefore, that but for this provision, a receiving corporation would automatically lose the exemption (which it would otherwise enjoy) through the fact that the paying corporation had received the three-year exemption accorded to new mines and thus the purpose of the Government in allowing the three-year exemption would be defeated.

In the 1943 amendment to the Income War Tax Act a substantial concession was extended to corporations whose chief business is that of mining or exploring for metalliferous and strategic minerals. Such companies were granted a deduction from their combined income and excess profits taxes equal to  $26\frac{2}{3}$  per cent of all prospecting, exploration and development expenses incurred in searching for base metals and strategic minerals during the period from January 1, 1943 to March 31, 1945, such deduction to be taken in the year of the expenditure. The deduction is contingent on provision by the company of certified statements of expenditures and submission of satisfactory evidence that the funds were expended in prospecting and exploring for base metals and strategic minerals by qualified persons.

As a companion measure to the above-mentioned exemption from excess profits tax, an amendment was made to the Income War Tax Act in 1942 designed to encourage prospecting for strategic minerals. It provided that a taxpayer contributing in 1942 to prospecting syndicates, associations or mining partnerships registered or otherwise recognized under the laws of any of the provinces, will be allowed a deduction from the income tax otherwise payable, equal to forty per cent of such contributions, provided that the tax credit will apply only in respect of contributions up to \$500 in the case of one syndicate, association or mining partnership, and only in respect of total contributions not exceeding \$5,000 in the case of any one taxpayer. In the 1943 amendment to the Income War Tax Act, this provision was extended for another year to apply to contributions made during 1943.

General regulations covering depletion allowance to precious metal mines are unchanged from the previous year and remain on the basis of  $33\frac{1}{3}$  per cent for mining companies, with allowance in the case of dividends received by shareholders standing at 20 per cent.



A copy of Bill 104—The Excess Profits Tax Act 1940—is contained in the Dominion Bureau of Statistics "Gold Mining Report for 1939". Bill 78, an act to amend Bill 104 referred to above, was passed by the House of Commons on May 26, 1941 and was reprinted in the 1940 report. A copy of Bill 122, the 1942 amendment to the Act, is shown at the end of the report for that year. No amendments to the Excess Profits Tax Act specifically relating to the mining industry were enacted in 1943, but the relevant sections of the amendment to the Income War Tax Act referring to mining company expenditures for base and strategic metals exploration and also to contributions to prospectors' syndicates are reproduced in the Appendix of the 1942 gold report.

A further amendment to the Income War Tax Act provided that taxes payable by mining companies to municipalities under certain sections of the Assessment Act in the Province of Ontario shall be allowed as a deduction from the income of such companies in calculating their income and excess profits taxes, provided that the Minister of National Revenue is satisfied that in calculating the taxes payable to the municipalities under the above-mentioned Act no deduction is allowed in respect of income and excess profits taxes payable to the Dominion. This amendment will effect a change in the amount of taxes payable respectively to the municipalities and to the Dominion but leaves unchanged the aggregate amount of taxes payable by a mining company.

### TREND IN EMPLOYMENT, 1942

(Employment and Payroll Statistics Branch)

#### GENERAL SUMMARY

In continuing response to the stimulus provided by the industrial war effort, employment reached unprecedentedly high levels in Canada during 1942. The trend was generally favourable during nine of the twelve months, curtailment having been indicated only during the first quarter of the year; the contractions then were moderate. The extent of the general upswing, however, was not equal to that reported in the earlier phases of the expansive movement, which, dating from the outbreak of hostilities, had received great impetus from the events of the spring and early summer of 1940, climaxed by the collapse of France. This slowing down in the rate of acceleration during 1942 was an obvious development in view of the magnitude of the expansion since the beginning of the war, with its consequent depletion of the labour market, seriously affected also by the recruitment of some 600,000 persons by the armed forces. In the 1942 stage of the war, the distribution of the workers taken on differed from that indicated in preceding phases. As shortages of labour and materials became increasingly a problem in industrial organization, the shift of workers from the less-essential to the more-essential production and services assumed an ever-growing importance in the industrial pattern—a transfer which in general was facilitated by relatively high earnings in war plants and other essential industries.

#### MINING

Mining operations were adversely affected by labour shortages in 1942, in eight months of which employment was in smaller volume than in the same period of 1941. With only one exception, the trend in the group as a whole was unfavourable in each month of the year under review. The index declined from 177.8 at Jan. 1, to 162.7 at the beginning of December, averaging 171.3 in the twelve months; the 1941 mean had been 176.6.

The 80,056 employees reported, on the average, by the 428 co-operating mining operators were shown to have earned a weekly average of \$2,785,432 in 1942. This was a per capita average of \$34.81, which was higher than in any other of the main industrial groups included in the monthly surveys, although it was exceeded by the average in a few manufacturing industries. The index of payrolls rose from 100 at June 1, 1941 to a peak of 112.0 at March 1, 1942, thence declining to 103.8 at November 1. This falling off was accompanied by a loss of eight per cent in employment in the period from June 1, 1941, to November 1, 1942.

Coal mining, on the whole, showed little general change from 1941, the index averaging 94.7 in 1942, as compared with 94.9 in the preceding year. A working force of 26,020 persons was employed, on the average, by the 105 co-operating firms, who had had 26,056 employees in 1941. The reported payrolls in the year under review amounted to \$808,893 per week, a per capita average of \$31.09. At the end of 1942, payrolls in the coal-mining division had risen by 37.6 per cent from June 1, 1941, while employment in the same period had advanced by only 1.1 per cent.



The labour stringency affected particularly metallic ore mining, notably gold. From the first quarter of the year, employment was quieter than in the same period of 1941, and as the year progressed, the comparison with earlier years since 1937 also became favourable. The index averaged 346.1, as compared with 366.2 in 1941 and 350.9 in 1940; these three are the highest in the record. Data were tabulated from 207 employers whose working forces aggregated 43,215, varying from 44,614 at March 1, to 39,963 at the beginning of December. The reported weekly payrolls of persons employed by the co-operating metallic ore mines averaged \$1,668,080, a per capita average of \$38.60. This was exceeded only by the averages in certain iron and steel groups.

Non-metallic minerals, other than coal: This industry provided more employment than in 1941 or earlier years. The reported employees averaged 10,821, earning a weekly payroll of \$308,459. The per capita average was \$28.51. In 1941, the persons on the staffs of the co-operating firms numbered 10,119. The 1942 mean index of employment was 159.4 compared with 150.5 in 1941. Considerable activity was indicated in asbestos mining, quarrying and other divisions of the group.

Table 18.—Per Capita Weekly Average Earnings of Persons Engaged in Mining at Specified Dates in 1941 and 1942\*

Industry	Per Capita Averages						
	June 1, 1941	Sept. 1, 1941	Dec. 1, 1941	Mar. 1, 1942	June 1, 1942	Sept. 1, 1942	Dec. 1, 1942
	\$	\$	\$	\$	\$	\$	\$
Coal.....	24.90	28.49	32.62	32.41	29.84	32.27	33.89
Metallic ores.....	35.34	36.80	36.36	37.68	38.68	39.39	38.82
Non-metallic minerals (except coal).....	25.72	26.58	26.73	29.03	28.03	29.28	29.37

\*From Annual Review of Employment and Payrolls in Canada, 1942—D.B.S., Ottawa.

Table 19.—Strikes and Lockouts in Canada, by Industries, 1941 and 1942  
(Department of Labour)

	1941					1942				
	Number of strikes and lockouts	Workers involved		Time lost		Number of strikes and lockouts	Workers involved		Time lost	
		No.	Per cent of total	Man working days	Per cent of total		No.	Per cent of total	Man working days	Per cent of total
Agriculture.....						2	426	0.3	278	0.1
Logging.....						5	604	0.5	974	0.2
Fishing and trapping.....	1	300	0.3	4,000	0.9	1	3,260	2.9	10,000	2.2
Mining, etc.*.....	46	41,476	47.6	191,689	44.2	61	22,408	19.7	129,529	28.8
Coal mining.....	(45)	(38,136)	(43.8)	(109,069)	(25.1)	(53)	(19,670)	(17.3)	(68,318)	(14.7)
Manufacturing.....	127	36,730	42.2	205,845	47.4	219	80,037	70.3	296,135	65.8
Construction.....	27	5,889	6.0	13,997	3.2	31	3,889	3.4	4,266	1.0
Transportation and Public Utilities.....	13	1,566	1.8	4,224	1.0	15	2,233	2.0	5,439	1.2
Trade.....	4	193	0.2	760	0.2	4	61	0.0	74	0.0
Finance.....						1	224	0.2	1,100	0.2
Service.....	11	937	1.1	13,390	3.1	15	774	0.7	2,407	0.5
<b>Total.....</b>	<b>231</b>	<b>87,091</b>	<b>100.0</b>	<b>433,914</b>	<b>100.0</b>	<b>354</b>	<b>113,916</b>	<b>100.0</b>	<b>450,292</b>	<b>100.0</b>

\*Non-ferrous smelting is included with mining.

Of the total of 354 strikes and lockouts during 1942, 61 were in mining, involving 19.7 per cent of the workers in all strikes. The time loss was 28.8 per cent of the total. Fifty-three strikes were recorded in the coal mining industry and these caused 14.7 per cent of the total time loss in all strikes. Only two strikes were recorded during the year in gold mining but one of these involving 2,800 miners at Kirkland Lake caused a time loss of 58,000 man working days in 1942 and 78,000 days in 1941. About one-half of the time loss due to strikes in coal mining was caused by five disputes. In March a strike at Springhill, Nova Scotia resulted in a loss of 11,500 man working days; two strikes at Florence, Nova Scotia in April caused a total loss of about 12,000 days and two strikes in British Columbia in October, one at Nanaimo and the other at Cumberland caused a loss of 9,500 days.

Table 20.—Employees, Salaries and Wages in the Mineral Industry in Canada, by Provinces, 1942

Province	*Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total†	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
Nova Scotia.....	503	145	13,744	2	14,394	1,329,450	20,839,803	22,169,053
New Brunswick.....	75	20	1,599	18	1,719	195,979	1,659,819	1,855,798
Quebec.....	2,315	546	24,306	68	27,235	5,200,827	37,694,618	42,901,145
Ontario.....	3,252	557	32,801	256	36,866	9,811,884	63,056,277	72,868,161
Manitoba.....	239	37	2,224	12	2,512	639,678	3,960,493	4,600,171
Saskatchewan.....	276	56	2,116	2	2,450	752,971	3,648,210	4,401,181
Alberta.....	1,132	218	9,836	160	11,116	2,869,388	16,758,717	19,628,105
British Columbia.....	1,417	338	12,429	139	14,323	3,948,086	23,218,910	27,166,996
Yukon.....	40	4	354		398	145,004	1,076,858	1,221,952
Northwest Territories.....	101	15	584	1	701	299,495	1,437,903	1,737,398
<b>Canada.....</b>	<b>9,350</b>	<b>1,942</b>	<b>100,093</b>	<b>658</b>	<b>112,043</b>	<b>25,198,852</b>	<b>173,351,408</b>	<b>198,550,260</b>

\*The average number of wage-earners was obtained by adding the monthly figures for individual companies and dividing by 12 irrespective of the number of months worked, the average number of wage-earners in the industry, as in the previous years, is the sum of these individual averages.

†The data are not inclusive of all individuals or syndicates engaged exclusively in prospecting or general exploration.

Table 21.—Employees, Salaries and Wages in the Mineral Industry in Canada, by Industries, 1942

Industry	*Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
						\$	\$	\$
<b>METAL MINING</b>								
Alluvial Gold Mines.....	43	7	421		471	128,714	1,154,560	1,283,274
Auriferous Quartz Mines.....	2,275	238	23,456	61	26,030	6,979,330	47,400,542	54,388,872
Copper-Gold-Silver Mines..	515	115	5,016		5,616	1,547,826	9,549,586	11,097,112
Silver-Cobalt Mines.....	24	3	165		192	63,722	220,258	283,980
Silver-Lead-Zinc Mines†...	281	27	1,877		2,185	711,770	4,018,600	4,730,370
Nickel-Copper Mines.....	345	23	6,779		7,147	1,124,038	14,241,169	15,365,207
Miscellaneous Metal Mines..	169	22	1,161		1,352	286,932	2,109,799	2,396,731
Non-ferrous Smelting and Refining.....	1,978	647	18,352	185	21,162	5,286,755	32,053,801	37,340,556
<b>NON-METAL MINING, INCLUDING FUELS</b>								
Coal.....	1,223	208	24,763	11	26,205	3,141,599	38,940,538	42,091,137
Natural gas.....	805	227	901	7	1,940	1,696,659	1,130,152	2,826,811
Petroleum.....	371	113	1,483	5	1,972	907,609	2,651,356	3,648,965
<b>OTHER NON-METALLIC MINING</b>								
Asbestos.....	269	60	3,420		3,749	731,836	4,567,618	5,299,454
Feldspar and Quartz (a)...	41	5	487		533	91,267	691,636	782,903
Gypsum.....	46	9	451	4	510	106,477	551,143	657,620
Iron Oxides.....	4	2	41		47	9,174	35,114	44,288
Mica.....	28	7	250	76	361	45,145	213,400	258,605
Pent (b).....	43	26	1,131	116	1,316	113,781	1,266,361	1,380,142
Salt.....	86	48	509	32	675	337,050	777,524	1,114,574
Talc and Soapstone.....	7	1	107		115	22,729	90,872	113,601
Miscellaneous.....	76	12	723		811	142,268	999,806	1,142,072
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</b>								
Cement.....	79	10	1,152		1,241	200,779	1,858,558	2,059,337
Clay Products.....	227	54	2,082	160	2,523	590,545	2,482,466	3,073,011
Lime.....	80	18	924		1,022	161,777	1,150,543	1,312,320
Sand and Gravel.....	97	16	2,027	1	2,141	224,868	2,179,887	2,404,755
Stone.....	238	44	2,415		2,697	456,204	2,998,059	3,454,263
<b>Total.....</b>	<b>9,350</b>	<b>1,942</b>	<b>100,093</b>	<b>658</b>	<b>112,043</b>	<b>25,198,852</b>	<b>173,351,408</b>	<b>198,550,260</b>

\*See footnote, preceding table.

†Includes pitchblende-silver mines.

(a) Includes nepheline-syenite mines.

(b) Includes fuel, moss and humus.

Table 22.—The Number of Wage-Earners in the Canadian Mining Industry, 1942, who Worked the Number of Hours Specified, during One Week in Month of Highest Employment

	30 hours or less	31-43 hours	44 hours	45-47 hours	48 hours	49-50 hours	51-54 hours	55 hours	56-64 hours	65 hours and over	Grand total	Total wages paid in that week*
<b>By provinces—</b>												\$
Nova Scotia.....	112	318	46	312	14,287	30	264	34	896	100	16,399	486,779
New Brunswick.....	98	151	34	38	2,556	53	258	4	175	52	3,419	59,137
Quebec.....	902	1,110	240	305	18,286	1,347	1,919	928	4,535	1,526	31,188	943,796
Ontario.....	849	1,235	201	1,761	22,967	701	2,253	226	6,665	1,518	38,376	1,405,835
Manitoba.....	88	107	153	34	1,828	100	342	37	737	123	3,549	114,690
Saskatchewan.....	133	123	159	47	1,019	80	300	113	598	183	2,755	96,457
Alberta.....	237	531	361	253	8,921	492	776	44	470	64	12,149	449,630
British Columbia.....	341	251	247	171	13,047	84	356	88	1,977	234	16,796	561,870
Yukon.....									579	65	644	38,870
Northwest Territories.....	30	28	6	4	275	8	12		340	74	792	25,893
<b>Canada.....</b>	<b>2,799</b>	<b>3,854</b>	<b>1,447</b>	<b>3,015</b>	<b>83,186</b>	<b>2,895</b>	<b>6,480</b>	<b>1,474</b>	<b>16,978</b>	<b>3,939</b>	<b>126,067</b>	<b>4,182,937</b>
<b>By Industries—</b>												
<b>METAL MINING</b>												
Alluvial Gold Mines.....	2	4	2		106			14	541	90	759	42,843
Auriferous Quartz Mines.....	644	1,036	104	169	15,158	296	2,090	611	7,127	939	28,174	1,058,196
Copper-Gold-Silver Mines.....	225	306	186	99	3,481	125	638	86	528	130	5,804	217,838
Silver-Cobalt Mines.....	6	27		7	120	2	8		33	29	232	6,524
†Silver-Lead-Zinc Mines.....	32	47	1	29	1,719	33	55	2	501	42	2,551	104,247
Nickel-Copper Mines.....	41	90	3	566	8,507	30	111	4	100	16	7,564	314,662
Miscellaneous Metal Mines.....	158	120	30	15	491	39	158	15	739	214	1,979	59,988
Non-Ferrous Smelting and Re- fining.....	421	428	163	957	17,204	196	701	63	1,638	279	22,070	734,106
<b>Non-Metal Mining, Including Fuels</b>												
Coal.....	297	756	206	455	24,299	502	487	62	1,380	69	28,513	972,592
Natural gas.....	115	26	168	62	250	21	234	9	186	95	1,156	27,441
Petroleum.....	77	128	17	24	1,327	7	79	14	154	34	1,861	55,309
<b>Other Non-Metal Mining</b>												
Asbestos.....	2			2	2,598	744	4	1	179	64	3,594	100,794
Feldspar and Quartz.....	47	33		28	173	11	45	6	161	104	608	16,412
Gypsum.....	48	63	27	16	138	32	105	21	138	99	687	17,041
Iron Oxides.....	8	30	19	10	35				13		48	874
Mica.....				10	199	123	22	29	14	12	466	7,515
Peat (a).....	263	135	134	139	1,790	58	137	21	205	127	3,000	54,513
Salt.....	26	59	27	29	156	31	47	11	128	76	690	17,647
Talc and Soapstone.....	3	4	1		1		85	2	25	32	133	2,494
Miscellaneous.....	65	63	22	33	119	29	138	30	277	278	1,064	26,074
<b>Clay Products and Other Structural Materials</b>												
Cement.....	15	55	35	27	426	62	88	21	414	106	1,249	39,916
Clay Products.....	66	90	60	198	527	408	614	117	612	156	2,848	64,419
Lime.....	18	52	49	6	205	10	128	62	331	99	960	26,001
Sand and Gravel.....	16	37	24	19	5,630	17	63	16	453	241	6,546	115,548
Stone.....	204	265	149	135	447	119	413	257	1,004	608	3,001	99,463
<b>Total.....</b>	<b>2,799</b>	<b>3,854</b>	<b>1,447</b>	<b>3,015</b>	<b>83,186</b>	<b>2,895</b>	<b>6,480</b>	<b>1,474</b>	<b>16,978</b>	<b>3,939</b>	<b>126,067</b>	<b>4,182,937</b>

†Contains data on mining of silver-pitchblende ores in the Northwest Territories.

\*Includes the actual money wages paid, the value of room and board where provided, deductions from employees for social services, such as sickness, accident, insurance, pensions, etc., as well as any other allowance forming part of the employees' wages, includes overtime.

(a) In all forms.



Table 23.—Employees and Salaries and Wages Paid in Canadian Mining Industry, 1930-1942

Year	Nova Scotia		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1930.....	15,484	19,284,197	1,391	1,132,308	15,397	15,190,714	24,706	34,433,915	3,021	4,372,044	1,371	1,040,790
1931.....	14,871	15,302,444	1,197	1,048,860	11,141	12,666,586	20,277	30,470,475	2,059	3,096,332	1,092	896,131
1932.....	13,706	11,302,801	1,480	1,123,080	7,694	8,198,379	16,376	24,412,126	1,730	2,106,017	924	748,782
1933.....	13,915	9,852,765	1,629	1,402,114	8,629	8,621,984	17,306	25,600,168	1,379	1,847,251	1,265	1,111,001
1934.....	13,500	13,594,114	1,722	1,276,770	10,362	10,492,169	22,033	32,619,846	1,948	2,796,454	1,461	1,257,282
1935.....	14,550	14,301,510	2,390	1,865,407	11,811	12,794,600	25,264	38,152,140	2,346	3,403,649	1,457	1,343,041
1936.....	15,368	15,980,687	1,744	1,248,431	14,225	15,774,362	31,105	46,899,805	2,932	3,752,367	1,828	1,937,825
1937.....	15,629	18,373,958	3,012	1,509,063	19,121	22,708,131	36,238	58,891,339	3,159	4,301,366	2,307	2,372,443
1938.....	15,591	15,959,095	3,042	2,074,273	20,829	24,485,254	35,791	58,926,900	2,840	4,393,270	2,287	2,470,530
1939.....	15,202	17,371,518	3,263	2,311,835	20,872	25,689,382	37,233	63,220,042	3,027	4,541,992	2,026	2,347,264
1940.....	14,034	19,285,662	2,240	1,939,160	21,726	29,025,418	38,774	66,395,845	3,145	5,107,054	1,961	2,573,878
1941.....	15,246	21,388,809	2,262	2,097,842	23,149	34,008,021	40,496	74,902,555	3,101	5,312,075	1,977	3,105,529
1942.....	14,394	22,169,053	1,718	1,855,798	27,235	42,901,445	36,880	72,888,161	2,512	4,600,171	2,450	4,401,181

  

Year	Alberta		British Columbia		Yukon		Northwest Territories		Canada	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1930.....	12,675	16,272,916	14,836	21,412,925	319	835,525			89,290	113,975,332
1931.....	10,579	11,357,722	11,297	16,345,887	296	784,802			72,909	91,969,299
1932.....	9,692	10,476,449	9,565	12,612,151	286	761,585	17	30,679	61,470	71,772,949
1933.....	9,057	9,403,382	9,845	11,455,946	233	545,692	76	131,502	63,334	70,631,895
1934.....	0,843	9,792,297	12,270	15,482,102	286	660,814	80	154,338	73,505	88,126,186
1935.....	9,706	10,862,198	12,352	16,479,606	333	809,067	47	69,341	80,256	100,080,559
1936.....	10,376	11,850,463	12,827	17,908,553	566	1,372,917	26	40,812	90,999	116,766,222
1937.....	10,843	12,924,934	14,282	21,487,277	691	1,502,692	132	221,181	105,114	144,292,384
1938.....	10,612	12,811,075	15,179	21,975,143	794	1,962,941	310	584,619	107,275	145,644,000
1939.....	10,548	13,097,818	14,587	21,698,690	728	1,605,671	273	468,996	107,759	152,353,298
1940.....	10,628	14,535,789	14,420	23,227,719	617	1,518,747	441	880,414	108,886	164,489,686
1941.....	11,141	17,065,351	14,801	25,797,418	501	1,870,683	553	1,174,903	113,227	186,423,186
1942.....	11,435	19,628,105	14,323	27,166,996	398	1,221,952	701	1,737,398	112,432	198,550,260

Table 24.—Wage-earners on Surface, Underground and in Mill, 1942

Province	Metal Mines			Fuels			Other†		
	Surface (a)	Under- ground	Mill	Surface	Under- ground	Mill	Surface	Under- ground	Mill
Nova Scotia.....	39	81	13	2,116	10,450		863	52	132
New Brunswick.....	3			~ 390	714		455	24	31
Quebec.....	10,656	4,812	797				4,084	787	2,368
Ontario.....	11,717	15,611	1,610	815			2,773	90	441
Manitoba.....	823	649	110	1	2		537	15	99
Saskatchewan.....	589	541	158	252	340		111		127
Alberta.....				3,567	5,840		580		98
British Columbia.....	4,641	2,941	945	689	1,581		1,440		131
Yukon.....	53	24	277						
Northwest Territories..	203	221	59	102					
<b>Total, 1942.....</b>	<b>28,724</b>	<b>24,786</b>	<b>3,969</b>	<b>7,932</b>	<b>19,227</b>		<b>11,743</b>	<b>938</b>	<b>3,427</b>
<b>Total, 1941.....</b>	<b>25,940</b>	<b>28,388</b>	<b>4,198</b>	<b>7,902</b>	<b>19,608</b>		<b>12,915</b>	<b>923</b>	<b>3,208</b>
<b>Total, 1940.....</b>	<b>23,525</b>	<b>27,575</b>	<b>3,833</b>	<b>8,046</b>	<b>19,859</b>		<b>12,979</b>	<b>775</b>	<b>2,958</b>
<b>Total, 1939.....</b>	<b>23,018</b>	<b>26,530</b>	<b>3,750</b>	<b>8,037</b>	<b>19,861</b>		<b>11,406</b>	<b>857</b>	<b>5,766</b>
<b>Total, 1938.....</b>	<b>23,326</b>	<b>24,754</b>	<b>3,713</b>	<b>8,277</b>	<b>20,260</b>		<b>15,808</b>	<b>678</b>	<b>1,894</b>

†Includes asbestos, salt, gypsum, stone quarries, brick plants, etc., etc.

(a) Including non-ferrous smelters and refineries.

Table 25.—Fuel and Electricity Used for All Purposes

Industry	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Char coal
	Canadian Imported		From United States	From other countries					
	Tons	Tons	Tons	Tons	Tons	Tons	Imp. gal.	Imp. gal.	lb.
<b>METAL MINING</b>									
Alluvial Gold..... Quantity	1	20				3	30,041	680	
\$	26	1,678				313	27,111	610	
Auriferous Quartz..... Quantity	23,628	26,102	2,770	305	189	76	367,935	15,433	
\$	241,514	285,732	34,781	6,112	947	1,963	136,478	4,149	
Copper-Gold-Silver... Quantity	16,779	2,127	94	66	82,109	523	71,734	7,643	
\$	113,462	22,585	2,003	1,344	204,038	7,767	24,801	1,951	
Silver-Cobalt..... Quantity	4	1,171	159	31		10	5,910	10	
\$	58	18,408	2,711	554		200	2,257	4	
Silver-Lead-Zinc..... Quantity	50,692	386	270		501	291	37,978	1,312	
\$	231,111	4,400	2,934		3,795	2,041	14,186	445	
Nickel-Copper..... Quantity		14,027	84			19	60,779	3,453	
\$		105,217	1,240			261	15,784	781	
Miscellaneous Metals... Quantity	417	583	43		5	23,083	91,120	662	
\$	4,188	5,937	678		65	94,202	29,070	204	
Non-Ferrous Smelting and Refining. Quantity	394,760	642,930	72	40		373,995	368,842	10,668	853,565
\$	2,780,251	4,807,739	1,066	436		4,111,282	126,522	2,327	12,883
Total..... Quantity	486,197	687,346	3,492	442	82,804	598,800	1,034,343	39,861	853,566
\$	3,376,610	5,261,696	46,478	8,446	208,846	4,218,029	576,218	10,471	12,883
<b>NON-METAL MINING</b>									
<i>Fuels</i>									
Coal..... Quantity	554,394				53,172		152,286	3,117	
\$	1,723,568				56,010		42,898	895	
Natural Gas..... Quantity	16	181	8				75,496	845	
\$	198	1,506	135				18,216	171	
Petroleum..... Quantity	1,305		3		3	2	115,707	2,902	
\$	7,687		33		16	25	32,952	459	
Total..... Quantity	555,715	181	11		53,175	2	343,489	6,864	
\$	1,731,453	1,506	168		56,026	25	94,068	1,525	
<i>Other Non-Metal Mining</i>									
Asbestos..... Quantity	2,242	27,903	20,801	3,491			120,405	6,743	
\$	20,420	253,966	183,366	31,983			37,247	1,209	
Feldspar, nepheline... Quantity	1,064	3,591	1,437	1		10	69,170	779	
syenite and quartz. \$	8,902	26,240	15,585	15		141	19,543	157	
Gypsum..... Quantity	8,416	3,000			948	340	53,716	245	
\$	59,680	22,125			3,719	3,738	12,894	53	
Iron Oxides..... Quantity	22		8			3	873	129	
\$	214		128			36	277	24	
Mica..... Quantity	1	90	34				29,635	327	
\$	11	919	538				9,600	80	
Peat..... Quantity							49,018	448	
\$							12,611	93	
Salt..... Quantity	29,121	40,599			22,400		51,548	39	
\$	166,958	253,367			80,261		14,477	11	
Talc and Soapstone... Quantity	3						17,194	187	
\$	30						5,237	39	
Miscellaneous..... Quantity	15,944	22,523	38		19,595	1	135,943	2,046	
\$	82,344	186,145	611		57,307	12	37,737	392	
Total..... Quantity	56,813	97,706	22,318	3,492	42,941	354	527,582	10,043	
\$	338,666	742,762	200,228	31,988	141,267	3,927	149,623	2,067	
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>									
Cement..... Quantity	156,544	192,105					152,146	5,121	
\$	1,003,490	1,305,383					41,295	972	
Clay Products..... Quantity	32,816	80,231	228	375	1,981	363	140,979	1,698	
\$	228,437	677,900	2,229	2,526	4,814	3,687	42,324	324	
Lime..... Quantity	143,049	84,895	10,043		85	20,654	105,355	123	
\$	1,194,675	531,279	87,135		333	190,863	30,084	30	
Sand and Gravel..... Quantity	4,882	12,767	5			22	746,874	3,394	
\$	40,602	93,818	75			373	265,603	840	
Stone..... Quantity	2,518	10,058	131	6		305	770,871	8,079	
\$	23,270	82,175	1,827	70		3,234	226,124	1,098	
Total..... Quantity	339,899	380,656	10,407	380	2,046	21,344	1,916,325	16,415	
\$	2,490,474	2,690,555	91,266	2,596	5,147	198,157	666,330	3,264	
<b>Grand Total..... Quantity</b>	<b>1,438,534</b>	<b>1,165,280</b>	<b>36,228</b>	<b>4,314</b>	<b>180,966</b>	<b>420,300</b>	<b>3,821,719</b>	<b>74,093</b>	<b>853,565</b>
<b>\$</b>	<b>7,937,202</b>	<b>8,686,319</b>	<b>337,140</b>	<b>43,040</b>	<b>411,305</b>	<b>4,420,138</b>	<b>1,226,237</b>	<b>17,327</b>	<b>12,883</b>

(a) On outgoing shipments only.

(b) Paid by mine operator only.



## in the Mineral Industry in Canada, by Kinds and Industries, 1942

Fuel oil and diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplied	Freight (a)	Treatment charges (b)
		Manufactured	Natural								
Imp. gal.	Cords	M cu.ft.	M cu.ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	\$	\$
77,518	2,207						24,624,400	4,169,616			
38,645	34,941					103,324		33,967	37,343	31,367	34,601
4,223,366	60,649				846,900,417		89,178,074	7,443,138			
627,020	419,700			390	5,856,971	7,615,766		112,046	17,922,522	741,329	2,346,264
945,156					259,346,497		86,704,181	10,554,637			
104,851	4,187			948	850,740	1,338,737		94,904	5,703,455	1,932,958	26,483,998
6,700	251				2,730,920						
1,009	1,685			13,828	27,635	68,349			64,000	1,439	16,255
923,479	1,620				62,803,531		37,866,247	11,217			
157,673	12,247				362,940	791,772		4,239	1,163,819	1,662,341	650,420
835,387	424				149,703,687		17,520				
87,980	1,926				502,209	715,404			7,471,373		
1,062,104	22,912				16,948,678		2,160,000				
157,684	195,548				136,080	623,665			600,900	261,211	33,910
39,766,900	6,192	3,138	429		8,287,760,845		259,823,581	23,473,768			
2,600,583	27,847	3,207	348		21,268,140	35,748,639		93,691	27,083,695		
47,840,610	103,812	3,138	429		9,696,254,575		509,374,005	45,652,376			
3,775,454	698,081	3,207	348	15,166	29,004,724	47,006,656		339,737	60,047,107	4,630,645	29,565,448
92,234	3				170,852,010		50,819,799	6,912,607			
15,507	3				1,871,431	3,710,312		111,313	7,255,640		
660	50		185,751		27,480						
77	200		69,675	1,155	1,156	92,489			12,313		
104,875	304		7,998,351		2,005,823						
11,453	917		886,634	676	30,650	921,504			235,959		
197,769	857		8,184,102		172,885,319		50,819,799	6,912,607			
27,039	1,120		956,309	1,831	1,903,237	4,774,305		111,313	7,603,912		
54,490					147,922,370						
9,937					1,108,163	1,646,291			2,747,682		
191,536	458				3,619,708		1,753,959				
22,051	2,090				29,318	124,100			287,928		
84,496	61		5,488		12,022,893		1,467,344				
9,195	306		2,196		64,700	178,682			65,457		
1,288	3,358				200,000				5,780		
252	16,790				3,114	20,835		1,350			
1,352	491				318,710				19,161		
179	2,372				4,444	18,152					
7,776	654				379,787				13,499		
1,491	1,969				9,702	25,866					
15,482			66		3,610,719		7,502,246				
1,775			36		19,764	536,649			133,783		
3,940	68				1,648,880				33,208		
851	339				19,409	25,995					
3,398,374	3,391	176,571			5,968,148		1,722,009				
191,319	9,385	21,012			70,294	656,538			296,322		
5,758,704	8,481	176,571	5,554		175,891,179		13,446,908				
237,050	33,291	21,012	2,232		1,328,966	3,233,018			3,602,620		
40,212	19				154,502,140						
4,946	86				771,092	3,127,264			1,024,057		
333,410	27,202	803	475,544		11,581,782		364,768				
28,835	126,180	321	15,720	555	158,621	1,292,373			158,866		
645,325	59,668				15,703,933		1,603,415		177,268		
31,381	258,322			935	95,355	2,421,292					
201,426	303		49		6,587,012		150,000				
39,367	1,840		23		66,649	509,190			167,959		
300,075	1,805		1,000		23,451,322		269,040				
39,122	9,740		696		285,544	672,900			844,269		
1,529,448	88,997	893	476,633		211,826,189		2,387,223				
143,651	396,168	321	16,439	1,490	1,377,161	8,023,019			2,372,419		
53,317,331	204,767	180,512	8,666,718		10,186,657,256		566,027,933	52,564,983			
4,183,194	1,129,370	24,540	975,328	18,487	33,614,088	63,835,998		451,950	73,526,258	4,630,645	29,565,448

## DOMINION BUREAU OF STATISTICS

Table 26.—Fuel and Electricity Used for All Purposes

Industry	Bituminous		Anthracite coal		Lignite coal	Coke	Gasoline	Kerosene	Charcoal
	Canadian Imported		From United States	From other countries					
	Tons	Tons							
Nova Scotia.....Quantity	397,256					4,951	133,772	251	
\$	1,472,002					29,548	34,020	53	
New Brunswick.....Quantity	15,005						57,377	16	
\$	103,189						14,139	4	
Quebec.....Quantity	436,388	273,681	34,282	3,882		4,789	1,447,112	22,058	92,000
\$	3,548,539	2,330,320	300,587	34,744		61,709	496,147	4,530	1,585
Ontario.....Quantity	47,865	891,490	1,859	321		330,959	1,230,366	31,822	761,565
\$	371,776	6,352,825	25,646	5,612		3,582,486	361,599	7,373	11,298
Manitoba.....Quantity	73,652	83	17		23,534	95	147,517	2,651	
\$	602,093	984	361		84,535	1,356	60,419	783	
Saskatchewan.....Quantity	32,891		67		50,600	380	130,338	3,022	
\$	217,396		1,446		90,151	5,424	43,601	832	
Alberta.....Quantity	178,773				24,027		195,831	5,887	
\$	470,541				27,765		51,757	1,277	
British Columbia.....Quantity	255,798	14	3	111	82,804	79,123	413,375	7,587	
\$	1,150,577	552	100	2,684	208,845	730,302	125,620	1,653	
Yukon.....Quantity		21					3	23,944	788
\$		1,838					313	23,645	712
Northwest Territories.....Quantity	6						30,087	201	
\$	489						15,284	110	
Canada.....Quantity	1,438,534	1,165,289	36,228	4,314	180,966	420,300	3,821,719	74,983	853,565
\$	7,937,202	8,686,519	337,140	43,040	411,363	4,420,138	1,226,237	17,327	12,883

(a) On outgoing shipments only.

(b) Paid by mine operator only.

Table 27.—Fuel and Electricity Used only for Metallurgical

Province	Bituminous coal		Anthracite coal		Lignite coal	Coke	Charcoal
	Canadian	Imported	From United States	From Other Countries			
	Tons	Tons	Tons	Tons			
Quebec.....Quantity	204,510	89,294				4,465	92,000
\$	1,685,344	794,946				58,381	1,585
Ontario.....Quantity		499,809	69	40		290,461	761,565
\$		3,610,463	1,020	436		3,313,101	11,298
Manitoba.....Quantity	43,700						
\$	365,097						
Saskatchewan.....Quantity	14,566						
\$	118,366						
British Columbia.....Quantity	100,803					77,811	
\$	482,194					727,545	
Canada.....Quantity	363,579	599,103	69	40		372,737	853,565
\$	2,641,901	4,405,409	1,020	436		4,099,027	12,883

\*All used in the non-ferrous smelting and refining industry and included in table 26.

## in the Mineral Industry in Canada, by Provinces, 1942

Fuel oil and diesel oil	Wood	Gas		Other fuel	Electricity purchased	Total	Electricity generated for own use	Electricity generated for sale	Process supplied	Freight (a)	Treatment charges (b)
		Manu- factured	Natural								
Imp. gal.	Cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.	K.W.H.	\$	\$	\$
147,267	855	176,571			108,002,420		27,225,724	3,610,168			
18,042	3,376	21,012			1,162,425	2,741,078		30,086	3,797,287	1,999	4,623
13,908	14,589		44,346		2,946,569		1,147,856				
1,409	55,563		17,950	935	54,794	247,983			153,772	2,279	
24,105,421	62,513	3,138			7,035,878,451		206,969,376	22,767,400			
1,672,960	302,930	3,207			19,652,078	28,419,236		87,812	26,951,269	1,376,554	14,636,712
19,740,511	52,981	803	89,896		1,650,179,016		25,489,832	676,308			
1,515,990	265,691	321	48,238	15,003	7,692,022	20,165,898		5,879	29,187,520	430,937	1,194,095
144,259	16,349				274,792,224		10,506,510				
30,417	93,884			189	493,075	1,358,096			1,982,791	297,781	2,795,242
3,423,800	150				172,246,120		14,842,118				
203,065	1,463			759	191,615	755,732			2,044,162	1,785	8,143,735
109,424	3,236		8,532.5	66	55,704,759		10,218,763	241,447			
12,175	14,124		909.1	40 550	587,485	2,674,920		34,464	2,504,197		
5,301,516	40,470				879,220,156		170,676,562	14,139,389			
606,328	256,787			945	3,776,888	6,870,285		149,969	6,170,224	2,409,822	2,671,960
109,317	2,432				481		26,126,742	4,180,833			
88,939	38,427				48	153,922		38,106	97,200	85,947	78,513
132,308	8,077				6,787,055		12,834,460	6,919,378			
33,860	96,325				102,760	248,828		104,134	637,836	24,641	39,978
53,317,531	201,767	180,512	8,644,718		10,186,657,256		566,027,933	52,564,983			
4,183,194	1,128,370	24,540	975,328	18,487	33,614,888	63,035,998		451,650	73,526,258	4,636,645	29,565,448

## Purposes in the Mineral Industry of Canada, by Provinces, 1942\*

Gasoline	Kerosene	Fuel oil and diesel oil	Wood	Gas		Other	Electricity	Total	Electricity generated own use
				Manu- factured	Natural				
Imp. gal.	Imp. gal.	Imp. gal.	Cords	M cu. ft.	M cu. ft.	\$	K.W.H.	\$	K.W.H.
4,619	1,766	22,078,895	4,338	3,138			6,231,003,701		249,908,225
1,670	406	1,382,442	13,858	3,207			15,172,120	19,113,939	
39,218	279	16,204,422	111		429		270,253,874		
10,865	74	1,050,207	788		348		871,774	8,870,374	
		13,352	140				177,652,808		
		2,139	969				119,693	477,898	
		4,450	46				59,217,602		
		713	322				39,897	159,798	
104,531		1,286,472	1,052				701,405,189		
35,350		144,278	7,652				2,702,064	4,929,683	
148,368	2,645	39,588,391	5,687	3,138	429		7,439,333,174		249,908,225
47,885	490	2,679,779	23,589	3,207	348		18,966,148	32,721,212	



Table 28.—Electricity Purchased by

Year	Auriferous Quartz Mining (gold mines)		Total All Metal Mines (including non-ferrous smelters and refineries)		Total entire mining industry	
	K.W.H.	\$*	K.W.H.	\$*	K.W.H.	\$*
1925.....	160,192,738	1,413,861	612,062,882	3,542,342	944,819,733	6,927,280
1926.....	169,287,220	1,547,152	1,215,488,195	4,992,979	1,604,089,435	8,780,863
1927.....	221,866,174	1,742,860	1,490,457,194	5,509,534	1,799,505,643	8,025,375
1928.....	224,756,744	2,002,062	1,530,612,608	6,271,434	1,856,391,170	9,072,073
1929.....	233,219,275	1,983,959	1,662,142,083	6,934,266	2,054,411,658	10,353,034
1930 (a).....	213,116,298	1,927,268	1,752,490,909	7,535,324	2,151,082,619	10,929,340
1931 (b).....	253,438,606	2,222,870	1,874,324,568	7,309,118	2,213,264,599	10,514,814
1932.....	314,326,323	2,516,897	1,409,911,795	6,626,600	1,758,083,427	9,615,706
1933.....	317,650,168	2,661,852	1,688,075,040	7,115,894	1,908,779,501	9,966,904

\* Includes service charges.

(a) 1925 to 1930 for power only.

(b) 1931-1941 for all purposes.

## ORDINARILY IN USE

Table 29.—Power Equipment in Use, and Power Equipment in

Province	Steam engines and turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power em- ployed	Electric motors run by primary power in same plant	Boilers
Nova Scotia..... No.	56	22	81	3	192	947	1,109	202	83
H.P.	50,710	2,444	5,847	565	59,566	64,603	124,169	11,902	25,036
New Brunswick..... No.	20	1	43	.....	64	257	321	18	20
H.P.	1,890	60	1,296	.....	3,246	2,254	5,500	270	1,365
Quebec..... No.	38	84	251	15	388	9,066	9,454	813	128
H.P.	10,293	12,213	9,351	52,658	84,616	270,124	354,639	11,218	26,108
Ontario..... No.	130	56	808	4	998	13,381	14,379	682	238
H.P.	12,052	6,410	20,624	2,350	41,436	410,499	451,935	12,569	29,807
Manitoba..... No.	5	6	39	1	51	1,335	1,386	172	26
H.P.	1,978	824	973	1,900	5,676	70,980	76,655	3,527	3,009
Saskatchewan..... No.	9	21	52	1	83	1,429	1,512	251	13
H.P.	655	2,162	1,581	3,300	7,698	68,159	75,857	5,514	2,674
Alberta..... No.	194	18	183	.....	395	1,607	2,002	279	222
H.P.	37,664	1,281	6,306	.....	45,261	43,483	88,734	6,516	24,619
British Columbia..... No.	94	85	140	57	376	4,448	4,824	1,654	64
H.P.	37,826	14,419	4,619	36,292	83,166	161,405	254,561	43,954	12,307
Yukon..... No.	.....	12	.....	3	16	.....	15	362	1
H.P.	.....	1,748	.....	15,000	16,748	.....	16,748	10,683	60
N.W.T. No.	.....	6	7	1	14	139	153	168	9
H.P.	.....	679	113	4,700	5,492	2,034	7,526	2,798	645
Canada..... No.	546	311	1,604	85	2,546	32,609	35,155	4,661	864
H.P.	153,068	42,240	50,710	116,765	362,783	1,093,541	1,456,324	111,951	125,430

## Canadian Mining Industry, 1925-1942

Year	Auriferous Quartz Mining (gold mines)		Total All Metal Mines (including non-ferrous smelters and refineries)		Total entire mining industry	
	K.W.H.	£*	K.W.H.	£*	K.W.H.	£*
1934	415,570,323	3,091,147	2,099,586,731	8,433,428	2,359,525,280	11,510,481
1935	464,146,582	3,722,163	2,320,385,917	9,415,062	2,591,470,745	12,546,298
1936	449,026,003	4,345,066	2,841,045,187	10,763,296	3,151,192,519	14,055,915
1937	629,083,378	5,031,691	3,368,047,901	12,442,423	3,744,919,540	16,135,702
1938	741,866,953	5,333,427	4,125,037,129	13,917,518	4,441,098,287	17,485,652
1939	777,832,223	5,803,160	4,449,477,330	13,060,673	4,817,050,497	18,749,417
1940	868,846,323	5,893,562	5,105,497,931	17,005,546	5,569,961,386	21,066,734
1941	947,563,696	6,277,626	7,105,275,873	22,373,156	7,630,138,911	26,710,350
1942	846,000,417	5,856,971	9,626,254,575	29,004,724	10,186,657,256	33,614,088

## IN RESERVE OR IDLE

## Reserve or Idle, in the Mineral Industry in Canada, by Provinces, 1942

Steam engines and turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total
12	6	22		40	44	84	38	13	20
1,773	930	1,281		3,984	1,397	5,381	2,184	4,451	1,973
		5		6	20	25		4	3
		49		49	186	235		165	70
6	17	60	1	84	923	1,007	26	49	154
474	2,397	4,180	125	7,176	25,772	32,948	931	7,631	24,984
19	14	79		112	1,084	1,196	41	48	397
2,339	2,718	5,315		10,373	35,188	45,569	1,169	3,880	86,619
1	2	9		12	79	91	20	8	27
684	386	529		1,579	2,191	3,770	474	868	541
7	5	11		23	119	142	59	10	24
2,644	1,100	430		4,174	2,918	7,092	1,635	1,186	3,251
28	12	19		69	54	117	14	28	42
7,028	210	1,103		8,341	2,443	10,784	357	2,580	3,776
12	17	44	8	81	712	793	99	14	130
11,010	1,578	1,093	9,115	23,326	17,980	41,376	2,348	1,333	37,461
	5	1		6	34	40	54	3	4
	812	28		840	288	1,128	4,313	177	950
	7	1		8	7	15		2	12
	1,297	10		1,307	200	1,507		45	448
83	85	251	9	439	3,080	3,510	351	179	813
26,532	11,428	14,018	9,249	61,218	88,563	149,781	13,411	22,316	160,073

Table 30—Power Equipment in Use and Power Equipment in  
ORDINARILY IN USE

Industry	Steam engines and turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power Em- ployed	Electric motors run by primary power in same plant	Boilers
<b>METAL MINING—</b>									
Alluvial Gold Mines..... No.	2	20	23	13	58		58	298	1
H.P.	160	1,567	589	16,012	18,328		18,328	15,675	100
Auriferous Quartz Mines..... No.	19	72	55	24	170	9,699	9,869	1,028	184
H.P.	1,663	14,251	3,444	23,680	43,038	254,991	298,029	28,720	16,004
Copper-Gold-Silver Mines..... No.	2	12	3	8	25	2,418	2,443	769	30
H.P.	17,333	3,585	127	11,200	32,245	101,012	133,257	21,724	6,199
Silver-Cobalt Mines..... No.	1				3	43	46		3
H.P.	175		35		310	1,204	1,414		145
Silver-Lead-Zinc Mines..... No.	4	24	13	9	50	816	866	468	14
H.P.	6,040	4,044	226	1,350	11,680	19,180	30,840	11,663	2,619
Nickel-Copper Mines..... No.	1		1		2	902	904		4
H.P.	150		4		164	37,775	37,929		380
Miscellaneous Metal Mines..... No.		20	31		51	188	239	80	14
H.P.		2,748	1,073		3,821	6,095	9,916	896	995
Non-ferrous Smelting and Refining..... No.	34	7	318	11	370	10,268	10,638	338	45
H.P.	14,836	1,430	2,367	51,125	69,768	368,365	438,123	4,448	27,763
<b>Total..... No.</b>	<b>62</b>	<b>156</b>	<b>446</b>	<b>65</b>	<b>729</b>	<b>24,334</b>	<b>25,063</b>	<b>3,571</b>	<b>295</b>
<b>H.P.</b>	<b>40,297</b>	<b>27,775</b>	<b>7,865</b>	<b>103,367</b>	<b>179,214</b>	<b>788,622</b>	<b>967,836</b>	<b>83,146</b>	<b>54,265</b>
<b>NON METAL MINING, INCLUDING FUELS—</b>									
Coal..... No.	234	9	199	2	444	2,788	3,232	417	211
H.P.	75,598	746	4,116	12,000	98,460	107,114	199,374	22,777	43,621
Natural Gas..... No.	8		246		254	96	350	11	9
H.P.	265		8,659		8,924	1,070	9,994	185	360
Petroleum..... No.	71	15	103		189	170	359	15	108
H.P.	23,677	1,159	4,490		29,366	1,061	30,417	317	9,617
<b>Total..... No.</b>	<b>313</b>	<b>24</b>	<b>548</b>	<b>2</b>	<b>887</b>	<b>3,054</b>	<b>3,941</b>	<b>442</b>	<b>328</b>
<b>H.P.</b>	<b>99,549</b>	<b>1,935</b>	<b>17,265</b>	<b>12,000</b>	<b>130,740</b>	<b>109,215</b>	<b>239,985</b>	<b>23,279</b>	<b>53,588</b>
<b>Other Non-Metal Mining</b>									
Asbestos..... No.	6	1	14		21	1,076	1,097		3
H.P.	210	120	1,148		1,478	53,276	54,754		80
Feldspar, nepheline syenite and quartz No.	8	7	27		42	98	140	113	9
H.P.	608	942	1,361		2,811	2,189	5,000	1,167	670
Gypsum..... No.	7	16	33		56	170	226	42	6
H.P.	1,270	2,078	1,778		6,123	5,727	10,850	1,016	770
Iron Oxides..... No.									
H.P.									
Mica..... No.	1		22		23	7	30	5	3
H.P.	50		1,521		1,571	145	1,716	25	100
Peat..... No.	1	1	76		78	62	140		
H.P.	50	115	1,999		2,164	776	2,940		
Salt..... No.	29		5		34	144	178	213	9
H.P.	4,668		138		4,806	976	5,782	2,174	4,720
Talc and Soap- stone..... No.		2	14		16	36	52		
H.P.		78	450		528	682	1,210		
Miscellaneous..... No.	6	17	29	2	54	232	286	72	13
H.P.	308	1,663	1,159	350	3,480	4,355	7,835	1,016	1,151
<b>Total..... No.</b>	<b>58</b>	<b>44</b>	<b>720</b>	<b>2</b>	<b>324</b>	<b>1,832</b>	<b>2,156</b>	<b>445</b>	<b>43</b>
<b>H.P.</b>	<b>7,064</b>	<b>4,996</b>	<b>9,551</b>	<b>350</b>	<b>21,061</b>	<b>68,212</b>	<b>96,173</b>	<b>5,398</b>	<b>7,491</b>



## Reserve or Idle, in the Mineral Industry in Canada by Industries, 1942.

## IN RESERVE OR IDLE

Steam engines and turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total
	2	9	1	12		12	52		
	91	137	10	238		238	4,300		
9	43	103	1	158	770	928	78	67	367
1,547	6,802	7,650	780	16,779	22,316	39,095	1,801	4,241	15,843
7	2	2	4	15	154	169	58	15	107
12,708	450	345	7,950	21,453	3,090	24,543	8,464	1,334	13,665
	1			1	17	18			
	120			120	441	561			
	9	6	2	17	132	149	10	6	30
	982	515	375	1,872	4,250	6,122	93	317	3,972
					68	68		1	58
					1,943	1,943		100	25,120
3	1	5		9	33	42	1	4	5
377	300	115		795	1,004	1,799	2	400	50
1	1			2	1,240	1,242	31	9	130
1,074	75			1,149	27,149	28,298	354	5,850	91,913
20	59	127	8	214	3,414	2,628	230	102	697
15,706	8,820	8,765	9,115	42,406	60,193	102,599	10,014	12,242	150,563
33	1	28		62	124	186	33	37	66
8,971	80	543		9,594	3,601	13,195	1,918	6,842	7,073
		3		3		3			1
		96		96		96			2
	7	15	4	26	15	41	4	8	1
265	110	959		1,334	371	1,705	195	505	6
37	8	46		91	139	230	37	43	64
9,236	190	1,538		11,024	3,972	14,996	2,111	7,347	7,981
				3	39	39			
				462	3,254	3,254			
	2	1		29	8	11	3	1	6
	422	40		1,660	148	610	12	50	247
4	2	23		23	20	49	15	4	12
130	396	1,134			670	2,330	430	355	836
		3	1	4		4	2	3	1
		73	125	198		198	10	75	12
		11		11		12			
		539		539	7	546			
7	1			8	3	11	19	7	1
100	180			570	11	281	234	1,135	15
					5	5			
					320	320			
1	4	6		11	8	19	33	1	3
35	980	240		1,255	365	1,620	320	20	237
12	9	44	1	66	84	150	72	16	23
355	1,978	2,026	125	4,484	4,775	9,259	1,006	1,633	1,247

Table 30.—Power Equipment in Use, and Power Equipment in ORDINARILY IN USE

Industry	Steam engines and turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>									
Cement..... No.		5	39		44	1,479	1,523	26	9
..... H.P.		1,176	1,446		2,621	77,069	79,690	968	515
Clay Products.... No.	41	9	46		96	486	582	24	46
..... H.P.	3,542	552	1,314		5,408	12,790	18,198	330	4,804
Lime..... No.	8	5	25		38	440	478	59	13
..... H.P.	260	579	785		1,624	7,186	8,810	896	1,593
Sand and Gravel. No.	16	15	51	7	89	215	304	8	8
..... H.P.	531	890	2,007	240	3,668	7,205	10,873	53	520
Stone..... No.	48	53	229	9	339	769	1,108	25	62
..... H.P.	1,924	4,337	10,478	808	17,547	23,212	40,759	881	2,644
<b>Total..... No.</b>	<b>113</b>	<b>87</b>	<b>390</b>	<b>16</b>	<b>606</b>	<b>3,389</b>	<b>3,995</b>	<b>142</b>	<b>138</b>
<b>..... H.P.</b>	<b>6,257</b>	<b>7,534</b>	<b>16,029</b>	<b>1,048</b>	<b>30,868</b>	<b>127,462</b>	<b>158,330</b>	<b>3,128</b>	<b>10,076</b>
<b>Grand Total 1942. No.</b>	<b>546</b>	<b>311</b>	<b>1,604</b>	<b>85</b>	<b>2,546</b>	<b>32,609</b>	<b>35,155</b>	<b>4,601</b>	<b>894</b>
<b>..... H.P.</b>	<b>153,068</b>	<b>42,240</b>	<b>50,710</b>	<b>116,765</b>	<b>362,783</b>	<b>1,093,541</b>	<b>1,456,324</b>	<b>111,951</b>	<b>125,430</b>
<b>Grand Total 1941. No.</b>	<b>587</b>	<b>351</b>	<b>1,317</b>	<b>85</b>	<b>2,340</b>	<b>30,032</b>	<b>32,372</b>	<b>4,099</b>	<b>788</b>
<b>..... H.P.</b>	<b>152,307</b>	<b>45,062</b>	<b>44,568</b>	<b>115,397</b>	<b>357,334</b>	<b>1,219,848</b>	<b>1,577,182</b>	<b>101,001</b>	<b>116,641</b>

## WARTIME MINE SHOP ASSOCIATION

Prepared by: Oliver Hall, Chairman, Wartime Mine Shop Association

The work of the Wartime Mine Shop Association has gone steadily on throughout 1942. Orders at the end of 1941 totalled about two million dollars. These orders were largely for engines and pumps for the merchant ships and for units of gun contracts.

These orders were nearly all completed in 1942 and early 1943.

New orders have been taken and the war work in the mine shops is now on a steady basis and totals a large amount per year.

The war pressure on the base metal mines has increased the repair work in their shops and limited the amount of war manufacturing that they can do. The major gold camps, Porcupine and Kirkland Lake, have increased their shops, purchased new equipment and perfected their organization for war work.

## Reserve or Idle, in the Mineral Industry in Canada, by Industries, 1942—Concluded

## IN RESERVE OR IDLE

Steam engines and turbines	Diesel engines	Gasoline, gas and oil engines other than Diesel engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Boilers	Motor generator sets in use and in reserve Total
1		6		7	294	301	6	1	8
50		242		292	13,753	14,045	210	40	701
6	4	11		21	64	85		8	4
605	20	643		1,268	2,489	3,757		700	163
1				1	9	10		3	
25				25	219	244		117	
2		4		6	14	20		2	3
170		250		420	629	1,049		150	52
6	5	13		24	62	86	6	2	10
383	420	494		1,299	2,533	3,832	70	85	165
16	9	34		59	443	502	12	16	25
1,235	440	1,629		3,304	19,623	22,927	280	1,092	1,082
85	85	251	9	430	3,080	3,510	351	179	813
26,532	11,428	14,018	9,210	61,218	88,563	149,781	13,411	22,316	160,073
113	93	283	15	504	2,737	3,241	456	195	
28,969	118,29	14,820	2,450	58,088	83,518	151,586	13,974	23,115	



## CHAPTER TWO

## THE GOLD MINING INDUSTRY IN CANADA

Including—(a) The Alluvial Gold Mining Industry; (b) The Auriferous Quartz Mining Industry; (c) The Copper-Gold-Silver Mining Industry; (d) Miscellaneous Data on Monetary Gold and World Gold Production, Prices, Exchange, etc.

**Definition of the Industry.**—Gold mining in Canada is classified into three principal industries—(a) the recovery of gold from the gravels and sands of stream channels or beaches or what is defined as “The Alluvial Gold Mining Industry”; (b) the recovery of lode gold, which is designated “The Auriferous Quartz Mining Industry” and in which industry gold is usually the most important economic constituent of the ores mined and quartz the predominant gangue mineral; (c) gold is often found in various other mineral deposits, more particularly in those of copper, and for this reason the review of Canada’s “Copper-Gold-Silver Mining Industry” is included here to complete a more comprehensive survey of the Canadian Gold Mining Industry.

Output in Canada of fine gold from all primary sources totalled 4,841,306 troy ounces valued at \$186,390,281 in 1942. This represents decreases of 503,873 troy ounces and \$19,399,111 or 9.5 per cent from the all-time high record of 5,345,179 troy ounces and \$205,789,392 in 1941. This decline in Canadian gold production represents the first break in a series of annual increases that had been realized by the Canadian mining industry since 1923 and largely reflects the curtailment in labour, equipment and essential supplies resulting from the increasing intensity of the second World War. Personnel of the auriferous quartz mining industry have entered in considerable numbers the various branches of the armed forces, others have transferred to the mining of base metals, while the manufacture of certain equipment or materials necessary for the development of new gold mines or expansion in the older mines has been considerably restricted or the products of such manufacture diverted to industries considered at the time to be of more vital importance in a total war effort.

The direct result of these war-time changes was reflected in the cessation of mining operations at most of the new properties under development, the closing down of producing mines operating on ore described as marginal in grade, and a decrease in production by some of the more important and long-established mining companies. Labour troubles continuing from 1941 adversely affected production in the Kirkland Lake camp during the early part of 1942, and gold recoveries at a few base metal mines fell off with a reduction in the shipments of copper-gold ores from these particular properties.

Production of gold in Canada in 1942, according to type of deposit or nature of recovery included 80.8 per cent from crude gold bullion bars produced at auriferous quartz or “gold mines”; 12.1 per cent from blister or anode copper; 4.6 per cent from ores, slags, copper-nickel matte, etc., exported; 2.3 per cent from alluvial deposits, and 0.2 per cent from base bullion made chiefly from silver-lead ores.

Reliable data relating to world gold production have been increasingly difficult to obtain since the outbreak of war in 1939. From statistics made available, it is estimated that Canada, as a world gold producer, probably ranked second in 1942. The Union of South Africa ranked a definite first with approximately 14,120,000 troy ounces, while production of the United States, including receipts from the Philippine Islands, was estimated at 3,618,543 troy ounces. Accurate data pertaining to gold production in Russia are unobtainable, but a conjectural total output of 4,000,000 troy ounces was reported for this country in 1940.

Table 31.—Production of New Gold in Canada, by Provinces and Sources, 1941 and 1942  
(Gold at \$20·671834 per fine ounce)

	1941		1942	
	Fine troy ounces	\$	Fine troy ounces	\$
<b>NOVA SCOTIA—</b>				
In gold bullion.....	19,170	396,279	12,989	268,506
Estimated exchange equalization on gold produced.....		341,706		231,570
Total Value—Canadian Funds.....		738,045		500,076
<b>QUEBEC—</b>				
In anode copper, in ores shipped and in gold bullion.....	1,089,339	22,518,635	1,092,388	22,581,663
Estimated exchange equalization on gold produced.....		19,420,917		19,475,275
Total Value—Canadian Funds.....		41,939,552		42,056,938
<b>ONTARIO—</b>				
*Porcupine Area—In gold bullion.....	1,439,140	29,749,849	1,398,590	27,050,955
*Kirkland Lake—In gold bullion (a).....	743,616	15,371,907	750,388	15,635,927
*Other gold mines—In gold bullion.....	933,318	19,293,395	627,646	12,974,894
Copper-nickel and other ores.....	78,225	1,617,054	71,196	1,471,731
Total.....	3,194,308	66,032,205	2,763,819	57,133,207
Estimated exchange equalization on gold produced.....		56,948,653		49,273,825
Total Value—Canadian Funds.....		122,980,858		106,407,032
<b>MANITOBA—</b>				
In gold bullion, ores shipped and in blister copper.....	150,553	3,112,207	130,226	2,816,041
Estimated exchange equalization on gold produced.....		2,684,083		2,428,660
Total Value—Canadian Funds.....		5,796,290		5,244,701
<b>SASKATCHEWAN—</b>				
In ores shipped to Canadian smelters, crude placer gold and gold bullion.....	138,015	2,853,023	178,871	3,697,592
Estimated exchange equalization on gold produced.....		2,460,555		3,188,941
Total Value—Canadian Funds.....		5,313,578		6,886,533
<b>ALBERTA—</b>				
In alluvial gold.....	215	4,444	34	703
Estimated exchange equalization on gold produced.....		3,833		606
Total Value—Canadian Funds.....		8,277		1,309
<b>BRITISH COLUMBIA—</b>				
In alluvial gold.....	35,020	723,928	26,323	544,145
In gold bullion.....	351,974	7,275,948	275,178	5,688,434
In base bullion and in slag and ores exported.....	221,209	4,572,795	172,838	3,572,578
Total.....	608,203	12,572,671	474,339	9,805,457
Estimated exchange equalization on gold produced.....		10,843,146		8,456,595
Total Value—Canadian Funds.....		23,415,816		18,262,052
<b>YUKON—</b>				
In alluvial gold.....	70,847	1,464,537	83,198	1,719,855
In ores shipped.....	112	2,315	49	992
Total.....	70,959	1,466,852	83,246	1,720,847
Estimated exchange equalization on gold produced.....		1,266,070		1,484,124
Total Value—Canadian Funds.....		2,731,922		3,204,971
<b>NORTHWEST TERRITORIES—</b>				
(b)421.....		8,703	723	14,946
In ores shipped.....	73,996	1,529,633	98,671	2,039,710
In gold bullion produced.....				
Total.....	74,417	1,538,336	99,394	2,054,656
Estimated exchange equalization on gold produced.....		1,326,718		1,772,013
Total Value—Canadian Funds.....		2,865,054		3,826,669
Total for Canada.....	5,345,179	110,494,653	4,841,306	100,078,674
Total estimated exchange equalization on gold produced.....		95,294,739		86,311,607
<b>Grand Total Value, including exchange.....</b>		<b>205,789,392</b>		<b>186,390,281</b>

NOTE—The estimated average price of a troy ounce of fine gold in Canadian funds was \$38.50 in both 1941 and 1942.

\*Includes relatively small amounts of gold contained in slag, and ore shipped.

(a) Includes production in Larder Lake area.

(b) Includes a relatively small amount of placer gold.

Table 32.—Production of Gold in Canada, and Dividends Paid, by Principal Mines, 1942

Property and Province	Ore raised	Material sorted (discarded)	Ore treated	Gold production	Mill capacity 24 hours	Dividend 1942	Total dividends to date	See footnotes
	Tons	Tons	Tons	Fine oz.	Tons	\$	\$	
<b>NOVA SCOTIA</b>								
Avon Gold Mines Ltd.	8,530		8,530	3,015	100			(a)
Consolidated Mining & Smelting Co. of Canada, Ltd. (Holman)	10,355		10,355	6,394	40	(c)	(c)	(a) (b)
Goldbrook Limited	10,000	(c)	(c)	286	(c)			(d)
Guysborough Mines Ltd.			(c)	103				(a)
Queens Mines Limited	5,699		5,699	1,535	35	(c)	(c)	
Other gold mines				1,656	(c)			
Total Nova Scotia				12,989				(e)

## FOOTNOTES—

(\*) Mines which were active in 1942.

(a) Amalgamation.

(b) In addition, 36.2 tons of concentrates stored assaying 2.2 oz. gold per ton.

(c) Data not available.

(d) Clean-up operations only; closed down January 11.

(e) Receipts at Mint, Ottawa.

<b>QUEBEC</b>								
Arntfield Gold Mines Ltd.	23,809		23,809	2,509	350			(b) (c)
Beattie Gold Mines Ltd.	657,619		657,619	64,669	1,800	650,000	3,994,890	(c) (d)
Bellefleur Quebec Mines Ltd.	116,347		116,347	41,684	350			(c)
Canadian Malartic Gold Mines Ltd.	358,732		358,732	37,167	1,000	292,108	1,714,912	(c)
Central Cadillac Mines Ltd.	73,132	11,817	61,315	9,258	200			(c) (e)
Courmor Mining Co. Ltd.	45,000		30,000	6,959	200			(f)
East Malartic Mines Ltd.	448,691		449,016	69,971	1,500	200,000	2,200,000	(c)
Francœur Gold Mines Ltd.	69,477		69,477	10,996	250		208,883	(c)
Lamaque Mining Co. Ltd.	376,561		376,551	112,416	1,000	1,534,076	6,836,906	(c) (e)
L'Anse Cadillac Gold Mines Ltd.	72,480		72,553	12,195	300			(a) (c)
Malartic Gold Fields Ltd.	258,171	9,364	248,807	50,391	750		400,000	(c)
McWaters Gold Mines Ltd.	43,958	892	43,066	8,432	150		653,577	(c) (e)
Mic-Mac Mines Ltd.	75,544		74,266	9,240	650			(a) (g)
O'Brien Gold Mines Ltd.	69,406		69,406	27,362	200	97,500	1,235,000	(a) (c) (d)
Pandora Limited	32,297		32,297	5,306	150			(c) (h)
Perron Gold Mines Ltd.	208,175	65,853	141,638	45,882	360	340,000	1,740,000	(c) (e)
Pershing Manitou Gold Mines Ltd.	(i)		25	11	10			(a) (j)
Powell Rouyn Gold Mines Ltd.	307,062		(k) 301,194	34,201	450	25,000	212,500	(c) (k)
Senator Rouyn Limited	107,157		107,351	23,597	300			(c)



Sigma Mines (Quebec) Limited.....	403,467		403,467	79,179	1,100	600,000	1,380,000	(c) (e)
Siscoe Gold Mines Ltd.....	363,516	45,319	318,197	47,671	1,000	301,604	7,745,597	(a) (c)
Sladen Malartic Mines Ltd.....	255,181		255,388	29,638	700			(c)
Stadacona Rouyn Mines Ltd.....	151,481		151,481	25,461	500			(c)
Sullivan Consolidated Mines Ltd.....	200,010	31,801	168,209	43,368	500	360,000	1,720,000	(a) (c) (e)
West Malartic Mines Ltd.....	55,955		55,955	6,933	300			(c)
Wood Cadillac Mines Ltd.....	28,893	1,868	27,025	4,337	250			(a) (c) (f)
Val d'Or (Provincial Mine School).....	1,413		1,413	554	10			(a) (c)
Copper-gold-silver and other ores.....				282,999		(m)	(m)	
Total—Quebec.....				1,092,388				

## FOOTNOTES—

- (a) Amalgamation.  
 (b) Closed down April 27.  
 (c) Cyanide.  
 (d) Also shipped arsenic.  
 (e) Also shipped tungsten concentrates.  
 (f) Closed down July 31.  
 (g) Copper-gold concentrates shipped to smelter.  
 (h) Closed down August 31.  
 (i) Data not available.  
 (j) Closed down in May.  
 (k) Includes 263,763 tons crude ore shipped to smelter; milling ceased at mine March 31.  
 (l) Closed down June 30.  
 (m) See Table 60.

ONTARIO								
Porcupine District—								
Aunor Gold Mines Ltd.....	173,369		173,369	47,963	300	320,000	640,000	(e) (e)
Bonetal Gold Mines Ltd.....	44,884	4,506	40,318	6,076				(d) (c)
Broulan Porcupine Mines Ltd.....	159,144	21,443	137,701	26,948	350	161,640	565,941	(c)
Buffalo Ankerite Gold Mines Ltd.....	360,403	1,984	358,419	63,431	1,300		2,552,505	(c)
Coniaurum Mines Ltd.....	162,390		162,390	43,144	600	600,626	2,135,960	(c)
Dalnite Mines Ltd.....	172,731		172,727	31,676	520	178,726	536,178	(e) (e)
De Santis Porcupine Mines Ltd.....	38,910		38,910	6,651	150			(e) (b)
Dome Mines Ltd.....	559,700		559,700	170,547	1,700	3,309,336	52,507,203	(a) (c) (e)
Faymar Porcupine Gold Mines Ltd.....	12,889		12,889	3,370	200			(f)
Hallnor Mines Ltd.....	128,973		128,973	59,921	400	800,000	4,400,000	(c)
Hollinger Cons. Gold Mines Ltd. (Timmins).....	1,534,602		1,530,712	370,611	5,700	3,198,000	113,088,400	(c) (e)
Hollinger Cons. Gold Mines Ltd. (Rosa).....	101,829		101,406	20,785	300			(c)
Hoyle Gold Mines Ltd.....	207,297	19,677	187,620	19,890	600			(c)
McIntyre Porcupine Mines Ltd.....	798,430		798,260	224,031	2,500	2,657,340	29,817,728	(c) (e)
Moneta Porcupine Mines Ltd.....	57,103		57,103	24,813	175	203,509	1,195,614	(c)
Nakhodas Mining Co. Ltd.....	16,278		16,278	2,173				(f)
Naybob Gold Mines Ltd.....	58,908		58,870	8,975	200		190,812	(c)
Pamour Porcupine Mines Ltd.....	574,653		574,653	60,825	1,500	400,000	2,800,000	(c)
Paymaster Cons. Mines Ltd.....	202,390		207,566	44,169	600	86,291	431,453	(c)
Preston East Dome Mines Ltd.....	322,467	15,780	306,687	72,443	1,000	600,000	2,250,000	(a) (c) (e)

Table 32.—Production of Gold in Canada, and Dividends Paid, by Principal Mines, 1942—Continued

Property and Province	Ore raised	Material sorted (discarded)	Ore treated	Gold production	Mill capacity 24 hours	Dividend 1942	Total dividends to end of 1942	See footnotes
	Tons	Tons	Tons	Fine oz.	Tons	\$	\$	
Kirkland Lake District—†								
Bidgood Kirkland Gold Mines Ltd.	48,187		47,960	13,088	125			(c)
Golden Gate Mining Co. Ltd.	8,324		8,324	1,811	100			(a) (c) (g)
Kirkland Lake Gold Mining Co. Ltd.	100,854		100,854	37,846	400	319,602	3,720,807	(e)
Lake Shore Mines Ltd.	347,951		347,951 (h)	144,101	2,300	1,600,000	89,220,000	(c)
Macassa Mines Ltd.	120,400		120,400	55,582	400	803,420	5,683,394	(e)
Sylvanite Gold Mines Ltd.	175,222		175,745	52,418	600	593,910 (z)	7,654,840 (z) (c)	
Teck-Hughes Gold Mines Ltd.	93,335		93,335	35,427	600	1,442,143	37,565,937	(e)
Toburn Gold Mines Ltd.	43,635	4,075	43,635	18,915	175	240,500	2,109,000	(e)
Upper Canada Mines Ltd.	86,523		86,523	35,127	225	311,116	903,718	(e)
Wright-Hargreaves Mines Ltd.	283,580		283,580	146,950	1,200	2,475,000	39,102,500	(e)
Larder Lake District—								
The Chesterville Larder Lake Gold Mining Co. Ltd.	241,815		241,815	29,988	700	43,389	390,501	(e)
Kerr-Addison Gold Mines Ltd.	756,578		756,453	161,811	2,000	1,655,605	4,020,756	(e)
Omega Gold Mines Ltd.	149,274		149,274	20,903	500			(e)
Yama Gold Mines Ltd.	20,817	2,734	18,667	2,049	65			(c)
Matachewan District—								
Hollinger Cons. Gold Mines Ltd. (Young-Davidson)	290,728		290,942	33,875	1,050	63,364	190,093	(c)
Matachewan Consolidated Mines Ltd.	315,040		315,040	25,210	1,000		68,600	(c)
Sudbury District—								
Jerome Gold Mines Ltd.	168,628		168,628	29,481	500			(e)
Tyrantite Mines Ltd.	31,383		31,383	3,934	200			(c) (i)
Algoma District—								
Cline Lake Gold Mines Ltd.	45,496		46,119	7,378	250		64,200	(c) (j)
Regenery Metals	6,006		6,006	1,394	35			(a) (k)
Thunder Bay District—								
Bankfield Cons. Mines Ltd.	28,045		27,632	2,839	130			(a) (c) (l)
Hard Rock Gold Mines Ltd.	191,998	57,876	134,122	32,174	450	179,404	837,221	(c)
Leitch Gold Mines Ltd.	39,222	9,146	30,076	25,306	75	228,000	969,002	(a) (c) (e)
Little Long Lac Gold Mines Ltd.	129,601	13,811	115,790	39,345	300	322,175	3,627,175	(a) (c)
McLeod-Cockshutt Gold Mines Ltd.	378,291	145,080	233,036	68,017	650	286,149	1,137,896	(c)
Magnet Cons. Mines Ltd.	51,052	439	50,613	22,448	175	90,000	765,000	(a) (c)
Northern Empire Mines Co. Ltd. (Sand River mine)	23,725	7,130	16,595	4,352	75			(c) (n)
Sturgeon River Gold Mines Ltd.	31,327	14,365	17,757	12,335	75	54,995	219,981	(a) (c) (n)
Tombill Gold Mines Ltd.—Tombill mine	33,248		33,248	11,141 (*)	125			(a) (c) (o)
Elmos mine	4,942	995	3,947	1,017	30	152,000	454,000	(a) (p)
Kenora and Rainy River District—								
Kenwest Gold Mines Ltd.	6,324		6,324	480	125			(c)
J. D. Shannon (Goldwood)			5,000 (q)	254	75			(a) (k) (r)
Wendigo Gold Mines Ltd.	37,701	7,876	30,125	10,974	80	2,483	167,450	(a) (s)

ONTARIO—Concluded							
Patricia District—							
Berens River Mines Ltd.	86,850		86,850	30,005	225	240,000	300,000 (k) (t)
Cochenour Willans Gold Mines Ltd.	70,384	10,144	60,240	32,313	250	255,549	531,598 (a) (c) (k)
Central Patricia Gold Mines Ltd.	138,790		138,790	44,650	400	375,000	3,150,000 (e)
Gold Frontier Mines Ltd.	959						(v)
Hasaga Gold Mines Ltd.	168,539	34,654	133,885	23,060	350		(c)
Jason Mines Ltd.	40,406	7,414	32,992	13,972	125		(c) (u)
Madsen Red Lake Gold Mines Ltd.	146,950	724	146,226	38,183	400	209,972	823,720 (a) (c)
McMarnac Red Lake Gold Mines Ltd.	32,589		32,589	11,021	75		(c) (k)
McKenzie Red Lake Gold Mines Ltd.	103,861	18,314	85,547	26,026	250	352,200	2,273,550 (c) (e)
Pickle Crow Gold Mines Ltd.	126,997	18,881	107,951	51,285	400	900,000	7,350,000 (a) (c)
Sechigo River Exploration Co. Ltd.			(w)	418			(4)
Uchi Gold Mines Ltd.	165,498	2,871	162,627	22,270	750		(a) (c)
Nickel-copper ores (including lead, cobalt, and miscellaneous gold ores)				73,256		(3)	(3)
Total Ontario				2,763,819			

## FOOTNOTES—

- (a) Amalgamation.  
 (b) Closed down September 12.  
 (c) Cyanidation.  
 (d) Milled by Broulan Porcupine Mines Ltd.  
 (e) Also shipped tungsten concentrates.  
 (f) Subject to revision; closed down May 31.  
 (g) Closed down April 30.  
 (h) Includes 1,902 ounces recovered from tailings.  
 (i) Closed down August 14.  
 (j) Closed down October 14.  
 (k) Concentrates smelted.  
 (l) Closed down August 31.  
 (m) Closed down August 26.  
 (n) Closed down October 25.  
 (o) Closed down November 30.  
 (p) Closed down November 29.  
 (q) Tailings.  
 (r) Closed down May 1.  
 (s) Copper-gold concentrates exported.  
 (t) Also produces lead; does not include metal content concentrates in stock pile.  
 (u) Closed down October 15.  
 (v) No milling; closed down August 20.  
 (w) Final clean-up only.  
 (x) Miners' strike in camp early part of year.  
 (y) Subject to revision.  
 (z) Paid in U.S. funds to end of 1940; 1941 and 1942 includes some Canadian dollars; also 1942 includes \$98,985 paid in 1943.  
 (1) Data not complete.  
 (2) Assets distributed approximated \$4.56 per share and profits at 90 cents per share.

MANITOBA							
God's Lake Gold Mines Ltd.	72,850		72,850	16,353	200	262,500	(a) (c)
Gunnar Gold Mines Ltd.	13,472	918 (*)	12,554	5,989	150	647,491	(c) (b)
Ogama-Rockland Gold Mines Ltd.	(d)	(d)	(d)	3,765			
San Antonio Gold Mines Ltd.	199,203		199,203	58,869	550	478,603	3,311,190 (a) (c)
Copper-gold and miscellaneous gold ores				51,250		(e)	(e)
Total—Manitoba				136,226			

## FOOTNOTES—

- (\*) Subject to revision.  
 (a) Amalgamation.  
 (b) Closed down May 8.  
 (c) Cyanidation.  
 (d) Closed down July 31; data not recorded; milled by Gunnar Gold Mines Ltd.  
 (e) Data not complete; see table number 60.



Table 32.—Production of Gold in Canada, and Dividends Paid, by Principal Mines, 1942—(Concluded)

Property and Province	Ore raised	Material sorted (discarded)	Ore treated	Gold production	Mill capacity 24 hours	Dividend 1942	Total dividends to end of 1942	See footnotes
SASKATCHEWAN	Tons	Tons	Tons	Fine oz.	Tons	\$	\$	
Cons. Mining & Smelting Co. of Canada, Ltd. (Box).....	291,787		291,787	(a)	1,200			(b)
Placer gold.....				9				
Copper-gold and miscellaneous gold ores.....				178,862		(d)	(d)	
Total—Saskatchewan.....				178,871				
<b>FOOTNOTES—</b> (a) Data not recorded or available for publication; closed down August 15. (b) Cyanidation. (c) Includes Box mine. (d) See table number 60.								
ALBERTA								
Placer gold.....	(*)	(*)	(*)	34				
<b>FOOTNOTE—</b> (*) No record.								
BRITISH COLUMBIA								
Bayonne Cons. Mines Ltd.....	11,970	452	11,524	4,599	50	25,000	25,000	(c) (b)
Buena Vista Mining Co. Ltd.....	62,755		62,755	3,324	500	(1)	(1)	(c) (d)
Buccaneer Mines Ltd.....	3,001	(e)	(e)	(e)	(e)			(f)
Bralorne Mines Ltd.....	171,095		171,095	90,817	500	1,496,400	9,965,750	(a) (g) (h)
Central Zeballos Gold Mines Ltd.....	(e)		(e)	4,610 (*)	45			(a) (i) (h)
Cariboo Gold Quartz Mining Co. Ltd.....	94,162		93,885	38,016	350	173,330	1,626,636	(c) (h)
A. Endersley (Reno mine).....	1,128		1,128	883				(h)
Gold Belt Mining Co. Ltd.....	(e)		55,299	19,619	150	102,000	256,000	(c)
Hedley Mascot Gold Mines Ltd.....	(e)		66,088	22,477	175	181,130	1,154,705	(c) (h) (k)
Homeward Mines Ltd.....	(e)		373	594	50			(a) (h) (i)
Island Mountain Mines Co. Ltd.....	47,916		47,916	21,097	150	136,593	903,605	(c)
Kootenay Belle Gold Mines Ltd.....	26,016		26,016	8,316	150		370,360	(c)
Kelowna Exploration Co. Ltd.....	99,485		99,219	32,425	275	240,000	1,110,000	(h) (k)
Livingstone Mining Co. Ltd.....	1,138		1,138	874	30			(l)
Musketeer Mines Ltd.....	7,084	2,014	5,070	1,846	25			(a) (h) (m)
Mount Zeballos Gold Mines Ltd.....	8,464	2,776	5,686	2,665	60		165,000	(a) (h) (n)
R. O. Oscarson (Arlington).....	561		561	776		18,305	58,203	(l) (o)
Privatier Mine Ltd.....	48,280	23,207	25,073	22,360	90	319,030	1,784,930	(a) (c)
Pioneer Gold Mines Ltd.....	89,717	10,093	79,624	40,563	300	402,902	6,903,942	(a) (c) (h)
Polaris Taku Mining Co. Ltd.....	30,966		31,336	17,506	300			(h) (p)
Sheep Creek Gold Mines Ltd.....	55,395		55,395	23,493	150	375,000	1,875,000	(c)
Surf Inlet Cons. Gold Mines Ltd.....	27,744	1,628	26,116	8,683	100	26,729	120,278	(h) (q)
Silbak Premier Mines Ltd.....	140,567		140,567	36,300	500	400,000	1,800,000	(h) (r)
Spud Valley Mines Ltd.....	20,060	23,531	20,060	6,020	100		168,000	(a) (h) (s)
Vancouver Island Drilling & Exploration Co. Ltd.....	1,119		1,119	228				(l) (t)
Velvet Gold Leasers (Velvet).....	7,880	285	7,595	1,206	100			(h) (u)

White Star Mine Ltd.	100 (x)	100	500	3,080	3,080	(1) (v)
Ymir Yankee Girl Gold Mines Ltd.	10,144	10,363	2,540	100	178,000	(h) (o) (w)
Y. Y. Girl Leasers.	5,244	5,244	638	100		(h) (z) (o)
Pincer gold.		1,884,887 (y)	26,323	(1)	(1)	
Copper-gold ores.			19,892	(2)	(2)	
Silver-lead-zinc and other gold ores.			15,151	(1)	(1)	
<b>Total—British Columbia.</b>			<b>474,339</b>			

## FOOTNOTES—

- (x) Subject to revision.  
 (a) Amalgamation.  
 (b) Closed down August 31.  
 (c) Cyanidation.  
 (d) Closed down April 5.  
 (e) Not available for publication.  
 (f) Closed down August 11.  
 (g) Also shipped tungsten concentrates.  
 (h) Concentrates smelted.  
 (i) Closed down July 7.  
 (j) Closed down February 7.  
 (k) Also produced arsenic.  
 (l) Ore smelted.  
 (m) Closed down July 23.

- (n) Closed (in liquidation) down April 30.  
 (o) Also recovers lead and zinc.  
 (p) Closed down April 30.  
 (q) Closed down November 30; also recovers copper.  
 (r) Ore also contains relatively large quantities of silver and lead.  
 (s) Closed down June 30.  
 (t) Closed down October 15.  
 (u) Also recovers copper.  
 (v) Closed down March 31.  
 (w) Milling ceased by company June 25.  
 (x) Salvage operations; closed March 31.  
 (y) Cubic yards—partly estimated.  
 (z) Salvage operations; closed October 31.  
 (1) Not reported or complete.  
 (2) See Table No. 60.

YUKON							
Placers			11,848,333 (a)	83,198		970,291	(e)
Silver-lead ores				48 (b)	(d)	(d)	
<b>Total—Yukon</b>				<b>83,246</b>			

## FOOTNOTES—

- (a) Cubic yards—estimated.  
 (b) In ores exported.  
 (d) Not available.  
 (e) Yukon Consolidated Gold Corp. Ltd. only.

NORTHWEST TERRITORIES							
Cons. Mining & Smelting Co. of Canada, Ltd.—Con mine.	68,380	68,380	(x)	350	(x)	(x)	(a) (c)
Ruth mine.	187	187	(x)	25	(x)	(x)	(a) (b)
Goodrook Gold Mines Ltd.	(x) 7,368	(x)	(x)				(d)
International Tungsten Mines Ltd.		7,368		3,895	50		(a) (b) (d)
Negus Mines Ltd.	(x) 31,333	25,458	(x)	19,637	60	99,850	(a) (c)
Piarmigan Mines Ltd.		31,333	(x)		100		(a) (c) (e)
Rycon Mines Ltd.	3,824	3,824	(x)				(f)
Thompson Lundmark Gold Mines Ltd.	35,841	37,755	(x)	125	(x)	(x)	(a) (c)
Others	(x)	(x)	(x)	75,862 (g)	(x)		
<b>Total—Northwest Territories.</b>				<b>99,394</b>			
<b>Total—Canada.</b>				<b>4,841,396</b>			

## FOOTNOTES—

- (x) Not recorded or available for publication.  
 (a) Amalgamation.  
 (b) Operations ceased August 9.  
 (c) Cyanidation.

- (d) Also produced tungsten concentrates.  
 (e) Closed down August 31.  
 (f) Ore milled at Con mine.  
 (g) Includes output of all mines marked (x) under production.

Table 33.—Source of Canadian Gold Production, 1932-1942

Year	In alluvial gold	In crude gold bullion produced at mines (a)	In base bullion produced at lead smelters	In blister copper produced (b)	In ores, matte, slag, etc., exported	Total gold produced
	%	%	%	%	%	Fine oz.
1932.....	1.8	79.3	1.0	15.1	2.8	3,044,387
1933.....	2.0	79.8	0.7	14.2	3.3	2,949,309
1934.....	2.0	78.7	1.1	13.4	4.8	2,972,074
1935.....	1.8	78.3	2.2	13.2	3.9	3,284,890
1936.....	2.2	77.4	1.6	13.8	5.0	3,748,028
1937.....	2.2	80.2	0.9	11.7	5.0	4,096,213
1938.....	2.5	80.8	0.9	11.2	4.5	4,725,117
1939.....	2.5	82.1	0.6	10.4	4.4	5,094,379
1940.....	2.1	82.7	0.6	10.0	4.6	5,311,145
1941.....	2.0	82.6	0.4	10.3	4.7	5,345,179
1942.....	2.3	80.8	0.2	12.1	4.6	4,841,306

(a) Includes a relatively small quantity of gold contained in interprovincial shipments of gold ores, slag, etc., to Canadian smelters.

(b) Some blister copper is refined in the United States; also contains a relatively small quantity of gold recovered from auriferous quartz ores.



### 34.—Comparative Figures of Gold Production for the World Since the Discovery of America, also Production for Russia, Transvaal, United States and Canada

Year	Russia (a)	Transvaal since the commence- ment of Fields (i)	United States (f) (a)	Canada since the recording of production in 1858	(a) World since the discovery of America
	Fine oz.	Fine oz.	Fine oz.	Fine oz.	Fine oz.
1493-1800					24,266,820
1601-1700					29,330,445
1701-1800					61,088,215
1801-1840					20,488,552
1841-1850			(c) 1,187,170		17,605,018
1851-1860				220,030	64,482,933
1861-1870			(d) 58,279,778	1,477,099	61,098,343
1871-1880			(e) 15,281,264	904,003	55,670,618
1881-1890		1,070,051	15,808,339	584,102	51,280,184
1891-1895		6,870,158	9,100,834	291,564	39,412,823
1896-1900		12,578,899	15,728,572	3,469,701	62,234,698
1901-1905		13,632,808	19,393,722	4,592,261	78,033,650
1906		5,792,823		555,415	19,471,080
1907		6,450,740		405,517	19,977,260
1908		7,056,266	22,993,218	476,112	21,422,244
1909		7,295,108		453,865	21,965,111
1910		7,527,108		468,707	22,022,180
1911		8,249,461	4,687,053	473,159	22,397,134
1912	(g)	9,107,512	4,520,719	611,885	22,005,068
1913	1,563,077	8,798,336	4,299,784	802,973	22,556,347
1914	1,733,014	8,394,322	4,572,976	773,178	21,652,583
1915	1,382,450	9,093,902	4,887,604	918,056	22,846,008
1916	1,089,885	9,290,018	4,479,057	930,492	22,032,542
1917	871,205	9,018,084	4,051,440	738,831	20,346,043
1918	554,588	8,418,292	3,320,784	699,681	18,588,127
1919	173,610	8,331,294	2,918,628	760,764	17,339,679
1920	73,945	8,158,226	2,476,166	765,007	16,146,830
1921	65,907	8,128,681	2,422,006	926,329	15,997,692
1922	101,614	7,003,767	2,363,075	1,293,364	15,496,859
1923	305,425	9,148,771	2,502,632	1,233,341	17,845,349
1924	548,550	9,574,018	2,528,900	1,525,382	18,619,481
1925	632,390	9,597,573	2,411,987	1,735,735	18,673,178
1926	769,805	9,954,762	2,335,042	1,754,228	19,117,668
1927	688,492	10,122,459	2,197,125	1,852,785	19,058,736
1928	385,800	10,354,157	2,233,251	1,890,592	18,885,849
1929	707,300	10,412,328	2,208,386	1,928,308	19,207,452
1930	1,501,083	10,716,349	2,285,603	2,102,068	20,903,736
1931	1,655,725	10,577,708	2,395,878	2,693,892	22,284,290
1932	1,938,000	11,557,858	2,449,032	3,044,387	24,098,676
1933	2,700,000	11,012,340	2,556,246	2,949,309	25,409,295
1934	3,858,000	10,470,194	3,091,183	2,072,074	27,372,374
1935	4,784,030	10,773,041	3,609,283	3,284,890	29,099,245
1936	(h) 6,500,000	11,335,092	4,357,394	3,748,028	32,030,554
1937	(h) 5,900,000	11,734,553	4,804,540	4,096,213	35,115,298
1938	(h) 5,800,000	12,161,376	5,089,811	4,725,117	37,703,334
1939	(h) 5,000,000	12,821,061	5,611,171	5,094,379	39,634,430
1940	(h) 4,000,000	14,037,741	(j) 6,003,105	5,311,145	41,067,101
1941	(b)	14,386,361	(l) 5,976,419	5,345,179	(k) 40,332,204
1942	(b)	14,120,617	(n) 3,618,543	4,841,304	(m) 40,000,000
<b>Total</b>		<b>295,457,392</b>	<b>271,043,720</b>	<b>85,723,542</b>	<b>1,452,908,128</b>

(a) Supplied by United States Mint.

(b) Not available.

(c) 1792-1847.

(d) 1848-1872.

(e) 1873-1890.

(f) Including Philippine Islands production received in United States. Data represent receipts at United States Mint's refineries assay offices.

(g) Data not available for preceding years. A revision by the United States Mint of estimated Russian gold production for the years 1913 to 1934 was made from United States consular reports, based principally on Soviet publications. While available data are quite indefinite and, in many instances, contradictory, it is believed that this revision more nearly represents actual production than data heretofore used. Figures for Russian production since 1937 supplied by American Bureau of Metal Statistics.

(h) Subject to revision. American Bureau of Metal Statistics.

(i) Annual Report—Department of Mines, Union of South Africa. 1941 and 1942 figures, Transvaal Chamber of Mines.

(j) Includes 1,140,126 fine ounces received from Philippines.

(k) Includes conjectural data for Russia.

(l) Includes 1,144,332 fine ounces from Philippine Islands.

(m) The Mining Journal, London—subject to revision.

(n) United States Bureau of Mines—preliminary; includes 140,330 ounces from Philippine Islands.

Table 35.—Estimated Average Monthly Value of an Ounce of Fine Gold, Expressed in Canadian Funds, 1931-1942

Month	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940-1942
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
January.....	20.71	24.24	23.64	33.05	34.95	35.06	35.01	34.99	35.30	38.50
February.....	20.67	23.67	24.74	35.29	35.05	35.18	35.01	35.00	35.19	38.50
March.....	20.67	23.11	24.78	35.08	35.40	35.11	34.98	35.05	35.13	38.50
April.....	20.68	22.98	25.33	34.93	35.18	35.13	34.95	35.15	35.15	38.50
May.....	20.68	23.38	27.75	34.94	34.95	35.00	34.94	35.22	35.13	38.50
June.....	20.73	23.83	28.24	34.73	35.05	35.09	35.02	35.36	35.07	38.50
July.....	20.74	23.73	30.58	34.59	35.08	34.91	35.05	35.24	35.06	38.50
August.....	20.73	23.61	30.09	34.19	35.09	35.00	35.00	35.12	35.01	38.50
September.....	21.55	22.88	31.79	34.18	35.28	34.99	35.00	35.12	37.21	38.50
October.....	23.22	22.65	31.48	34.27	35.49	34.99	34.90	35.32	38.43	38.50
November.....	23.22	23.73	32.68	34.16	35.37	34.95	34.98	35.25	38.50	38.50
December.....	25.01	23.85	32.14	34.57	35.33	34.98	34.93	35.28	38.50	38.50
Yearly average.....	21.55	23.47	28.60	34.50	35.19	35.03	34.99	35.17	36.14	38.50

NOTE.—Procedure regarding the marketing of gold by the Department of Finance, Ottawa, is noted elsewhere in this report. At December 31, 1942, the price paid by the United States Treasury for gold purchased by the Mint continued at \$35 per troy ounce of fine gold, less  $\frac{1}{4}$  of 1 per cent. Actual payment by the United States Treasury for gold in imported and domestic ore or concentrate was at 99.75 per cent of the price quoted by the Treasury, which, at the close of 1942, was equal to \$34.9125 per ounce.

Table 36.—Precious Metals Consumed by the Jewellery and Silverware Industry in Canada, 1942 and 1941

Materials	Cost at works	
	1942	1941
	\$	\$
Precious metals—		
Fine gold.....		2,343,880
Gold alloys.....		392,067
Fine silver.....		1,144,409
Silver alloys.....		646,528
Platinum.....		208,318
Old gold, jewellers' findings, waste and scrap for refining.....		1,308,882
Gold-filled wire and stock.....		510,646
Precious and semi-precious stones.....		732,748

## GOLD EXPORTS

(Order in Council P.C. 11498—December 22, 1942)

WHEREAS by Order in Council, P.C. 1150, dated May 17, 1932, regulations respecting the export of gold, whether in the form of coin or bullion, from the Dominion of Canada, were made under the authority of The Gold Export Act;

AND WHEREAS the said regulations were by Order in Council, P.C. 9131, dated November 26, 1941, continued in force until December 31, 1942;

AND WHEREAS in the opinion of the Minister of Finance it is expedient that the said regulations be continued in force beyond December 31, 1942;

NOW, THEREFORE, His Excellency the Governor General in Council, on the recommendation of the Minister of Finance and under the provisions of the said "The Gold Export Act," in pleased to order that the provisions of the said Regulations be and they are hereby continued in force and effect until December 31, 1943, unless sooner rescinded by Order in Council.

NOTE.—Order in Council P.C. 1150, reads, in part, as follows:—"The export of gold, whether in the form of coin or bullion (including ore, etc.), from the Dominion of Canada, is hereby prohibited, except in such cases as may be deemed advisable by the Minister of Finance, and under licence to be issued by him.....".

## GOLD IN CANADIAN EXPORT TRADE

Exports of gold in Canadian trade statistics were distinguished in previous reports as between monetary and non-monetary. Monetary gold exports were described as those which entailed a reduction in the Dominion's monetary gold stocks. All other gold exported (classed as non-monetary) were shown as merchandise, and included with the total merchandise exports.

The fact that gold is a money metal gives it peculiar attributes which distinguish it from other commodities in trade. In particular, the movement of gold in international trade is determined almost exclusively by monetary factors. The amount of exports may fluctuate widely from month to month owing to other than ordinary trade or commercial considerations. In addition, gold is generally acceptable. It does not have to surmount tariff barriers and is normally assured a market at a relatively fixed price. For these reasons provision was made in previous trade reports for a supplementary table showing exports from Canada excluding all gold.

It is further to be noted gold does not move in international trade in any direct or normal relation to sales and purchases. It may be bought or sold abroad without moving in or out across the frontier, the sales or purchases in such cases being recognized by simply setting aside or "earmarking" the gold in the vaults of the central bank. Trade statistics deal only with physical movements, sales or purchases of gold which do not involve an actual movement being more properly regarded as an "invisible item" and taken care of in the "International Balance of Payments" statements. Changes in the Bank of Canada's stock of gold under earmark do not enter, therefore, into the trade statistics.

The publication of statistics showing the gross imports and exports of gold has been temporarily suspended as from September, 1939. Statistics for periods prior to this time have been accordingly revised to exclude all gold formerly included in the total of merchandise exports.

Statistics showing the NET exports of non-monetary gold, including changes in stocks held under earmark, were published as a supplement to the trade figures until February, 1942 when their publication was discontinued by regulation.



Data relating to Canadian gold stocks since 1939 were not published. For information pertaining to these stocks prior to 1940, see previous annual gold mining reports as issued by the Bureau of Statistics.

**Table 37.—World's Monetary Stocks of Gold at the Close of 1939, 1940 and 1941  
(Subject to Revision)**

(Compiled by the United States Mint from available data)  
(Stated in United States money)

Country	Total Gold Stock Value, 1939 (e)	Per capita	Total Gold Stock Value, 1940 (e)	Per capita	Total Gold Stock Value, 1941 (e)	Per capita
	\$	\$	\$	\$	\$	\$
United States (d).....	17,648,577,000	133-17	21,901,102,000	165-98	22,736,557,000	167-62
Canada.....	206,223,000	18-55	7,251,000	0-63	5,000,000	0-44
Argentina.....	406,000,000	36-51	438,078,000	34-33	389,798,000	29-26
Belgium.....	607,140,000	72-85	730,000,000	88-05	734,000,000	87-42
Denmark.....	53,083,000	14-10	52,003,000	13-82	44,000,000	11-39
France.....	2,708,878,000	64-64	2,000,068,000	47-73	2,000,000,000	47-64
Germany.....	40,118,000	0-59	40,280,000	0-60	29,000,000	0-42
Great Britain.....	10,314,000	0-22	1,991,000	0-04	1,648,000	0-03
Italy.....	144,000,000	3-29	137,000,000	3-13	(a)	(a)
Netherlands.....	690,128,000	70-92	617,299,000	71-49	575,000,000	64-44
Norway.....	93,916,000	32-31	84,388,000	29-03	(a)	(a)
Poland.....	85,000,000	2-46				
Portugal.....	68,900,000	9-47	92,284,000	12-69	59,000,000	7-66
Romania.....	151,602,000	7-72	157,400,000	8-01	182,000,000	13-49
Russia (Soviet Union).....	(a)	(a)	(a)	(a)	(a)	(a)
Spain.....	525,000,000	21-13	(a)	(a)	(a)	(a)
Sweden.....	208,117,000	49-02	304,055,000	48-52	223,371,000	35-06
Switzerland.....	548,580,000	131-43	502,115,000	120-29	665,000,000	156-21
British India.....	274,472,000	0-81	274,480,000	0-81	274,392,000	0-71
Japan (including Chosen, Taiwan, Kwantung).....	163,570,000	1-61	163,570,000	1-61	(a)	(a)
Netherlands East Indies.....	80,030,000	1-40	139,659,000	2-17	235,000,000	3-31
Egypt.....	52,500,000	3-30	52,000,000	3-10	52,000,000	3-10
Australia.....	4,200,000	0-61	16,683,000	2-43	(a)	(a)
New Zealand.....	23,086,000	12-04	23,087,000	14-41	23,000,000	14-08
Union of South Africa.....	250,451,000	2-13	352,713,000	36-00	366,000,000	35-39
Other countries.....	724,282,000		902,251,000		(a)	(a)
<b>Total.....</b>	<b>25,933,081,000</b>	<b>(b)12-71</b>	<b>29,086,657,000</b>	<b>(b)14-28</b>	<b>(c)</b>	<b>(c)</b>

(a) Data omitted because of indefiniteness or unavailability.

(b) Population figures are principally supplied by United States Department of Commerce, 1938-40.

(c) Totals omitted due to the great number of instances in which data are not available.

(d) Includes Alaska, Hawaii and Puerto Rico.

(e) 1 ounce fine gold = \$35.

NOTE.—It is understood that material amounts of gold are not reported by several countries, such as, amounts held in secret funds for stabilizing currencies and those hoarded or held outside of regularly reported stocks.

#### ORDER IN COUNCIL P.C. 1238—FEBRUARY 15, 1943

WHEREAS subsection one of section twenty-five of the Bank of Canada Act, Chapter forty-three of the Statutes of Canada, 1934, provides that the Bank shall sell gold to any person who makes demand therefor at the head office of the Bank and tenders the purchase price in legal tender, but only in the form of bars containing approximately four hundred ounces of fine gold;

AND WHEREAS by Order in Council P.C. 1397 dated February 23, 1942, passed under the provisions of sub-section two of said section twenty-five of the said Act, the operation of said subsection one of section twenty-five was suspended for a period of one year from and after March 10, 1942.

NOW, THEREFORE, His Excellency the Governor General in Council, on the recommendation of the Minister of Finance and under the provisions of said subsection two of section twenty-five of the Bank of Canada Act is pleased to order that the operation of said subsection one of section twenty-five be and it is hereby suspended for a further period of one year from and after the tenth day of March, 1943, unless sooner rescinded by Order in Council.

## ROYAL CANADIAN MINT—OTTAWA 1942

Six thousand three hundred and sixty-two deposits of gold bullion weighing 5,576,488 ounces were received at the Mint from Canadian Mining Companies and sundry persons, and 283 deposits weighing 184,557 ounces received from the Dominion of Canada Assay Office, Vancouver, B.C. The total gross weight of gold deposited, including mutilated gold coin, was 5,761,044 ounces, containing by assay 4,611,982 ounces fine gold and 652,827 ounces fine silver. This shows a decrease as compared with the year 1941 of 756 deposits, gross weight 683,010 ounces, fine gold 480,626 ounces fine and fine silver 94,094 ounces fine.

The average price paid per ounce of fine gold contained in deposits was \$38.47156 and per ounce fine silver 38.8709 cents.

The net amount paid by the Royal Canadian Mint to depositors by cheque was \$169,947,315.48. In addition, 7,294,180 ounces of fine gold with a statutory value of \$150,784.48 were issued to depositors.

Postage collected for the Postmaster General on deposits shipped to the Mint, postage collect, amounted to \$36,840.33.

There were 1,460 rough gold deposits received at Vancouver and 6,362 received at Ottawa. Details as to origin are shown in the following table.

Table 38.—

Source	Gross Weight	Fine Gold	Fine Silver
	Ounces	Ounces	Ounces
From Canadian mines—			
Ontario.....	3,355,021.125	2,729,104.140	359,475.41
Quebec.....	1,479,841.175	1,204,733.578	154,150.67
British Columbia.....	430,810.730	321,977.106	74,885.01
Manitoba.....	156,807.225	125,630.223	12,689.24
Yukon.....	104,345.835	83,198.102	17,321.45
Nova Scotia.....	13,815.325	12,919.840	420.96
Northwest Territories.....	132,074.925	98,947.668	22,414.13
Alberta and Saskatchewan.....	30,564.250	19,438.116	7,793.96
Total from mines.....	5,733,380.890	4,595,948.791	649,150.83
From jewellery and scrap.....	26,845.308	13,294.731	3,255.11
Mutilated gold coin.....	1.745	1.558	.....
Grand Total.....	5,760,227.643	4,609,245.080	652,411.94

A detail of the fine gold issued in the form of trade bars to the Bank of Canada and granulated, sweep, proof plate and medals to sundry persons is shown hereunder:

	Ounces Fine
11,395 Trade Bars to Bank of Canada.....	4,543,250.214
Depositors.....	7,294.180
Sales to Manufacturers.....	53,404.343
Proof Plate.....	13.467
Medals.....	4.067
Sweep.....	7,925.956
	4,611,892.227

This total shows a decrease of 522,455.578 ounces fine as compared with the year 1941.

## Dominion of Canada Assay Office, Vancouver, B.C.

The amount disbursed through this office in 1942 for the purchase of gold bullion was \$5,628,080.26, as against \$6,216,906.58 for the calendar year 1941, a decrease of \$588,826.32.

Particulars as to source, weights, etc., are as under:

Table 39.—

Source	Number of Deposits	Gross Weight	Fine Gold	Fine Silver
		Ounces	Ounces	Ounces
Yukon Territory.....	429	104,334.06	83,198.678	17,319.72
British Columbia.....	762	74,343.73	62,018.553	8,389.65
Alberta and Saskatchewan.....	13	54.75	42.484	3.88
Northwest Territories.....	1	4.25	3.538	.47
Jewellery and dental scrap.....	255	5,001.39	2,264.664	708.82
	1,460	183,738.18	147,517.917	26,422.54

## THE ALLUVIAL GOLD MINING INDUSTRY IN CANADA

In 1942, and for many years past, the greater part of the Canadian production of alluvial gold came from the Yukon Territory and British Columbia; relatively small quantities are also obtained in Alberta, Saskatchewan, and sometimes Quebec.

It is estimated that 137,296 troy ounces of crude gold were recovered from Canadian alluvial deposits in 1942. Of this production, 10 ounces came from Saskatchewan, 36 ounces from Alberta, 32,904 ounces from British Columbia and 104,346 ounces from Yukon. In addition to crude gold recovered, there were 40 ounces of platinum obtained from deposits in British Columbia; also a relatively small quantity of tungsten concentrates were produced from alluvial operations conducted in Yukon.

**Quebec and Ontario.**—No placer gold mining operations were reported in 1942 from either Quebec or Ontario.

**Saskatchewan and Alberta.**—Placer gold has been mined along the North Saskatchewan River at various points between Rocky Mountain House, Alberta, and Prince Albert, Saskatchewan, from about 1860. Most activity has, however, been confined to the Alberta region, particularly in the vicinity of Edmonton.

The returns of gold from the river for a period of thirty-two years, from 1887 to 1918, are given by the Department of Mines as 15,036 fine ounces valued at \$310,814. These figures were compiled by the Department from reports of local bank managers as a basis. In 1887 the first dredge was built on the river and from that time dredges have worked with varying success, though most of the gold has been obtained by miners working with shovel and grizzly collecting the gold on blankets, after which the blankets are washed and the gold separated from the tailings by means of mercury.

The gold is irregularly distributed in the gravels of the river and under bench gravels and is recovered when conditions are convenient to work such bars which move from point to point according to the vagaries of the stream. No individual reports are received from prospectors and production as credited to placer mining is obtained from Government mint statements which show total recoveries of fine gold in 1942 of 9 ounces from Saskatchewan deposits and 34 ounces from Alberta.

The Department of Lands and Mines of Alberta reported that activity along the Athabaska River in townships 63 and 64, range 3, west of the 5th meridian, continued during the fiscal year ending March 31, 1942 and 18 grants were issued for staked claims. Eight other grants were issued, six along the McLeod river, one on the North Saskatchewan River, and one in the Grande Prairie District.

**Northwest Territories.**—No production of placer gold in the Territories was reported direct by miners in 1942; however, Liard-Nahanni Gold Placers Ltd. carried on prospecting during 1941 in the Flat River area from June to December 26. Relatively small quantities of gold received at the Vancouver Assay Office from the Northwest Territories represent metal obtained from alluvial deposits; particulars relating to these recoveries, totalling 39 fine ounces in 1941, are not available.

**British Columbia.**—It has been found impractical to obtain complete reports for each individual placer gold mining operation in British Columbia inasmuch as a considerable quantity of the crude placer gold is recovered annually by prospectors of no fixed abode who, in many instances, market their recoveries through local merchants and banks.

Recoveries in 1942 were made chiefly from deposits located in the Atlin, Cariboo, Omineca and Quesnel districts; other districts to report production included Nelson, Stikine, Vernon, Similkameen, Kamloops, Port Steele, Revelstoke, Clinton and New Westminster.

In 1942 official returns were made to the Dominion Bureau of Statistics by approximately 72 operators who reported 155 employees and the distribution of \$275,485 in salaries and wages. Consumption of fuel and process supplies amounted to \$46,366. The value of crude gold pro-



duction was \$1,004,230 compared with \$1,352,648 in 1941. The quantity of sands and gravels, including overburden or barren material, moved during the year under review was estimated at 1,884,887 cubic yards. Equipment employed in mining operations included hydraulic jets (Monitors-Giants), gas shovels, drag lines, tractors, derricks, pumps and dredges. Ground work included bench gravels, river gravels and tailings. Work was conducted both on the surface and underground.

Bulletin No. 15, "Hydraulic Mining Methods"—issued by the British Columbia Department of Mines states: "When placer gold was first discovered in British Columbia much of the gravel was mined by methods other than hydraulicking. Subsequently, however, with the working out of rich shallow gravel, extensive yardages of lower grade gravels were left which, under favourable conditions, were mined by hydraulicking. This type of mining produces the largest proportion of placer gold at present. . . . All the rich ground that is known has been, or is being worked. In the past, failure to sample and properly estimate the available yardage of placer deposits has resulted in a tremendous waste of money and effort. . . . A placer deposit may be sampled by any one or a combination of methods; by panning gravel from natural exposures, by drifting, by test-pitting, by shaft sinking, or by Keystone-drilling. In every instance, in order to get reliable results, the work should be done carefully and systematically so that the information may be compiled to give as complete a picture of the deposit as it is possible or economical to obtain."

**Yukon.**—The following is from the Annual Report of G. A. Jeckell, Controller of Yukon Territory, for the fiscal year ending March 31, 1943:

"The amount of placer gold mined during the year in the Territory, on which royalty export tax was paid, was 105,430.89 ounces, produced as follows: Dawson district, 102,570.61 ounces; Mayo district, 2,218.00 ounces; and Whitehorse district, 642.28 ounces. The royalty collected was \$39,536.79, as follows: Dawson, \$38,464.06; Mayo, \$831.77; and Whitehorse, \$240.96. The gold production was 17,988.09 ounces greater than for the previous year.

"In the Dawson district one hundred and fourteen new placer location grants, twenty-eight relocation grants, and two thousand, four hundred and sixteen renewal grants were issued, representing two thousand five hundred and fifty-eight claims in good standing. Three dredging leases were renewed covering twenty-three miles, and fees for the renewal of four hydraulic leases were paid.

"In the Mayo district eight new placer location grants and one hundred and twenty-eight renewal grants were issued, making one hundred and thirty-six placer claims in good standing.

"In the Whitehorse district one new location grant and twenty renewal grants were issued, making twenty-one placer claims in good standing. The total number of placer claims in good standing in the Territory was two thousand seven hundred and fifteen.

A review in part of the operations of the Yukon Consolidated Gold Corp. Ltd. follows:

"The winter of 1941-42 was unusually mild. A cold spell of about ten days duration occurred in early December, when the temperature fell to 50 degrees below zero, after which the weather was comparatively moderate until the middle of March, when again temperatures of below 40 degrees were reported. . . . The first half of the summer season was unusually dry but, beginning about July 15, heavy intermittent rains, general in character, occurred and kept the streams at high stages throughout the remainder of the season. The ice in the Yukon River moved out on May 6 with only a slight rise in water. During the dry period, especially in the latter part of May and in June, many forest fires occurred and for a period of almost three weeks the creek valleys were filled with a blanket of smoke. The autumn was mild and excellent dredging conditions prevailed until the first of December. Throughout the entire season the company's operations were seriously affected by an acute labour shortage. . . . It was found necessary to shut down several operations in order to bring other crews approximately up to requirements. In order to enlarge many of the scanty crews, full advantage was taken of all available Indian labour. . . . The company's hydro-electro power plant, which is located on the north fork of the Klondike River, operated continuously during the year and generated

a total of 33,867,400 k.w. Of this amount, 73 per cent or 24,623,400 k.w. were sold to the Dawson Electric Light & Power Company Limited for power and light in the city of Dawson. . . . Stripping of muck overburden was carried on at seven places during the summer. The total amount of muck removed was 2,501,681 cubic yards at a cost of \$174,285 or 6.97 cents per cubic yard. Cold water thawing operations were carried on at seven localities during the 1942 season; a total of 4,529,117 cubic yards were thawed at an expenditure of \$202,648 or a cost of 4.474 cents per cubic yard. The average water temperature was 49.7 degrees and the thawing duty 7.25 cubic yards per M.I.D. of water. . . . Ten dredges were operated during the 1942 season. Two dredges, however, Nos. 6 and 9, were shut down before the end of the normal operating season in order to transfer the men to other dredges where the crews had become too small for proper operation. Spring dredge repairs were started on March 16; dredge No. 5, which is located at Granville, commenced active operation on April 8, however, owing to the backward spring and the lack of sufficient power, the starting dates of the other dredges were drawn out to May 14. Operating conditions were favourable at all dredges throughout the season. The dredging period extended to December 1, when the last dredge was shut down. The total production for the year from dredging operations was 73,530 fine ounces of gold valued at \$2,830,907, with gold at \$38.50 per ounce Canadian and 15,610 fine ounces of silver valued at \$6,295 from 10,401,131 cubic yards or 27.22 cents per cubic yard dredged.

**"Other Placer Operations.**—Clear Creek Placers Ltd. discontinued their drag line operations on the left fork of Clear Creek and erected a 3 cubic foot pontoon type steel construction dredge. This dredge started digging September 7. The Holbrook Dredging Company, operating under receivership, continued mining operations on the Upper Sixtymile River, commencing operations about March 22 and closing down on November 12. There were the usual summer mining operations by individual claim owners on the older placer creeks in the Klondike and Sixtymile Districts, but no new operations were commenced. In the Mayo district the most important placer operations were those of the Haggart Creek Mining Company on Haggart Creek, Swanson and Lunde on Dublin Gulch and Middlecoff on Hight Creek. The operators on Dublin Gulch, in addition to gold, made a recovery of scheelite concentrate which was shipped to the Mines Branch, Ottawa. A greater effort is being made in 1943 to increase the recovery of scheelite on Dublin Gulch. In the Whitehorse district there was little mining activity during the year, the Alaskan Highway and associated projects proving more attractive. One hundred and eight miles of prospecting leases were issued during the year as against two hundred and thirty-six miles leased in this manner during the previous year.

"Five schools were maintained in Yukon during the year, namely, two at Dawson, and one each at Whitehorse, Carcross and Mayo. The number of pupils enrolled in June, 1942 was two hundred and seventy. The sum of \$1,449 was expended on maintenance and improvements to certain airports in the Territory.

"The total revenue collected in the Dawson office on account of mining lands was \$70,109.54. Of this amount, \$69,428.36 was from placer and \$681.18 from quartz. In the Mayo Mining Recorder's office the total collections on account of mining were \$3,880.61; of this amount, \$1,764 was from placer and \$2,116.61 from quartz. In the Whitehorse Mining Recorder's office the total collections on account of mining were \$1,022.92, of which \$462.97 was from placer \$124.00 from quartz, \$66 from coal leases and \$369.95 from the sale of maps."

Table 40.—Summary Statistics of Alluvial Gold Mining in Canada, 1941 and 1942

	1941			1942		
	(d) British Columbia	Yukon (e)	(g) (f) Quebec Saskatchewan and Alberta	(d) British Columbia	Yukon (e)	(i) Saskatchewan and Alberta
Number of firms and individual operators (f).....	98	7	3	72	8	
Capital employed.....\$	2,187,519	8,568,187		1,028,079	9,043,238	
Number of employees.....	393	403	1	155	316	
Salaries and wages paid.....\$	625,173	1,328,995	110	275,485	1,007,789	
Electricity generated for own use, K.W.H.	560,670	29,267,200			24,624,400	
Electricity generated for sale.....		3,722,000			4,169,616	
Crude gold recovered—crude.....oz.	43,775	88,488	4	32,904	104,340	46
Platinum recovered.....oz.	60			40		
Value of platinum recovered.....\$	2,293			1,528		
Quantity of material handled (h) cu. yd.	4,587,103	8,792,220		1,884,887	11,875,833	
Tungsten recovered.....				(see under Auriferous quartz)		
Length of ditches.....miles (b)	140	56		56	52	
Total gross value of alluvial products.....\$	1,354,941	2,766,951	124	1,005,758	3,314,217	1,655
Fuel and electricity used (purchased).....\$	46,439	109,079		26,226	77,098	
Process supplies used.....\$	54,972	13,517		20,140	17,203	
Cost of freight and express on dust, nuggets, bullion, etc., shipped (c).....\$	2,947	42,942		2,626	28,741	
Cost of smelter, refinery and mint treatment on material shipped (c).....\$	0,510	55,955		4,991	29,610	
Total net value of alluvial products.....\$	1,244,073	2,545,458	124	951,775	3,161,565	1,655

(f) In addition to the number shown in the table, there were numerous small operators from whom returns were not obtainable; subject to revision.

(a) Recoveries for Alberta and Saskatchewan represent receipts of crude gold from Alberta and Saskatchewan at the Royal Canadian Mint, Ottawa, and the Dominion Assay Office, Vancouver, B.C. No other statistics available.

(b) Includes length of flume in use.

(c) Information not completely available.

(d) Value of crude gold in Canadian funds in 1941 was estimated to be \$30.95 per crude ounce. In 1942 it was \$30.52.

(e) Value of crude gold in Canadian funds in 1941 was estimated to be \$31.27 per crude ounce. In 1942 it was \$31.76.

(f) Value of crude gold in Canadian funds in 1941 was estimated to be \$31.00 per crude ounce.

(g) Quebec only—data not available for Alberta and Saskatchewan.

(h) Includes some overburden or barren material.

(i) Only production data available in 1942.



Table 41.—Alluvial Gold Recovered and Quantity of Material Handled (†) 1925-1942

Year	BRITISH COLUMBIA				YUKON				Average value gold per fine oz.
	Material handled (x)	Gold recovered	Ounces per cu. yd.	Value per cu. yd.	Material handled (x)	Gold recovered	Ounces per cu. yd.	Value per cu. yd.	
	cu. yd.	fine oz.	fine oz.	\$	cu. yd.	fine oz.	fine oz.	\$	
1925.....	(a)	13,181	(a)	.....	3,103,892	47,817	0-0154	0-318	20-67
1926.....	1,237,000	16,730	0-0135	0-279	2,501,200	25,344	0-0101	0-208	20-67
1927.....	2,470,552	7,353	0-0029	0-0599	2,421,489	30,778	0-0127	0-262	20-67
1928.....	1,188,667	6,739	0-0057	0-1178	5,097,182	34,116	0-0067	0-1385	20-67
1929.....	1,336,390	5,168	0-0039	0-0806	4,500,000	35,678	0-0079	0-1633	20-67
1930.....	224,339	7,164	0-0319	0-6593	3,559,642	35,160	0-0099	0-2046	20-67
1931.....	1,587,271	13,741	0-0086	0-1853	4,914,638	44,061	0-0090	0-1939	21-55
1932.....	1,053,677	16,320	0-0155	0-3637	6,051,256	40,373	0-0067	0-1572	23-47
1933.....	1,326,721	19,142	0-0144	0-4118	5,005,522	39,174	0-0070	0-2002	28-60
1934.....	2,034,522	20,145	0-0099	0-3415	6,315,070	38,703	0-0061	0-2104	34-50
1935.....	1,855,837	24,744	0-0133	0-4080	5,442,861	35,705	0-0066	0-2322	35-19
1936.....	2,083,034	34,711	0-0166	0-5815	8,067,159	50,192	0-0062	0-2172	35-03
1937.....	3,472,025	43,322	0-0125	0-4373	8,298,514	46,679	0-0056	0-1959	34-99
1938.....	4,138,746	46,207	0-0112	0-3939	8,870,628	71,303	0-0080	0-2813	35-17
1939.....	4,779,407	39,797	0-0083	0-2999	11,152,198	85,572	0-0077	0-2782	36-14
1940.....	6,680,457	32,128	0-0048	0-1848	11,551,170	79,905	0-0069	0-2656	38-50
1941.....	4,587,103	35,020	0-0076	0-2026	8,792,220	70,847	0-0081	0-3119	38-50
1942.....	1,884,887	26,323	0-0139	0-5352	11,575,833	(b) 83,198	0-0070	0-2695	38-50

(†) In addition, relatively small amounts of alluvial gold have been recovered in Quebec, Saskatchewan and Alberta, but complete data are not available; also, data relating to material handled, particularly those pertaining to small operations, are not complete and necessitate estimates in order to obtain totals.

(x) Data partly conjectural and includes some overburden and barren material.

(a) Not available.

(b) Fine gold received at Royal Canadian Mint; previous year's figures represent estimated fine gold in crude gold recovered.

## THE AURIFEROUS QUARTZ MINING INDUSTRY IN CANADA

The great part of the gold of Canada comes from the Canadian shield, an immense area of precambrian rocks extending from the Labrador Coast westward almost to the mouth of MacKenzie River. The area of the shield is roughly 1,825,000 square miles, almost half of Canada. The deposits of the shield are of two main types, namely, quartz veins, from which most of the gold, up to the present time, has been won, and sulphide deposits which produce a smaller but very considerable proportion. The second great source of gold in Canada has been the Western or Cordilleran section, comprising British Columbia and Yukon Territory—the gold production from this section includes relatively large quantities obtained from alluvial deposits. The third principal area in which gold deposits occur is the Acadian region of Eastern Canada, the metal occurring principally in Nova Scotia where it has been mined since 1862.

The number of Canadian gold mining firms reporting mining operations in 1942 totalled 223 compared with 338 in 1941 and 428 in 1940. During 1942 there were 227 properties in operation as against 357 in 1941; 184 mines reported production compared with 255 in the preceding year and 33 in 1923. From official returns received it was estimated that 42 Canadian gold mines suspended all operations in 1942. Of these, 4 were located in Quebec, 14 in Ontario, 6 in Manitoba and Saskatchewan, and 13 in British Columbia.

The gross value of output for the entire auriferous quartz mining industry, including the value of all recoverable metals, gold, silver, etc., totalled \$160,564,783 in 1942 compared with \$179,103,182 in 1941. Of the 1942 total, \$104,472,446 represented recoveries from Ontario ores, \$31,413,162 from Quebec ores and \$6,629,819 from the gold mines of British Columbia.

Employees in the lode gold mining industry totalled 26,030 compared with 32,551 in 1941 and 5,524 in 1923. Salaries and wages paid amounted to \$54,388,872 as against \$62,150,810 in 1941, and fuel and purchased electricity consumed by the industry in 1942 totalled \$7,615,766. The cost of explosives, drill steel and other process supplies used in 1942 amounted to \$17,922,522.

Dividends paid during 1942, as computed from actual returns made by the auriferous quartz mining industry, totalled \$34,571,376 compared with \$46,563,187 in 1941.

**NOVA SCOTIA GOLD MINING INDUSTRY, 1942**

(J. P. Messervey, Inspector of Metal Mines, Nova Scotia Department of Mines)

The gold operations in the province produced 12,989 fine ounces of gold in 1942 as compared with 19,170 fine ounces in 1941.

The number of operators was reduced to three companies to carry on steady mining and milling operations. The needs of industry for other minerals caused a scarcity of experienced labour in this field, and it became increasingly difficult to obtain equipment and supplies for gold mining.

The work carried on during the year was by:

Consolidated Mining and Smelting Company of Canada Limited, Caribou, Halifax County, who in addition to the regular production deepened the Holman vertical shaft from the 500 to the 800 foot level and started a drift from the 800 foot station southeast to the ore zone.

Avon Gold Mines Limited, Oldham, N.S., carried on work steadily in the Dunbrack mine with success. A considerable footage of new development work was carried out during the first six months of the year but the number of available employees had dwindled to 50 per cent by the end of the year so that it became apparent that they would have to cease operations early in 1943 for the duration of the war.

Queens Mines Limited continued operations at Molegn, Queens County, both with underground development and installation of a 25 ton ball mill plant.

The minimum work requirements on leases specified by the Mines Act have been waived for the duration of the war.

**THE GOLD MINING INDUSTRY IN QUEBEC IN 1942**

(A. O. Dufresne, Deputy Minister, Quebec Department of Mines)

During the twelve months of 1942, the gold output (shipments) of Quebec mines reached a new high record of 1,090,659 ounces, valued at \$41,990,372. While the output was slightly in excess of the figures for the previous year of 1941, it must be admitted that the peak of production was reached in the first half of the year, and there was a very noticeable falling off in the gold output during the last six months of 1942. The scarcity of labour was largely responsible for these conditions, and it seems unlikely that there will be any improvement, insofar as the gold mining industry is concerned, until the war has been brought to a successful conclusion.

Practically all of the gold produced in the province of Quebec comes from the counties of Abitibi and Temiscamingue. Returns of production were received from 33 mining companies, and from several individual shippers of small quantities. The year 1942 saw three new mines come into production in western Quebec, namely, West Mulartic, Mic Mac and Golden Manitou, the latter being essentially a zinc mine, where the gold occurs in association with the base metal ore. The Tetraut lead-zinc mine, in Montauban township, was re-opened during the year, and a small output of gold resulted from this operation.

For general statistical purposes, the gold mines of western Quebec have been classified into two groups, namely, the "straight gold" producers, where the gold occurs in association with other precious metals in a quartz or quartzose gangue, and the "sulphide" mines, where the gold is considered essentially as a by-product in the mining of complex sulphide ores of such metals as copper, zinc, and lead, and the mineral iron pyrites.

In 1942 approximately 75 per cent of the gold production of the province was derived from the "straight gold" ores, and the remaining 25 per cent was recovered from the treatment of base metal ores.

Prospecting activities were at a low ebb in 1942, the number of recorded claims amounting to only 4,367. In the peak year of 1937, 18,641 mining claims were recorded in the province.

In spite of the difficulties imposed by the war, the "straight gold" mines, as a whole, had a very good year. Tonnage was reduced at several properties, and the Arntfield, Cournor, Pandora and Wood Cadillac mines were obliged to suspend operations, but the loss in gold output resulting from these factors was more than balanced by the production from the new mines, and by improvements in the grade of the ore at a number of older mines.

In the western part of the Abitibi-Temiscamingue region, the Francoeur mine was in continuous operation, with tonnage only slightly below the figures for the previous year. Production was continued at the Arntfield until April, 1942, when financial difficulties forced suspension of all operations. Tonnage and gold output were slightly reduced at the McWatters mine. At Senator Rouyn, both tonnage and grade improved, and the main shaft was deepened from the 875-foot level to the 1,430-foot horizon where four new levels were established. The Powell-Rouyn mill was shut down in April, 1942, and since that time all the mine output has been shipped by truck to the Noranda smelter where it is used as a siliceous flux; tonnage and gold output decreased somewhat below the figures for the previous year. At the Stadacona Rouyn mine, production was maintained at a very satisfactory level, and the main shaft was deepened to 2,325 feet from the surface. The Beattie mine and mill also operated continuously with little change in tonnage, but the grade of the ore was appreciably reduced owing to an inrush of clay and quicksand in the north workings. In Guillet township, operations at the Belletierre Quebec mine were continued at a steady rate, and the capacity of the Company's power plant on the Winneway river was doubled by the addition of a second 1,375 K.V.A. generator.

In the Bousquet-Cadillac area, the new Mic Mac mill was turned over in June, and it has demonstrated a capacity of 600 tons per day; due to labour shortage, the daily tonnage treated during the remainder of 1942 averaged only 380 tons. The O'Brien mine operated at a steady rate of close to 200 tons daily. Central Cadillac continued to operate at a slightly increased rate, shipping its output, by truck, to the Thompson Cadillac mill for treatment. Increased operating difficulties forced suspension, in June, 1942, of all operations at the Wood Cadillac mine. The Pandora mine was another war casualty which, owing to the lack of sufficient labour, closed down in August for the duration of the war. Tonnage at Lapa Cadillac was gradually reduced by 40 per cent from the rate in effect at the beginning of the year. At West Malartic production was commenced in May, 1942, and in spite of the serious operating difficulties resulting from the scarcity of labour, the mill was brought up to its rated capacity of 300 tons per day.

In the Fournière-Malartic area, the average daily tonnage treated at the Canadian Malartic mine was increased to 983 tons, with little variation in grade from the figures for the previous year. At Sladen Malartic, tonnage was maintained at a steady rate of 700 tons per day, and gold recovery showed a substantial increase at \$4.49 per ton; No. 2 shaft was deepened during the year to the 1,750-foot horizon. At East Malartic, a slight reduction in tonnage treated, as compared with 1941, was almost wholly compensated by an improvement in grade. Malartic Goldfields operated at an average daily rate of 682 tons, with mill heads averaging \$8.20 gold per ton; at the No. 2 mine, half a mile to the west of the main workings, a shaft was completed to a depth of 500 feet, and lateral work has indicated that the promising results attained in previous diamond drilling will be confirmed.

In the Bourlamaque-Dubuisson area, an output of 1,000 tons per day was maintained at the Siscoe mine, but the grade of the ore has been appreciably reduced. Sullivan Consolidated increased production to an average daily rate of 462 tons, with grade averaging \$10.36 per ton in gold. At Lamaque, the severe shortage of labour resulted in a drastic curtailment of underground work, and, during the last six months of 1942, the daily tonnage was gradually reduced from 1,225 to 815 tons. Operations at the Sigma mine showed little change, the tonnage of ore treated amounting to 403,467 tons, with an average gold content of 3.926 dwt. per ton.

In the Pascalis-Louvicourt area, the Cournor mine and mill operated continuously throughout the first six months of 1942, but due to a fire which destroyed the mine office, the engineers' office and the warehouse, and the increasing wartime difficulties, the operations have been suspended for the duration of the war. Operations continued at a steady rate at the Perron mine, with production only slightly below the figures for the previous year; some shipments of sorted tungsten ore were made from this property.



Dominion Bureau of Statistics  
Mining, Metallurgical and Chemical Branch  
Ottawa - Canada

E R R A T A

ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA, 1942

Please substitute the following data for iron ore production:

<u>Page 53</u>			<u>Page 62</u>		
<u>Year</u>	<u>Short tons</u>	<u>\$</u>	<u>Short tons</u>	<u>\$</u>	
1890 .....			5,000	(x)	
1909 .....			263,893	653,808	
1910 .....			251,445	513,722	
1911 .....			175,586	446,328	
1912 .....			112,521	222,490	
1913 .....			195,680	427,975	
1914 .....			240,079	551,200	
1915 .....			394,429	766,166	
1916 .....			271,967	706,799	
1917 .....	17,189	54,815	198,113	703,501	
1918 .....	8,159	44,531	201,119	853,722	
1919 .....			195,649	686,381	
1920 .....			128,900	507,600	
1921 .....			58,499	227,154	
1922 .....			16,190	52,055	
1923 .....			50,447	113,543	
1924 .....			44	(x)	
 TOTAL ..	 468,325	 ...	 6,255,018	 ...	

(x) Not recorded.



Development and exploration work was continued on a number of new gold properties in Quebec during the first part of 1942, but as the difficulties resulting from shortage of labour and materials increased rather sharply, most of this work has been suspended, and there appears to be little prospect of its resumption until after the war.

### GOLD MINES OF ONTARIO, 1942

(Maurice Tremblay, Statistician, Ontario Department of Mines)

**East Kirkland and Larder Lake Areas.**—All development and stoping at the Bidgood Kirkland mine was done in the No. 2 shaft workings from the 250 foot level to 1,275 feet. There was no change in plant or equipment and an average of 131 tons of ore per day was milled during the year. No. 1 shaft at Upper Canada was sunk 250 feet during the year and levels were established at 1,125 and 1,250 feet. Stoping is being carried out on the 125, 250 and 375 foot levels of No. 2 shaft and on all levels of No. 1 shaft down to the 875 foot level. In 1942 the mill treated an average of 231 tons of ore per day, this being an increase of 30 tons over the previous year. At the Omega property No. 3 internal shaft, a winze was collared on the 1,550 level in the southern part of the property. It was sunk 186 feet in 1942 and a level established at 1,675 feet. Average daily tonnage milled in 1942, 409 tons, was 60 tons below the 1941 daily average. One of the most important developments at the Kerr Addison property was the finding of No. 6 ore body south of the fault. This section of the property had heretofore been considered barren. Average daily tonnage treated in 1942 was 2,072 or 170 tons above the average for 1941. The main shaft, No. 3, was sunk 716 feet to a total depth of 2,805 feet. New levels were established at 150 foot intervals from the 2,200 foot level to the 2,800 foot level. The lowest level to be developed in this block, therefore, will be at 2,650 feet and the main production to come from the 2,500 foot level. There were no changes to plant or equipment at the Chesterville property. The shaft was sunk 458 feet during the year under review to a total depth of 1,703 feet and the 10th, 11th, and 12th levels established. Average daily tonnage treated in 1942 was 663 against 687 in 1941. At the Yama property milling operations were sporadic throughout the year. An average of 63 tons of ore per day was milled. Late in the year an attempt was made to increase capacity from 75 to 100 tons per day. Most of the development was carried on the bottom or 500 foot level. O. L. Knutson succeeded H. G. Wray as Manager in November. The old Margaret shaft or No. 1 Queenston shaft on the Queenston Gold Mines property was deepened to 272 feet and a second level established at 250 feet. Development was carried out on the 125 and 250 foot levels. A shipment of 1,054 tons of ore was milled in the Upper Canada mill as a bulk test. All work was done by the latter company. Operations were suspended for the duration of the war on April 15, 1942. Some diamond drilling was done underground at the Laguerre mine early in January, but on March 10 it was decided to suspend all operations for the duration. Toburn Gold Mines Ltd. pumped out the workings of Kirkland Consolidated Mine (Keryan Lease), in April and May of 1942. The property was examined for scheelite.

**Kirkland Lake Area.**—All operations were suspended on April 14, 1942, at both the Golden Gate and Crescent mines. They were allowed to flood. There was no further work done on the crosscuts into the Casakirk property from Macassa. The plant of the latter mine remained substantially the same. At the Kirkland Lake Gold Mining Company property development work and stoping was curtailed during the year. The major part of the development work was carried out in the block of ground from 4,600 to 5,450 feet. The most important work at this company was carried out on six veins of high class ore on the 5,450 level. The mill treated an average of 276 tons per day. The mill of Teck-Hughes Gold Mines Limited treated an average of 256 tons of ore per day, all of which came from above the 15th level. It will probably take longer than expected before mining of this upper block of levels is completed. Notwithstanding the strike, sinking of No. 6 shaft was carried on throughout the year at the Lake Shore mine. Footage sunk was 776 and new levels were established at 125-foot intervals from the 5,200-foot level. Development work was concentrated in the block of levels from 4,575 to 5,950. The mill treated an average of 950 tons per day. No new levels were opened up at the Wright-Hargreaves mine during the year and most of the development was done in the blocks from the 4,200 to the 5,400 and from the 200 to the 700 levels. Daily average tonnage treated for the year was 777 tons. At the Sylvanite mine the No. 5 winze was sunk 446 feet and levels were established at 3,900, 4,050 and 4,200 foot levels. Average daily tonnage was 480.



**Porcupine District.**—Gold ore tonnage milled during 1942 dropped below that of the preceding year for the first time in 12 years. Tonnage milled dropped from 5,971,786 in 1941 to 5,624,679 tons in 1942, a decrease of 5.95 per cent. However, this figure is much less than 1 per cent of the tonnage milled in the district in 1940. A comparison of tonnage and production of the Porcupine district with that of the province indicates the decline in the Porcupine district was less than the general decline production from Porcupine amounting to 48.75 per cent of the total highest figure since 1930, while the tonnage exceeded that of all the other Ontario gold mines combined for the first time since 1938. Employment decreased over the year by 10.35 per cent, but this does not reflect the great exodus of men in the latter months of the year. The December employment figures show a decrease of 2,418 men from the 1941 average, or a 25 per cent decrease. During the year, operations were suspended at DeSantis Porcupine Gold Mines, Faymar Porcupine Gold Mines, and Nakhodas Mining Company. With the exception of hoisting ore from stopes, mining also was suspended at Naybob Gold Mines at the close of the year. From August to November, 1942, Wolfestev Mining and Development Company operated on the former Credo Porcupine property. Production of 292 tons of ore from open pit operations was trucked to Buffalo Ankerite Gold Mines for testing purposes.

There was little expansion during the year at producing mines. Preston was the outstanding exception in this respect. Near completion of mill expansion at the end of 1941 enabled this company to step up average production from 534 tons daily in 1941 to 840 tons in 1942. The step-up took place during the first three months, just prior to the passing of new regulations restricting increases in gold tonnages beyond that of the first three months of the year. Construction work and installation of new equipment at the Porcupine mines was done on a very modest scale in 1942. Preston completed early in the year additions to the mill, shops and power plant which were well on the way at the end of 1941. Aunor completed installation of additional mill equipment ordered in 1941, and received near the end of the year a new hoist which was also ordered many months earlier. The Hollinger scheelite mill was completed and the additions to the Delnite mill for the recovery of the same mineral were both completed in 1942.

**Matachewan and West Shiningtree Area.**—A considerable proportion of the ore milled at the Young-Davidson mine was extracted from pillars, and average daily mill tonnage dropped from 955 in 1941 to 816 in 1942. No additions were made to the plant. At the Matachewan Consolidated property the expansion program commenced in 1941 to bring mill capacity to 1,000 tons per day was completed in 1942. Shortage of labour prevented production of more than 900 tons per day. Mining from surface of the syenite ore body near the Young-Davidson line was started. The Tyrannite mine suspended operations for the duration of the war on July 31, 1942. During the period of operation, average daily tonnage treated was 148. It is likely that when the mine re-opens, considerable lower level development will be done before milling is resumed.

**Sudbury and Nipissing District.**—Development work totalling 2,118 feet was done in 1942 at the Jerome property. The mill treated an average of 462 tons per day. At the Rundle mine operations were continued until the end of July. The shaft was deepened to 375 feet and a second level opened up at 300 feet. The Renabie property was closed in May after development work, totalling 2,985 feet, had been done on the 125- 250-foot levels during 1942. Lack of ore caused cessation of operations at the Cline Lake mine in November. The mill treated an average of 161 tons per day from January 1 to October 14. Regnery Metals handled an average of 35 tons per day from shallow under ground work. Operations there lasted from April 16 to December 21.

**Thunder Bay District.**—Little Long Lac Gold Mines, Limited, operated continuously during the year and the mill tonnage was held in the neighbourhood of 320 tons. Mining was done from the 10th level down. The winze from the 16th level, which is situated 1,680 feet west of No. 1 shaft was completed early in the year and four levels were established. A 15-ton scheelite concentrator was added to the mill and was in operation in January, 1943. MacLeod-Cockshutt was in continuous operation during 1942. It had been hoped to increase production. The mill building addition was completed and most of the mill units installed but the labour shortage became so acute that it was found difficult to maintain previous tonnage.

At the end of the year approximately 600 tons daily were being milled. The possibility of producing arsenic from the roasting plant fumes was being investigated. Continuous production was also maintained at the Hard Rock Gold Mine. Most of the tonnage milled was taken from the large shrinkage stopes between the 4th level and surface. No. 2 shaft was deepened during the year to a total depth of 1,410 feet and six new levels established at 150-foot intervals below the 4th. Investigation of possible production of arsenic was also being made at this property. The mill of the Magnet Consolidated mine was in continuous operation throughout the year, treating an average of 140 tons per day. The ore supply was mostly taken out between the 5th and 9th levels. Production at the Bankfield mine ceased on August 30. It was said that all commercial ore had been removed underground. There is, however, a possibility that the ore on the Magnet property to the east is raking toward the Bankfield at depth and for this reason the three levels from No. 1 shaft were bulkheaded off so that in future it would not be necessary to pump out the mine workings in the event of the reopening of the mine. The Tombill mine ceased operating on November 30 for the same reason as Bankfield. The Elmos operation of this company witnessed the installation of a mining and milling plant of 40 tons capacity. The mine was also closed on November 30 and the underground allowed to fill with water. In the Sturgeon River area, the Sturgeon River mine ceased operations in October owing to a lack of labour. At the Brengold property some sampling was done after the mine had been dewatered but owing to the difficult times, work was discontinued in March. In the Beardmore area the Leitch mine operated its plant during the year and established itself as the highest grade gold mine in Canada. Daily tonnage was about 110 tons hoisted and 80 tons milled. Development of five new levels was practically completed during the year. Ore developed on these levels was as good or better than the upper levels. The mill feed for the year came mostly from the section between the 5th and 9th levels. Some scheelite was produced at the property and two small shipments were made to Ottawa. Owing to the labour shortage the Sand River operation of the Northern Empire Mines, Limited, was closed on August 26. Some scheelite ore was shipped from this mine. The Bandolae Mining Company, Limited, in the Shebandowan Lake area moved prospecting equipment on its property which is situated in the vicinity of the Shebandowan Station on the C.N. Railway. The property will probably be dormant for the duration. Several of the larger mining companies have had scouts examining prospects in this area.

**Rainy River District.**—Goldorel Mining Company, Limited, operated the old Olive Gold mine at about 20 tons daily till August 21 when a fire destroyed both the Diesel plant and mill. No further work has been done. This company was also interested in the old Golden Star property south of Mine Centre but no work was done there during the year.

**Kenora District.**—The Berens River mill treated a daily average of 238 tons of ore during the year. Plans were being made to enlarge the mill building and to install equipment necessary for the extraction of zinc which formerly followed the tailings. Central Patricia was in continuous operation and the winze which had been collared on the 2,050-foot level during the latter part of 1941 was deepened 578 feet during 1942. Four new levels were established. Three new levels were opened up at the Pickle Crow mine. This followed deepening of the winze which had been collared on the 750-foot level in 1941. Mining operations ceased at the No. 5 shaft of the Ueli mine on November 30, 1942. At the end of the year only No. 2 and No. 4 shafts were producing. The mill treated an average of 454 tons of ore daily. Continuous operations were reported also from the McKenzie Red Lake and the McMarnac mines. The former mined an average of 235 tons of ore daily and the latter 90 tons. There was nothing new to report from the Cochenour Willans mine. The mill treated an average of 165 tons of ore per day. Production at the Hasaga mine averaged 367 tons per day during 1942 and Madsen Red Lake had an average daily run of 400 tons. Although the Wendigo mine operated throughout the year under review, discouraging results from diamond drilling on the 1,700-foot level in January of 1943 caused the company to begin salvage operations. Attempts to retreat the old mill tailings at the Goldwood property were unsuccessful. The tailings are covered by 35 feet of water. Some 5,000 tons of tailings were treated between February 20 and May 31, 1942. At the Gold Frontier mine development work was done from January to July 9. Some drifting was done from the No. 1 shaft and drifting and crosscutting from the No. 2 shaft. Mine buildings were erected at the No. 2 shaft. The mill equipment that was delivered to the landing during



the latter part of 1941 is still there. The Jason mine was operated from January 1 to October 10, milling an average of 94 tons of ore per day. Equipment that could be damaged by water was brought to surface and the mine allowed to flood. It is planned to re-open the property after the war. Shortage of labour was mainly responsible for the closing down of the mine. Underground exploratory work was carried on at the Kenwest property from January 1 to February 15. At that time the mine was allowed to flood to the third level. Underground operations were resumed on October 9 and continued throughout the year. The Gurney mill purchased in 1941 was installed at the property and milling operations started on the 1st of September. By the end of the year a total of 3,015 tons of ore that had been stored on the surface dump and 3,309 tons of ore obtained from the underground workings had been treated. Owing to the war, plans to retreat the tailings from the old Micado mine, on Shoal Lake, had to be abandoned, but some trenching was completed during the year on the company's holdings at High Lake. Sandybeach Lake Syndicate took a 5½-ton sample from Claim K.9194 near Kirk Lake, south of the old Sakoose mine. The ore was trucked to the mill at Van Houten Gold Mines and was sampled there. Production of bullion from this ore amounted to \$83.66.

### MANITOBA GOLD INDUSTRY, 1942

(Geo. E. Cole, Director of Mines)

The province of Manitoba continued its gold production in 1942 with 136,226 ounces as compared with 150,553 ounces in 1941. Gold was produced at four gold-quartz mines and was also obtained from the treatment of base metal ores of the Flin Flon and Sherritt-Gordon mines.

Prospecting for gold was overshadowed in 1942 by the search for strategic minerals which resulted in the discovery of chromite in the Bird River area of southeastern Manitoba. Nevertheless, there was some interest shown in the development of a gold property at Snow Lake, The Pas Mining District, by the Howe Sound Exploration Company, Limited.

After an intensive campaign of diamond drilling at the Nor-Acme property located some 10 miles northeast of Herb Lake (Wekusko) settlement, results were reported so satisfactory as to warrant taking over the property and commencing mining operations when world conditions were more settled. Following on these reports there has been considerable prospecting in the area.

The Gunnar Gold mine, which up to 1942 had for several years been producing at the rate of 150 tons a day, on \$11.00 ore, was forced to discontinue operations in June. The company acquired the Ogama-Rockland group of claims, located 6 miles northwest of the Gunnar mine after some preliminary drilling. Preparations were made to develop and work two small ore shoots on the Ogama claim but owing to unsatisfactory conditions imposed on gold production during the war, mining could not be continued.

### SASKATCHEWAN GOLD MINING INDUSTRY, 1942

(W. H. Hastings, Chief Inspector of Mines)

Saskatchewan's gold production for 1942 was 178,871 ounces valued at \$6,886,533 as against 138,015 ounces valued at \$5,313,578 in 1941, or an increase of 29.6 per cent. In January the surface buildings of Pamon Gold Mines Limited, Amisk Lake, burned down, and on August 15, 1942 Consolidated Mining and Smelting Company of Canada, Limited closed their Box property mine at Beaverlodge, Lake Athabaska, for the duration of the war. The closing of these two mines left the Flin Flon mine of Hudson Bay Mining and Smelting Co. as the only operating gold producer in Saskatchewan.

As the Flin Flon mine accounted for approximately 90 per cent of the total gold production of the province, the closing of the mines at Amisk and Athabaska Lakes will not greatly affect the production figures of future years. As long as the Hudson Bay Mining Company continues in its present healthy state of operation, Saskatchewan's gold production should remain in the neighbourhood of \$6,000,000 annually.



No new discoveries were reported during the year under review. Preview Mines Limited, a prospect in the Lac la Ronge area, operated a small pilot mill during the early part of the year but later discontinued operations indefinitely. Wampum Gold Mines Limited at Douglas Lake, six miles south-west of Flin Flon, an arsenical gold property, also failed to reach the production stage in their development operations.

### BRITISH COLUMBIA GOLD MINING INDUSTRY, 1942

Submitted by H. Sargent, Chief Mining Engineer, British Columbia Department of Mines  
(Prepared by the Mining and Metallurgical Division, Bureau of Economics and Statistics  
Victoria)

In the Atlin Mining Division the Polaris-Taku Mining Company treated a total of 31,336 tons of ore, the concentrates being shipped to the Tacoma smelter. This operation was closed down, presumably for the duration, at the end of April.

The Portland Canal Division was credited with a tonnage output of 203,322, of which the Silbak Premier produced 140,567 tons containing 36,300 ounces of gold. The Big Missouri mill treated 62,755 tons, closing down in April, and finally, in October the operation ceased altogether. In the Skeena Mining Division, the Surf Inlet Consolidated Gold Mines Ltd., was credited with 26,116 tons treated, with gold production of 8,683 ounces. The company ceased operations at the end of November. The Government sampling plant at Prince Rupert, handled several small lots of ore and numerous testing lots. Settlement is made direct with the shipper, and accumulated stocks are shipped by the Department of Mines, to Tacoma or Trail, as the character of the ore determines.

The Cariboo Division had 141,801 tons credited, of which the Cariboo Gold Quartz treated 93,885 tons, with gold content of 38,016 ounces. The Island Mountain Mines Ltd., treated 47,916 tons, giving a content of 21,164 ounces of gold.

Clean-up operations, by leasers, continued at the Windpass in the Kamloops Division and in the Vernon Division the Kalamalka mine is credited with 433 tons.

The Greenwood Division again disclosed that the Old Granby (Phoenix), Providence, and Union Mines were the main producers in the total of 2,113 ounces of gold. Leasing operations at the Dentonia continued, and production was made from the Yankee Boy.

The Osoyoos Division came close to the tonnage and production of 1941, and in 1942 tonnage was 165,643 and 55,011 ounces of gold produced. Hedley Mascot treated 66,088 tons which yielded 22,477 ounces of gold. The Kelowna Exploration, operating the old Nickel Plate mine, treated 99,219 tons. Smaller producers included the Empire, Grandoro, K.C.M. and Smuggler.

The Copper Mountain property of the Granby Consolidated Mining, Smelting and Power Co. Ltd., can be credited with several thousand ounces of gold.

The Nelson Mining Division was credited with a total of 183,384 tons treated, which yielded 65,663 ounces of gold. The leading producer was Sheep Creek Gold Mines Ltd., with 55,395 tons yielding 23,493 ounces of gold, followed by Gold Belt with 55,299 tons yielding 19,619 ounces of gold. Kootenay Belle treated 26,016 tons for a yield of 8,310 ounces of gold. Bayonne is credited with a yield of 4,599 ounces from 11,524 tons treated. Clean-up work was carried out at the Reno, and it is reported the property has been sold to Messrs. Endersby, who for some years worked the Nugget claim on a lease.

Other shippers in the Nelson Division included Alpine, Arizona, Arlington, California, Granite Poorman, Wilcox, Yankee Girl, now being worked by leasers. In addition, shipments were made by the Bunker Hill, Clubine-Comstock, Durang, Goodenough, Ymir leasers, Trimetals (Golden Age), Gold Hill, Jessie Victoria, and Keystone.

Trail Creek had a total tonnage of 12,565 which yielded 4,135 ounces of gold. The Velvet was the largest producer with 7,595 tons treated, followed by Rossland leasers with 3,999 tons treated.

In the Alberni Division, the Thistle and Sherwood made aggregate shipments of 1,141 tons, which yielded 288 ounces.

The Clayoquot Division tonnage was 68,100 with a total yield of 41,136 ounces. Privateer again topped the list with 22,360 ounces of gold from 25,073 tons treated. Spud Valley came next with 6,020 ounces from 20,060 tons treated, followed by Central Zeballos with 4,610 ounces. Other producers were Buccaneer, Muskateer, White Star, Homeward and Mount Zeballos. The following mines are now closed down: Buccaneer, Mount Zeballos, Homeward, Muskateer, Central Zeballos, Spud Valley and White Star.

Lillooet Division, with two producing Mines, is credited with 259,719 tons, of which Bralorne treated 171,095 yielding 90,817 ounces of gold. The Pioneer treated 79,624 tons with a yield of 40,563 ounces of gold.

Nanaimo and New Westminster divisions added a few tons to the Provincial total, and Britannia Mine in the Vancouver Division also was responsible for some thousands of ounces, but same is tied in with copper-production data, and cannot be segregated.

## GOLD MINING IN THE NORTHWEST TERRITORIES, 1942

(A. W. Jolliffe, Ph.D., Geological Survey—Ottawa)

Curtailment of all phases of the gold mining industry in Northwest Territories took place during 1942. Two of the six mines producing at the start of the year were closed, and one new mine operated for less than a month. The total daily tonnage milled at Northwest Territories gold mines dropped from about 450 at the start of the year to about 300 at the end. Prospecting was on a much reduced scale as compared with previous years and much of this was devoted towards the search for scheelite and other war minerals rather than for gold. Staking and development of gold claims practically ceased. Notwithstanding, gold was produced to a value of \$3,826,669, nearly one-quarter larger than the amount produced in 1941, and representing about 63 per cent of the value of all minerals produced in Northwest Territories in 1942. Since September, 1938, when continuous production started, gold valued at over ten and one-half million dollars has been produced.

Con and Ryeon mines on Yellowknife Bay are operated from a common plant by Consolidated Mining and Smelting Company of Canada, Limited. In 1942 the property maintained its position as chief gold producer in Northwest Territories, treating an average of nearly 200 tons a day. No. 1 shaft was deepened from 1,011 to 1,450 feet with stations cut at 1,100, 1,250, and 1,400 feet. About 6,600 feet of lateral work was done in the mines during the year, chiefly on the 950-, 650-, and 500-foot levels. Most ore treated to date has come from Con mine above the 650-foot level. The deepest ore known is on the 950-foot level. Extension of mill capacity to 350 tons daily, with installation of a Hadsell mill, roaster, and leaching plant, were completed in April, 1942, but shortage of labour prevented full use. An average of 286 men were employed during the year. Ore reserves are not available for publication.

Negus mine is situated immediately south of the Con-Ryeon property and is the third largest gold producer in Northwest Territories, milling an average of 70 tons daily and recovering gold valued at over \$700,000 in 1942. No. 2 shaft was deepened from 734 to 800 feet during the year and lateral work therefrom amounted to about 2,910 feet, chiefly on levels at 300, 425, and 550 feet, and on a sub-level at 140 feet. About 87 men were employed. Ore reserves are reported to have increased during the year from 19,000 tons carrying 0.637 ounces of gold per ton to 27,500 tons carrying 0.82 ounces gold per ton.

Ptarmigan Mines Limited, controlled by Consolidated Mining and Smelting Company of Canada, Limited, are located about five miles northeast of Yellowknife, entered production in January, 1942. Up until the time the property closed down in September, 1942, due to labour shortage, about 125 tons were treated daily. The property was worked from a single shaft put down to a depth of 923 feet with levels at 150-foot intervals, and from about 5,760 feet of lateral workings, all completed prior to 1942. About 95 men were employed at the property. Ore reserves are not available for publication.

Ruth mine, owned and operated by Consolidated Mining and Smelting Company of Canada, Limited, lies about 60 miles east of Yellowknife and is connected by a winter road with Francois Bay on the east arm of Great Slave Lake. A 25-ton mill at the property operated from August 1 to 12. Ore milled represents about 70 per cent of the tonnage mined, the remainder being wall rock which is removed on a picking belt. All ore stoped has come from above the 100-foot level. A second level at 200 feet has been established. About 26 men were employed at the property during the milling period. Ore reserves are not available for publication.

The property of Thompson Landmark Gold Mines, Limited, lies about 50 miles east of Yellowknife by winter road, and is operated by Consolidated Mining and Smelting Company of Canada, Limited. During 1942 an average of about 103 tons were treated daily, averaging about 0.60 ounces gold a ton. No. 1 shaft on Kim vein was deepened from 325 to 650 feet while No. 2 shaft on Fraser vein remained at a depth of 834 feet. Both shafts are inclined at about 50 degrees and levels have been established at 150-foot intervals measured down the slope. About 1,470 feet of lateral underground work were completed, chiefly on the third and fourth levels. All ore mined in 1942 was taken from Fraser vein. About 95 men were employed on the average. Ore reserves were reported to be 63,639 tons averaging 0.59 ounces gold per ton, and 57,894 tons averaging 0.44 ounces at the beginning and end of 1942 respectively.

International Tungsten Mines, Limited (formerly Slave Lake Gold Mines, Limited) operating on Outpost Islands, Great Slave Lake, for the first eight months of 1942 recovered gold in bullion, copper concentrates, and tungsten concentrates. No. 1 shaft was deepened to include a new level at 525 feet; No. 2 shaft, situated about 2,000 feet to the west, was also extended. An average of 49 men were employed. Ore reserves are not available for publication.

## YUKON

(G. A. Jeckell—Controller, Yukon)

In the Dawson District, eleven grants were issued for lode mining and one hundred and nine claims were renewed. No work other than necessary representation work was done. Only one claim was renewed under the exemption granted by Order in Council P.C. 7750, dated September 2, 1942.

In the Mayo District, three hundred and thirty-eight claims were kept in good standing, and one hundred and thirty-two claims were held under twenty-one year leases. No claims were renewed under exemption granted by Order in Council P.C. 7750. The Treadwell Yukon Corp. carried on no mining operations in 1942 and the equipment of the company was largely disposed of. There was no lode mining activity in the District, aside from that done by three laymen on the "Sadie", "Elsa" and "Calumet" mineral claims. Promising discoveries of scheelite ore were made late in the fall of 1942 on Lynx Fork Creek, a tributary of Haggart Creek, and Cement and Scheelite Creeks in the Johnson Creek area, but no work was done on these prospects during the winter months.



Table 42.—Principal Statistics of the Entire Auriferous Quartz Mining Industry in Canada, for Years Specified

	Number of active operators	(c) Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	(b) Cost of process supplies used	Value of freight paid on shipments of ore, slag, etc.	Smelter and refinery treatment costs	Gross value of bullion, ore, concen- trates or residues shipped from mines (d)	Net value of bullion, ore, concen- trates or residues shipped from mines (d)
			\$		\$	\$	\$	\$	\$	\$	\$
1923.....	65	65	77,574,976	5,524	8,961,434	1,497,197	Data not available			(a) 25,021,837	Data not available
1929.....	80	85	135,166,105	8,660	14,258,733	2,579,481	Data not available			(a) 37,275,986	Data not available
1941—											
Nova Scotia.....	11	12	440,528	261	315,154	52,019	99,474	1,127	8,188	737,740	576,932
Quebec.....	88	93	42,741,363	6,386	11,502,849	1,854,389	3,877,009	87,177	474,890	31,386,312	25,092,847
Ontario.....	96	99	169,500,184	21,007	40,834,236	5,427,354	13,758,759	375,075	1,365,347	120,703,979	99,777,444
Manitoba.....	6	6	3,717,198	637	1,196,305	188,367	411,649	6,720	34,437	3,095,461	2,454,288
Saskatchewan.....	3	3	17,526	204	424,235	27,715	274,518	18,783	20,589	941,372	599,757
British Columbia.....	127	137	22,929,476	3,511	6,721,978	735,291	2,309,128	421,840	747,455	19,378,045	15,164,331
Northwest Territories.....	7	7	3,792,586	545	1,156,053	177,483	336,363	5,601	27,592	2,860,273	2,313,234
Yukon.....											
<b>Canada.....</b>	<b>338</b>	<b>357</b>	<b>243,138,861</b>	<b>32,551</b>	<b>62,156,810</b>	<b>(e) 8,462,618</b>	<b>21,066,990</b>	<b>916,323</b>	<b>2,678,508</b>	<b>179,103,182</b>	<b>145,978,833</b>
1942—											
Nova Scotia (f).....	6	6	318,438	104	159,502	34,857	37,921	1,782	4,166	370,225	291,499
Quebec.....	50	50	38,379,170	5,736	11,381,876	1,763,649	4,174,550	111,979	540,223	31,413,162	24,822,761
Ontario.....	73	75	175,289,245	16,579	35,079,849	4,833,382	11,143,741	192,431	1,159,232	104,472,446	87,143,640
Manitoba.....	8	8	6,011,285	483	1,060,211	173,162	323,867	6,306	31,933	3,294,248	2,748,980
Saskatchewan.....	3	3	17,100	113	231,088	12,303	170,050	1,785	5,720	533,768	343,910
British Columbia.....	77	78	17,901,610	2,439	5,058,944	549,696	1,524,526	402,705	564,992	16,629,819	13,587,900
Northwest Territories.....	6	7	7,324,149	579	1,418,302	248,717	547,867	24,341	39,978	3,860,275	2,999,372
Yukon.....										840	840
<b>Canada.....</b>	<b>223</b>	<b>227</b>	<b>245,240,997</b>	<b>26,030</b>	<b>54,388,872</b>	<b>7,615,766</b>	<b>17,927,522</b>	<b>741,329</b>	<b>2,346,264</b>	<b>160,564,783</b>	<b>131,938,902</b>

(a) Less freight and treatment charges.

(b) Explosives, chemicals, etc.

(c) Number of mines producing—1923—33; 1929—38; 1937—189; 1938—226; 1939—232; 1940—278; 1941—255; 1942—184.

(d) Value of bullion *produced* plus value of ore, concentrates, etc. *shipped*.

(e) Includes \$7,415,094 in salaries in 1941 and \$6,979,530 in 1942.

(f) Does not include data for Queens Mines Ltd.

NOTE.—Net Value represents the gross value less the cost of fuel and electricity, process supplies freight and treatment charges.

Table 43.—Principal Statistics Relating to Producers Only in the Auriferous Quartz Mining Industry in Canada, 1942

Province	Number of producing plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	(a) Cost of process supplies used	Value of freight paid on shipments of ore, slag, etc.	(b) Smelter and refinery treatment costs	Gross value of bullion, ore, concentrates or residues shipped from mines (d)	Net value of bullion, ore, concentrates or residues shipped from mines (d)
		\$		\$	\$	\$	\$	\$	\$	\$
Nova Scotia (f).....	4	315,863	102	158,249	30,558	36,469	1,782	4,166	370,225	297,250
Quebec.....	29	36,097,240	5,649	11,249,958	1,746,477	4,164,264	111,979	540,223	31,413,162	24,850,219
Ontario.....	67	174,324,939	16,511	34,944,578	4,814,236	11,122,630	192,431	1,159,252	104,472,446	87,183,897
Manitoba.....	7	6,011,285	493	1,060,211	173,162	323,867	6,306	31,933	3,284,248	2,748,980
Saskatchewan.....	3	17,100	113	231,088	12,303	170,050	1,785	5,720	533,768	343,910
British Columbia.....	67	17,679,569	2,377	4,971,227	545,203	1,515,120	402,705	564,992	16,629,819	13,601,799
Northwest Territories.....	7	7,324,149	579	1,418,302	248,717	547,867	24,341	39,978	3,860,275	2,999,372
Yukon.....									840	840
<b>Total Canada 1942.....</b>	<b>184</b>	<b>241,770,145</b>	<b>25,814</b>	<b>54,033,613</b>	<b>7,570,636</b>	<b>17,880,267</b>	<b>741,329</b>	<b>2,346,264</b>	<b>160,564,783</b>	<b>132,026,267</b>
<b>Total Canada 1941.....</b>	<b>255</b>	<b>231,635,573</b>	<b>31,850</b>	<b>61,063,035</b>	<b>(e) 8,336,180</b>	<b>20,721,498</b>	<b>916,323</b>	<b>2,678,508</b>	<b>179,103,182</b>	<b>146,450,673</b>
<b>Total Canada 1940.....</b>	<b>278</b>	<b>230,719,341</b>	<b>30,353</b>	<b>53,540,938</b>	<b>7,935,193</b>	<b>20,390,784</b>	<b>691,649</b>	<b>2,486,587</b>	<b>178,794,078</b>	<b>147,280,845</b>
<b>Total Canada 1939.....</b>	<b>232</b>	<b>214,326,080</b>	<b>29,001</b>	<b>50,891,920</b>	<b>(e) 7,701,026</b>	<b>19,001,782</b>	<b>694,165</b>	<b>2,249,312</b>	<b>160,014,172</b>	<b>130,367,887</b>

(a) Explosives, etc.

(b) Includes handling charges.

(c) Not recorded separately—included with data relating to non-ferrous smelting industry in British Columbia.

(d) Value of bullion produced plus value of ore, concentrates, etc. shipped.

(e) Includes \$7,214,016 in salaries in 1941; \$6,794,255 in 1940 and \$6,878,890 in 1942.

(f) Does not include data for Queens Mines Ltd.

Table 44.—Ores Mined and Milled, Crude Bullion Recovered and Crude Bullion and Concentrates Shipped in the Auriferous Quartz Mining Industry, 1942

	Nova Scotia	Quebec	Ontario	Manitoba	Saskat- chewan	British Columbia	Northwest Terri- tories	Yukon	Canada
Number of producing mines.....	4	29	67	7	3	67	7		184
Ore mined.....	28,896	4,802,534	11,067,105	285,615	291,787	1,100,005	146,934		17,722,866
Material discarded (sorted).....	7,248	166,914	419,242	918		64,117			658,439
Ore milled.....	18,885	4,349,768	10,651,204	284,607	291,808	1,040,864	174,306		16,820,442
Tailings retreated.....			5,176						5,176
Concentrates produced.....		5,212	75,917			34,979	52,587		168,695
Gold content of ores, slag, residues and concentrates shipped—									
To Foreign smelters.....			40,638			142,681	631		183,950
To Canadian smelters.....	69	37,157	2,486		4	8,914			48,630
Bullion bars shipped—									
Gold content.....	9,443	773,195	2,711,532	75,281	13,688	269,530	98,880		3,951,549
Silver content.....	298	152,332	470,177	11,487	5,745	70,906	22,442		733,387
Bullion produced by amalgamation.....	10,047	59,897	323,133	17,549		118,160	55,651		584,437
Bullion produced by cyanidation.....	12	967,125	2,958,096	86,465	21,618	207,087	55,352		4,295,785
Total Bullion Produced.....	10,069	1,027,022	3,281,229	104,014	21,618	325,247	111,033		4,880,222
Content of bullion bars produced—									
Gold.....	9,730	772,994	2,649,077	85,144	13,799	269,604	98,651		3,898,999
Silver.....	298	152,852	457,718	12,494	5,745	69,670	22,510		(a) 721,287
Gold value (standard).....	\$ 195,235	\$ 15,979,291	\$ 54,761,136	\$ 1,700,049	\$ 285,240	\$ 5,572,874	\$ 2,037,294		\$ 80,591,032
Silver value.....	\$ 110	\$ 64,451	\$ 182,733	\$ 4,931	\$ 2,233	\$ 28,627	\$ 8,786		\$ 289,877
Exchange premium on bullion bars produced.....	\$ 168,378	\$ 13,781,065	\$ 47,235,286	\$ 1,517,968	\$ 246,105	\$ 4,808,142	\$ 1,758,766		\$ 69,515,708
Value of ores, concentrates, slag and residues sold (shipped).....	\$ (b) 6,498	\$ 1,588,442	\$ 2,293,291	\$ 1,300	\$ (b) 190	\$ 6,223,176	\$ (b) 55,429	\$ 840	\$ 10,168,166
Total Gross Value of Production.....	\$ 370,225	\$ 31,413,162	\$ 104,472,446	\$ 3,284,243	\$ 533,768	\$ 16,629,519	\$ 3,860,275	\$ 840	\$ 160,564,783
Value of fuel, electricity and process supplies used, also freight on shipments, marketing, smelter and refining charges.....	\$ 78,726	\$ 6,530,401	\$ 17,328,806	\$ 535,268	\$ 189,858	\$ 3,041,919	\$ 890,903		\$ 28,625,881
Net Value of Production.....	\$ 291,499	\$ 24,822,761	\$ 87,143,640	\$ 2,748,980	\$ 343,910	\$ 13,587,600	\$ 2,999,372	\$ 840	\$ 131,938,902

(†) Value of tungsten concentrates recovered from crude alluvial material treated at Ottawa by the Bureau of Mines (shipments from the Ottawa mill are recorded as production.)

(a) In addition, there were 1,465,082 ounces of silver contained in concentrates, etc., shipped to smelters; see following table.

(b) Includes for convenience value of tungsten shipped from mines other than gold.



Table 45.—Ores, Concentrates, Slag, Etc., Shipped to Smelters from Canadian Gold Mines, 1929-1942

	To Canadian plants						To Foreign plants					
	Ores		Concentrates		Slag, residues, precipitates		Ores		Concentrates		Slag, residues, precipitates	
	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.	Tons	Gold content fine oz.
1929.....	27,278	14,327	268	305	1	24	90,871	82,096	2,370	3,638	6	304
1930.....	52,540	22,910	1,187	9,665	2	117	70,497	22,432	18,276	40,102	53	1,009
1931.....	51,579	21,756	3,120	16,805	12	1,505	24,224	11,870	20,271	48,743	47	1,308
1932.....	36,397	17,943	191	952	26	1,416	36,736	15,810	16,925	52,508	30	869
1933.....	30,096	14,882	490	1,349	55	6,279	3,292	2,293	29,111	76,601	34	1,392
1934.....	48,106	29,088	2,490	10,440	203	1,487	1,419	1,936	43,053	114,476	27	599
1935.....	18,239	7,008	7,045	35,958	58	6,231	1,242	2,840	46,050	90,167	25	11,310
1936.....	4,705	6,567	7,865	34,654	64	3,609	1,864	3,421	65,660	137,273	25	16,603
1937.....	37,126	9,649	6,981	21,865	130	2,060	2,516	8,108	62,987	163,781	74	912
1938.....	172,377	36,008	8,404	26,552	37	420	4,445	8,443	40,828	142,513	1,281	23,101
1939.....	271,666	47,114	7,747	24,184	797	4,507	3,853	8,930	39,530	112,126	235	26,631
1940.....	201,941	34,315	4,485	13,532	158	3,761	7,453	8,107	44,570	125,704	103	47,100
1941.....	202,943	38,380	1,628	7,492	369	4,444	7,453	11,222	43,855	122,619	115	56,183
1942.....	280,978	38,492	2,555	7,307	137	2,831	1,856	1,020	40,428	126,931	68	55,999
<b>Grand Total.....</b>	<b>1,435,971</b>	<b>339,039</b>	<b>54,456</b>	<b>210,060</b>	<b>2,949</b>	<b>38,691</b>	<b>257,221</b>	<b>189,338</b>	<b>513,914</b>	<b>1,363,182</b>	<b>2,123</b>	<b>243,678</b>

NOTE.—In addition, other material contained in ores shipped by gold mines to Canadian plants in 1942 included: Silver, 56,358 fine ounces; copper, 394,087 pounds; lead, 95,404 pounds; zinc, 55,754 pounds; crude  $As_2O_3$ , 5,291,796 pounds, and tungsten concentrates 166,732 pounds.

NOTE.—In addition, other material contained in ore exported by gold mines in 1942 included: Silver, 1,408,724 fine ounces; copper, 939,333 pounds; lead, 3,142,701 pounds; tungsten concentrates, 98,200 pounds; 7,114,751 pounds arsenic in ore (not paid for) and 2,148,000 pounds crude  $As_2O_3$  and 36,693 pounds cadmium.

Table 46.—Ores, Concentrates and Slag Shipped from the Auriferous Quartz Mines in Canada, 1942

	Ontario mines shipping		Quebec, Manitoba, Nova Scotia, Saskatchewan, Northwest Territories and Yukon mines shipping		British Columbia mines shipping		Canada
	To Canadian smelters	To Foreign smelters	To Canadian smelters	To Foreign smelters	To Canadian smelters	To Foreign smelters	
Number of mines.....	18	5	14	2	47	21	107
Tons of ore, etc., shipped.....	7,157	3,382	269,402	1,729	10,701	38,222	330,593
Metal content—							
Gold.....oz.	2,486	40,638	37,230	631	8,914	142,681	232,580
Silver.....oz.	7,551	861,182	3,509		45,298	547,542	1,465,082
Copper.....lb.	10,318	392,771	383,769	77,443		469,119	1,333,420
Lead (a).....lb.		1,288,530			98,404	1,854,171	3,241,105
Antimony (b).....lb.							
Arsenic.....lb.			5,291,796	2,148,000		7,114,751	14,554,647
Zinc.....lb.					55,754		55,754
Tungsten concentrates*.....lb.	110,193		6,989*	18,968	182,872*		325,022
Cadmium.....lb.						36,693	36,693
Value—Gross.....\$	241,036	2,052,255	1,574,362	78,337	554,434	5,667,742	10,168,166

(a) Some B.C. gold ores exported contain relatively large quantities of lead which are not reported by the producer; this lead is reported by the U.S. Smelters and 50 per cent is credited to Canadian lead production.

(b) Any antimony recovered from Canadian ores in Canadian smelters is not usually reported by mine operators.

(\*) WO<sub>3</sub> content: B.C., Nova Scotia and Manitoba content includes WO<sub>3</sub> recovered from all types of ores.

Table 47.—Specified Costs per Ton of Ore Milled at certain of the Principal Auriferous Quartz Mines in Canada, 1942

Name of Mine	Development and exploration (a)	Mining	Milling	General (b)	Total Cost per Ton (c)	
					1942	1941
QUEBEC	\$	\$	\$	\$	\$	\$
Beattie Gold Mines Ltd.....	0-270	0-676	1-018	0-381	2-345	2-334
Bellefleur Quebec Mines Ltd.....	1-697	3-696	1-250	1-949	8-592	7-825
Central Cadillac Mines Ltd.....	1-065	3-180	1-285	1-117	6-647	(h)
Cournoir Mining Co. Limited.....	1-533	3-721	1-034	0-360	6-648	(h)
Francœur Gold Mines Ltd.....	0-24	2-15	1-42	1-03	4-84	3-886
Lamaque Mining Co. Ltd.....	0-93	2-43	0-71	2-64	6-71	5-213
Lapa Cadillac Gold Mines Ltd.....	0-702	2-762	1-210	0-733	5-413	4-266
Malartic Gold Fields Ltd.....	1-056	2-802	0-773	0-743	5-434	4-545
McWatters Gold Mines Ltd.....	0-41	3-03	1-46	0-93	5-83 (d)	6-646
O'Brien Gold Mines Ltd.....	1-71	4-27	1-49	1-40	8-87	7-07
Pandora Limited (e).....	0-48	3-10	1-11	0-68	5-37	5-012
Perron Gold Mines Ltd.....	2-015	3-512	1-012	0-974	7-513	7-347
Powell Rouyn Gold Mines Ltd. (f).....	0-43	1-81	0-94	0-37	3-55	3-31 (g)
Senator-Rouyn Ltd.....	0-81	1-49	1-00	1-31	4-61	5-64
Sigma Mines (Quebec) Ltd.....	0-595	2-201	0-566	0-242	3-694	4-428
Siscoe Gold Mines Ltd.....	0-49	1-74	0-86	0-66	3-75	4-37
Sladen Malartic Mines Ltd.....	0-03	1-33	0-08	0-69	3-33	2-71
ONTARIO						
Porcupine District						
Bonetal Gold Mines Ltd.....	1-14	1-99	1-52	0-31 (i)	4-96	
Broulan Porcupine Mines Ltd.....	0-37	2-38	0-75	0-37	3-87	3-78
Buffalo Ankerite Gold Mines Ltd.....	0-66	2-88	0-74	0-96	5-24	(h)
Coniaurum Mines Ltd.....	1-96	3-45	0-79	1-146	7-66	7-30
Dome Mines Ltd.....	0-956	1-843	0-979	3-116	6-894	7-193
Faymar Porcupine Gold Mines Ltd (j).....	0-188	1-831	1-506	0-496	4-019	(h)
Hollinger Cons. Gold Mines Ltd. (Timmins).....	1-1049	3-0168	0-6022	1-8985	6-0824	6-5168
Hollinger Cons. Gold Mines Ltd. (Roes).....	0-1361	2-2763	1-7437	1-3290	5-4851	6-3125
Hoyle Gold Mines Ltd.....	0-13	1-67	0-95	0-67	3-42	(h)
McIntyre Porcupine Mines Ltd.....	0-069	4-062	0-870	1-887	7-488	7-375
Pamour Porcupine Mines Ltd.....	0-43	1-05	0-57	0-30	2-35	2-80
Paymaster Cons. Mines Ltd.....	1-15	3-17	1-14	0-50	5-90	6-02
Preston East Dome Mines Ltd.....	1-1483	3-0622	0-7555	0-7911	5-7871	(h)
Kirkland Lake District						
Bidgood Kirkland Gold Mines Ltd.....	1-61	4-79	1-53	1-16	9-09	10-48
Golden Gate Mining Co. Ltd. (k).....	1-77	3-31	2-13	1-67	8-88	9-58
Kirkland Lake Gold Mining Co. Ltd.....	1-43	4-01	1-31	3-08	10-43	8-40
Macassa Mines Ltd.....	0-87	3-64	1-25	4-15	9-91	10-07
Teck-Hughes Gold Mines Ltd.....		3-82 (l)	1-35	2-36	7-53	7-53
Toburn Gold Mines Ltd.....	2-26	4-09	2-87	(h)	(b)	9-70
Upper Canada Mines Ltd.....	1-44	4-04	0-99	3-04	9-51	9-05
Wright Hargreaves Mines Ltd.....		4-799	1-282	5-024	11-105	10-731

Table 47.—Specified Costs per Ton of Ore Milled at certain of the Principal Auriferous Quartz Mines in Canada, 1942—Concluded

Name of Mine	Development and exploration (a)	Mining	Milling	General (b)	Total Cost per Ton (c)	
					1942	1941
	\$	\$	\$	\$	\$	\$
Larder Lake District						
Chesterville Larder Lake Gold Mining Co. Ltd.	0.451	1.434	0.841	0.467	3.193	3.36
Kerr Addison Gold Mines Ltd.	0.636	1.330	0.656	0.387	2.989	4.08
Omega Gold Mines Ltd.	0.679	2.716	1.258	0.126	4.779	4.291
Yama Gold Mines Ltd.	(h)	(h)	(h)	(h)	(h)	11.25
Matachewan and Sudbury Districts						
Hollinger Cons. Gold Mines Ltd. (Young-Davidson)	0.1142	1.2170	0.8112	1.0494	3.1918	3.0813
Jerome Gold Mines Ltd.	0.233	2.518	0.821	0.928	4.500	4.302
Matachewan Cons. Mines Ltd.	0.134	1.225	0.712	0.355	2.426	3.601
ONTARIO—Concluded						
Thunder Bay and Kenora Districts						
Bankfield Consolidated Mines Ltd. (m)	0.0428	2.1760	1.4655	0.5363	4.5206	7.0192
Leitch Gold Mines Ltd.	3.77	7.08	2.44	(h)	(h)	18.73
MacLeod-Cockshutt Gold Mines Ltd.	1.0417	2.9323	1.0515	2.1211	7.7466	6.8268
Wendigo Gold Mines Ltd. (f)	1.37	4.36	2.39	1.29	9.41	9.34
Patricia District						
Central Patricia Gold Mines Ltd.	1.53	3.15	1.17	1.08	6.93	8.51
Hasaga Gold Mines Ltd.	0.38	1.4060	0.8321	1.2469	3.865	(h)
Jason Mines Ltd. (n)	1.874	4.941	1.682	1.636	10.183	9.389
McKenzie Red Lake Gold Mines Ltd.	0.99	3.38	1.21	1.00	6.58	6.77
McMarnac Red Lake Gold Mines Ltd.	1.760	2.700	1.780	1.684	7.924	(h)
Pickle Crow Gold Mines Ltd.	0.94	4.07	1.08	1.43	8.52	(h)
Uchi Gold Mines Ltd.	0.554	2.825	0.999	0.404	4.782	(h)
MANITOBA AND SASKATCHEWAN						
God's Lake Gold Mines Ltd.	1.85	2.43	1.56	1.80	7.64	9.21
Cons. Mining & Smelting Co. of Canada Ltd. (Box)	(h)	(h)	(h)	(h)	(h)	(h)
NORTHWEST TERRITORIES						
Con Mine	(h)	(h)	(h)	(h)	(h)	(h)
Rycon Mines Ltd.						
Negus Mines Ltd.						
Thompson-Lundmark Gold Mines Ltd.						
Ruth Mine						
Ptarmigan Mines Ltd.						
BRITISH COLUMBIA						
Bayonne Cons. Mines Ltd.	1.89	5.72	3.25	1.88	12.74	12.27
Bralorne Mines Ltd. (f)	1.02	3.16	0.77	1.52	6.47	7.34
Buena Vista Mining Co. Ltd. (p)	0.03	0.87	1.08	.....	1.98	2.28
Buccaneer Mines Ltd. (v)	(h)	(h)	(h)	(h)	(h)	(h)
Cariboo Gold Quartz Mining Co. Ltd.	1.51	6.94	1.62	0.84	10.91	9.351
Gold Belt Mining Co. Ltd.	0.75	2.16	1.49	0.84	5.24	8.30
Hedley Mascot Gold Mines Ltd. (f)	0.57	2.40	2.16	3.31	8.44	7.74
Island Mountain Mines Co. Ltd.	2.88	4.38	2.23	2.25	11.74	9.37
Kootenay Belle Gold Mines Ltd. (q)	0.18	4.03	1.46	2.08	7.75	11.69
Livingstone Mining Co. Ltd.	.....	7.50	4.50 (r)	3.00	15.00	19.50
Musketeer Mines Ltd. (s)	1.40	2.73	2.49	2.05	8.67	(h)
Mount Zeballos Gold Mines Ltd. (f) (t)	2.02	4.22	3.01	4.50	13.75	13.62
Pioneer Mine Ltd.	3.23	3.45	1.48	5.35	13.51	19.17
Pioneer Gold Mines of B.C. Ltd.	1.000	4.358	1.300	3.616	10.174	10.817
Sheep Creek Gold Mines Ltd.	0.665	3.137	1.602	1.079	6.493	7.434
Spud Valley Gold Mines Ltd. (u) (f)	0.584	5.587	2.369	2.881	11.421	12.91
Surf Inlet Cons. Gold Mines Ltd. (w)	3.00	3.48	1.56	5.24	13.28	8.03

- (a) Exclusive of outside exploration.  
 (b) Marketing, head office, taxes, etc.  
 (c) Depreciation not included.  
 (d) Exclusive taxes and head office.  
 (e) Closed down August 31.  
 (f) Produced bullion and also shipped ore or concentrates to smelter.  
 (g) Exclusive of taxes.  
 (h) Not available for publication.  
 (i) Milled at Brouhan mine.  
 (j) Closed down May 31.  
 (k) Closed down April 30.  
 (l) Includes development.

- (m) Closed down August 31.  
 (n) Closed down October 15.  
 (o) Closed down August 31.  
 (p) Closed down April 5.  
 (q) Milling ceased November 28.  
 (r) Smelting and cartage—all crude ore smelted.  
 (s) Closed down July 23.  
 (t) Closed down April 30.  
 (u) Closed down June 30.  
 (v) Closed down August 11.  
 (w) Shipped to smelter.



Table 48.—Certain Data Relating to the Production of Gold by the Entire Auriferous Quartz Mining Industry in Canada, 1928-1942

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter-refinery treatment on ores and bullion shipped per ounce of gold produced	Total of specified costs
	Ounces	\$	\$	\$	\$	\$
1928.....	206	1.47	7.45	Information not available	Information not available	.....
1929.....	219	1.46	7.18	.....	.....	.....
1930.....	237	1.25	6.63	.....	.....	.....
1931 (a).....	250	1.19	6.50	1928 to 1934	1928 to 1934	.....
1932.....	255	1.21	6.31	.....	.....	.....
1933 (b).....	207	1.36	7.45	.....	.....	.....
1934 (c).....	154	1.71	9.64	.....	.....	.....
1935.....	146	1.89	10.48	4.38	.....	16.75
1936.....	137	1.98	11.32	4.46	.....	17.76
1937.....	132	2.10	12.18	4.65	0.33 (d)	19.26
1938.....	150	1.85	10.65	4.53	0.56	17.89
1939.....	157	1.81	10.69	4.45	0.67	17.62
1940.....	161	1.76	10.48	4.49	0.69	17.42
1941.....	155	1.82	11.66	4.53	0.77	18.68
1942.....	176	1.84	11.47	4.54	0.75	18.40

(a) Equalization exchange premiums paid by the Dominion Government to gold miners (Great Britain goes off gold standard).

(b) United States goes off gold standard.

(c) United States gold dollar reduced in weight from 25.8 to 15.5/21 grains, 0.9 fine.

(d) Not including Mint charges and marketing prior to 1938.

NOTE.—The data contained in the foregoing table have been compiled from reports received from both producing and non-producing (exploring and developing) operators in the auriferous quartz mining industry. This fact should be noted if the information is to be construed or employed as possible criteria for technological or other statistical study. The trends revealed are not to be interpreted as entirely reflecting "Cause and effect" in the operation of producing mines only but rather as indices of change in the industry as a whole. For data relating to producers only, see following Table.

Table 49.—Certain Data Relating to the Production of Gold by Producers Only in the Auriferous Quartz Mining Industry in Canada, 1931, 1939-1942

Year	Ounces of gold produced per wage-earner year	Cost of fuel and electricity per ounce of gold produced	Cost of wages per ounce of gold produced	Cost of explosives and other process supplies used per ounce of gold produced	Cost of freight and smelter-refinery treatment of ores and bullion shipped per ounce of gold produced	Total of specified costs
	Ounces	\$	\$	\$	\$	\$
1931.....	250	1.19	6.38	(x)	(x)	.....
1939.....	164	1.76	10.25	4.33	0.67	17.01
1940.....	165	1.72	10.20	4.41	0.69	17.02
1941.....	158	1.79	11.37	4.46	0.77	18.39
1942.....	177	1.83	11.41	4.33	0.75	18.32

(x) Data not available.

Table 50.—Ores Mined and Treated by Auriferous Quartz Mining Industry, for Years Specified

Year	Ore hoisted	Ore milled (c)	Crude ore shipped to smelters (d)	Low grade sorted out	Tailings retreated	Gold recovered as bullion (b)	Gold in crude ore shipped	Gold in concentrates, slag, etc., shipped
	Tons	Tons	Tons	Tons	Tons	Fine oz.	Fine oz.	Fine oz.
1925.....	3,046,460	3,527,021	118,436 (a)	.....	48,475	1,452,294	97,011	34,131
1930.....	4,472,803	4,306,809	123,037 (a)	.....	37,095	1,782,556	45,342	56,893
1935.....	8,832,901	8,888,129	19,481 (a)	.....	57,798	2,492,145	9,848	143,666
1936.....	10,694,208	10,504,181	6,569 (a)	.....	33,814	2,903,063	9,988	192,439
1937.....	12,388,489	11,880,323	39,642	457,622	97,710	3,283,795	17,757	188,618
1938.....	14,749,649	14,158,555	176,822	528,696	64,926	3,810,642	44,451	191,586
1939.....	17,105,744	16,150,173	275,519	660,578	18,426	4,160,352	56,044	167,448
1940.....	18,086,306	18,083,439	209,394	757,538	180,311	4,386,073	42,422	190,157
1941.....	20,031,736	19,026,273	210,396	936,003	480,289	4,405,986	49,602	190,738 (d)
1942.....	17,722,866	16,820,442	282,334	658,439	5,176	3,898,999	39,512	193,068 (d)

(a) Not available.

(b) Content of bullion shipped 1925-1935; 1936-41 content of bullion produced.

(c) In addition, a relatively small tonnage of unclassified ores was shipped.

(d) + (d) = total crude ore treated (not including sorted material).

(d) Gold in material shipped by gold mines to other gold mines for treatment is included under bullion.

**Table 51.—Gold Content of Bullion, Ores, Concentrates, Etc., Shipped and Ore Milled by Auriferous Quartz Mines in Canada, with Average Price of Gold in Canadian Funds, 1929-1942**

Year	Tonnage treated (*)	Gold content fine oz. (†)	Oz. of fine gold per ton	Average price of gold \$
1929.....	4,371,143	1,771,526	41	20.67
1930.....	4,429,906	1,884,791	43	20.07
1931.....	5,526,379	2,271,278	41	21.55
1932.....	5,997,492	2,502,327	42	23.47
1933.....	6,480,164	2,455,365	38	28.60
1934.....	7,524,803	2,490,513	33	34.50
1935.....	8,907,610	2,645,659	30	35.19
1936.....	10,510,750	3,095,427	29	35.03
1937.....	11,919,965(a)	3,490,170	29	34.99
1938.....	14,335,377(a)	4,046,679	28	35.17
1939.....	16,425,692(a)	4,383,844	27	36.14
1940.....	18,292,833(a)	4,619,252	25	38.50
1941.....	19,236,669(a)	4,646,326	24	38.80
1942.....	17,102,776(a)	4,131,579	24	38.50

(\*) Does not include tailings retreated, but includes ore milled plus crude ore shipped to smelters.

(†) Relatively small quantity of gold contained in concentrates, slag, etc., shipped and in cyanide solution in circuit may have originated in ores treated during the previous year; from 1937 represents metal content of total bullion produced plus metal in ores or concentrates shipped to smelters.

(a) Material discarded by sorting not included.

**Table 52.—Milling Capacity of Producing Canadian Gold Mines, 1935-1942 (Tons of 2,000 pounds per 24 hours)**

Year	Nova Scotia	Quebec	Ontario	Manitoba	Saskatchewan	British Columbia	Northwest Territories
1935.....	292	3,368	20,921	1,465	.....	2,990	.....
1936.....	713	4,514	22,639	1,000	.....	4,120	.....
1937.....	595	6,090	25,249	975	30	3,915	.....
1938.....	542	8,217	30,097	875	1,000	4,590	.....
1939.....	582	9,580	33,324	885	1,000	4,417	.....
1940.....	450	11,215	35,030	690	1,200	4,255	275
1941.....	319	12,654	37,416	990	1,355	4,610	510
1942.....	247	14,330	36,135	903	1,202	4,303	710

**Table 53.—Principal Statistics Relative to All Ontario Gold Mines by Areas (\*) 1941-1942**

Camp or district	Number of producers	Ore (†) treated	Total gold recovered	Average ounces per ton recovered	Employees	Salaries and wages paid	Cost of fuel, electricity and process supplies
1941		Tons	Fine oz.		No.	\$	\$
Porcupine.....	21	5,974,447	1,439,148	24	9,746	19,230,445	8,110,392
Kirkland Lake.....	12	(b) 1,900,481	743,123	39	4,359	8,253,004	3,836,056
Larder Lake.....	4	1,124,221	205,766	18	1,135	2,347,675	1,218,731
Matachewan.....	2	543,677	58,683	11	521	999,239	662,812
Sudbury.....	4	148,119	23,420	15	468	913,103	324,611
Algoma.....	3	89,432	11,555	13	166	231,933	143,423
Thunder Bay.....	16	(a) 823,954	243,321	29	1,883	3,611,904	1,930,080
Rainy River and Kenora.....	7	53,459	18,162	34	231	381,904	157,196
Patricia.....	13	1,569,016	372,727	24	2,490	4,790,987	2,797,612
Eastern Ontario.....	1	300	60	20	8	5,052	3,400
<b>Total.....</b>	<b>83</b>	<b>12,227,706</b>	<b>3,115,975</b>	<b>25</b>	<b>21,007</b>	<b>46,834,236</b>	<b>19,186,113</b>
1942							
Porcupine.....	20	5,624,554	1,308,291	23	8,499	18,209,637	7,501,441
Kirkland Lake.....	10	1,309,361	543,284	41	2,946	6,028,485	2,812,489
Larder Lake.....	4	1,166,209	214,751	18	1,057	2,119,060	1,033,205
Matachewan.....	2	611,982	59,085	10	392	810,796	621,333
Sudbury.....	2	200,011	33,414	17	339	687,691	269,285
Algoma.....	3	52,125	8,804	16	98	197,350	94,898
Thunder Bay.....	10	662,816	218,430	24	1,366	3,061,671	1,790,286
Rainy River and Kenora.....	5	36,449	12,039	25	125	243,690	93,348
Patricia.....	11	987,697	294,103	23	1,754	3,721,469	1,760,838
Eastern Ontario.....							
<b>Total.....</b>	<b>67</b>	<b>10,651,204</b>	<b>2,692,201</b>	<b>24</b>	<b>16,578</b>	<b>35,079,849</b>	<b>15,977,123</b>

(a) In addition, 588 tons tailings were treated.

(b) In addition, 5,176 tons tailings were retreated in 1942, and 407,823 tons in 1941.

(\*) Includes data for all active properties.

(†) Does not include low-grade discarded by sorting, but includes ore milled or smelted.

Table 54.—Capital Employed in the Auriferous Quartz Gold Mining Industry in Canada, 1942

Province	Mines		Capital employed as represented by:					
			Present cash value of the land (excluding minerals)	Present value of buildings, machinery, tools, equipment, etc.	Inventory value of materials on hand, ore in process, fuels, etc.	Inventory value of finished products on hand	Operating capital (cash bills and accounts receivable, prepaid expenses, etc.)	Total
	Operating	Producing						
	Number	Number	\$	\$	\$	\$	\$	\$
Nova Scotia.....	6	4	7,495	267,706	25,105	4,300	13,832	318,438
Quebec.....	50	29	9,438,977	14,618,240	3,427,277	919,441	9,975,235	38,379,170
Ontario.....	75	67	33,125,446	78,541,332	11,097,094	5,261,039	47,264,334	175,289,245
Manitoba.....	8	7	1,871,314	2,285,095	585,014	54,000	1,215,862	6,011,285
Saskatchewan.....	3	3	-	15,000	2,000	-	100	17,100
British Columbia.....	78	67	1,654,963	5,506,781	1,536,001	639,194	8,364,671	17,901,610
Yukon.....								
Northwest Territories (a).....	7	7	4,586,905	1,602,470	651,113	160,665	322,927	7,324,149
Total.....	227	184	50,885,160	102,836,633	17,323,604	7,638,639	67,156,961	245,240,997

(a) Capital of one producing mine included with non-ferrous smelting industries in British Columbia.

Table 55.—Employees, Salaries and Wages in the Auriferous Quartz Mining Industry in Canada, by Provinces, 1942

Province	Number of employees				Total employees	Salaries and wages
	On salary	Wage-earners				
		Surface	Under-ground	Mill		
Nova Scotia.....	12	22	62	8	104	\$ 158,602
Quebec.....	608	1,211	3,425	492	5,736	11,381,876
Ontario.....	1,318	(b) 3,811	10,206	1,241	16,576	35,079,849
Manitoba.....	70	183	189	31	493	1,060,211
Saskatchewan.....	32	25	40	16	113	231,088
British Columbia (a).....	377	469	1,336	257	2,439	5,058,944
Northwest Territories.....	96	203	221	59	579	1,418,302
Yukon.....						
Canada.....	2,513	5,934	15,479	2,104	26,030	54,388,872

(a) In B.C. there are included with mill employees 19 men working in a mill underground. This was the only underground mill reported in Canada and closed in 1942.

(b) Includes 61 females; corresponding data for other provinces not available.

Table 56.—Wage-Earners, by Months, in the Entire Auriferous Quartz Mining Industry, 1931, 1939, 1941 and 1942

Month	1931	1939	1941	1942				Total
	Total	Total	Total	Surface		Under-ground	Mill	
				Male	Female	Male	Male	
January.....	8,273	27,402	29,772	6,600	39	17,858	2,233	26,730
February.....	8,482	27,278	29,765	6,507	52	18,014	2,239	26,812
March.....	8,681	28,941	29,783	6,385	49	17,793	2,224	26,451
April.....	8,746	26,767	29,833	6,303	50	17,536	2,266	26,155
May.....	9,030	27,669	29,869	6,182	57	16,842	2,244	25,325
June.....	9,319	28,238	29,807	6,177	54	16,467	2,240	24,938
July.....	9,345	28,537	30,310	6,059	79	15,369	2,200	23,687
August.....	9,285	28,743	30,158	5,676	75	14,043	2,089	21,883
September.....	9,391	28,577	30,605	5,443	65	13,754	1,984	21,246
October.....	9,524	28,021	30,870	5,210	66	12,827	1,921	20,021
November.....	9,496	28,402	29,567	5,018	66	12,694	1,914	19,692
December.....	9,323	27,516	27,566	4,800	71	12,435	1,886	19,192



## THE COPPER-GOLD-SILVER MINING INDUSTRY, 1942

The mining of "copper-gold-silver" ores in Canada during 1942 was confined to the provinces of Quebec, Manitoba, Saskatchewan and British Columbia. It is to be noted that in addition to the copper recovered from ores of this type there is a very large and increasing quantity of the metal obtained in the smelting and refining of the copper-nickel ores mined in the Sudbury area of Ontario, increasing quantities of gold and silver are also being extracted from these copper-nickel ores. General statistics relating to labour, etc., in the nickel-copper industry are not included in this report.

The mining of copper-gold-silver ores, particularly in Western Canada, was adversely affected in 1942 by a shortage of skilled labour resulting largely from the enlistment of personnel in the armed forces.

Mining operations conducted on Canadian copper-gold-silver deposits during 1942 were reported by 26 firms compared with 21 in 1941. The gross value of crude ore, concentrates, etc., shipped in 1942 from the mines and mills to smelters was estimated at \$69,147,790; the cost of fuel, purchased electricity, process supplies, freight and smelter treatment totalled \$35,459,148 and the net value of shipments was estimated at \$33,688,642.

The gross value of ores shipped by firms which both mine and smelt their own ores is often not reported. This necessitates considerable estimating in determining gross and net values for mine shipments. However, errors or possible incongruities resulting from this are largely compensated for in determining the value added at the smelters and refineries. This added value is credited to the non-ferrous smelting and refining industry and is also included in the total net value of production of the entire Canadian mining industry. This fact should be noted in making any statistical study of the annual production values shown for shipments from copper-gold-silver mines.

The statistics as herein shown under the copper-gold-silver mining industry refer only to mines and mills and are not inclusive of data pertaining to the operation of smelters and refineries. Statistics relating to the reduction of non-ferrous ores are recorded under the non-ferrous smelting and refining industry.

**Quebec.**—Noranda Mines Ltd. reported that production at the Horne mine in 1942 was at full capacity as permitted by sound and safe mining practice and limitations of the capacity of the smelter and of the customs refinery operated by its subsidiary, Canadian Copper Refiners Limited. The estimated copper and gold content of the ore indicated above the 2,975 foot level, as of January 1, 1943, is sufficient to maintain production of those metals for fifteen years at the 1942 rate of production.

Waite Amulet Mines Ltd., in its annual report, stated that the concentrator has, for the second time, been increased by adding another 300-ton extension. This last increase became effective on February 1, 1943, raising the capacity of the concentrator to 1,800 tons per day. This additional capacity will be utilized principally for the production of zinc concentrate for shipment to smelters in the United States. Currently, approximately 1,200 tons of ore are being extracted from the Amulet Dufault lower "A" orebody owned by the company's subsidiary, Amulet Dufault Mines Ltd., 300 tons from the Waite mine and 300 tons from the "C" orebody in the Amulet section. Surface drilling at the Waite mine exhausted all known favourable possibilities of finding more ore in the immediate vicinity of the open pit and of the known orebodies. Further drilling will be necessary to trace the downward extension of the mineralized zone on the 12th level. Exploratory drilling of the "C" orebody was started underground in August to determine the limits of the ore for mining purposes. An estimated 15,000 tons of copper, high zinc ore was added to the ore reserves. There are indications that the "C" orebody will give an increased tonnage of zinc-bearing ore. In the Amulet Dufault section all of the 6,000 feet of exploratory diamond drilling completed during the year was used to check on irregularities in the Lower "A" orebody contact. A total of 212,038 tons was added to the Lower "A" orebody reserves. Two new stopes were brought into production during the year. One stope will supply high copper, low zinc ore and the other will supply low copper, high zinc ore.

Normetal Mining Corporation Limited, in its 1942 annual report, stated that the plant extension, on which construction was started in 1941, was put in operation, and as a result tonnage treated was the highest in the mine's history. The total production of copper and zinc concentrates was shipped, the copper to Noranda smelter, the zinc to smelters in the United States. Of the total tonnage of ore broken, 23.5 per cent was supplied by development and stope preparatory work, 37.5 per cent by sub-level stopes, and 39 per cent by fill stopes. Although no new levels were opened up during the year, ore reserves calculated to the 2,000-foot level declined by only 10 per cent as compared with the reserve at the end of 1941. Ore added during the year included that developed on levels partially opened up previously, zinc ore in No. 3 orebody now considered as mineable, and overbreak beyond previously estimated limits. The average grade of copper in the total reserve was substantially the same as that of the previous year, while grade of zinc increased by approximately 30 per cent. Operating cost at \$4.90 per ton milled was 78 cents per ton higher than in 1941. A shortage of men prevailed throughout the year, to an extent to interfere with required development work, and at times was even responsible for a reduction in output.

Aldermac Copper Corp. Ltd., operated continuously throughout 1942. Copper concentrates were shipped to the Noranda smelter while the greater part of the iron pyrites output was exported to the United States. It was reported early in 1943 that ore reserves were very limited and that the company was now interested in the exploration and development of a recently discovered copper-bearing deposit located near Lennoxville in the south-eastern part of the province.

**Manitoba and Saskatchewan.**—The Hudson Bay Mining and Smelting Co. Ltd. reported that all the ore milled during 1942 was hoisted from underground, 56 per cent coming through the north main shaft, and 44 per cent through the south main shaft. Production of copper, zinc, gold and silver was the highest on record for any year. The tonnage of ore mined and hoisted from underground was the largest on record. Work in the open pit was confined to the mining of former railroad berms or benches and floor pillars. The year's production of slab zinc was an all-time high. The capacity of the copper smelter was further increased during the year. Contracts for the sale of copper and zinc, at substantially pre-war prices, entered into originally in 1939 with the British Ministry of Supply, were extended without change for another year and a similar arrangement arrived at with the Canadian Government. Emergency Metals Limited, a wholly owned subsidiary, was formed to mine and mill, as a war measure, the remaining portion of an ore body developed through the old Mandy shaft, located approximately four miles southeast of the company's main operations and metallurgical plants. The average number of employees at Flin Flon during 1942 was 2,069; the labour shortage during part of the year was such that underground development work had to be drastically cut down; women are now being employed on various types of work in the metallurgical and other surface plants and over 200 farmers worked for the company during the winter.

Sherritt-Gordon Mines, Limited, reported that although the tonnage treated in the mill during 1942 constituted a record, the output of copper was slightly below that of the preceding year, due to lower grade of mill feed. Costs per ton of ore milled (\$2.347 cost of concentrate at Sherridon) were practically the same as in the previous year but costs per pound of copper produced showed an increase, for the reason given above (5.750 cents per pound in concentrate—Sherridon). Production from the East mine was resumed in the spring and continued on an increased scale throughout the year, by which time a substantial proportion of the entire output was coming from this zinc reserve. Little new ore was found during the year, but in various parts of the mine stopes yielded considerably greater tonnage than was expected. Copper concentrates continued to be smelted at Flin Flon and zinc concentrates were shipped to the Metals Reserve Company in United States. In October the National Selective Service started sending in Saskatchewan farmers for winter work.

**British Columbia.**—At Mt. Sicker, in the Chemainus district of the Victoria Mining Division, development work was conducted on a copper-zinc bearing deposit by Twin "J" Mines Limited, a subsidiary of Jason Mines Limited. Operations included diamond drilling and construction of a mill.



Britannia Mining & Smelting Company Limited carried on mining and milling operations at Britannia Beach throughout the entire year. Copper concentrates were exported to the United States and iron pyrites shipments went to both Canadian and United States firms. The company reported that a reduction of approximately 50 per cent in the scale of operations became necessary due to an acute labour shortage. Late in 1942, in cooperation with the Dominion Employment Service, a considerable number of men were obtained, making possible a slight increase in production. To meet the situation a contract was arranged with Wartime Metals Corporation, a company wholly owned by the Canadian Government, under the terms of which all Britannia products are sold for their account and the company guaranteed against loss and allowed a small profit. Exploratory work below the main haulage adit continued to produce encouraging results.

At Copper Mountain the mill and mine of the Granby Consolidated Mining, Smelting & Power Company Ltd. were operated throughout the year. Copper concentrates were shipped to Tacoma, Wash., for smelting. Labour shortages were experienced and it was reported that the company completed an agreement with the Canadian Government to co-operate in increasing production.

Operations conducted at Anyox in 1942 by Anyox Metals Ltd., consisted solely of diamond drilling, experimental work and camp rehabilitation. The camp was completely razed by fire on July 1.

**Table 57.—Capital Employed in the Copper-Gold-Silver Mining Industry in Canada, 1942 (a)**

Province	Mines		Present cash value of the land (excluding minerals)	Present value of buildings, machinery, tools, equipment, etc.	Inventory value of materials on hand, ore in process, fuels, etc.	Inventory value of finished products on hand	Operating capital (cash bills and accounts receivable, prepaid expenses, etc.)	Total
	Operating	Producing						
			\$	\$	\$	\$	\$	\$
Quebec.....	14	6	15,927,515	10,228,433	948,573	1,809,510	10,435,581	39,319,612
Ontario.....	3		27,925	9,800			464	38,189
Manitoba.....	4	2	1,405,409	3,205,578	657,859	976,525	4,372,438	10,617,800
Saskatchewan.....	(b) 1	(b) 1	5,621,236	6,504,335	1,356,596	108,851	13,292,894	26,793,913
British Columbia*	6	4	290,855	2,852,365	1,064,632	440,494	3,328,375	7,976,721
<b>Total.....</b>	<b>28</b>	<b>13</b>	<b>23,272,940</b>	<b>22,890,511</b>	<b>4,077,660</b>	<b>3,335,380</b>	<b>31,339,752</b>	<b>84,776,243</b>

\* Reports from small lusers shipping from deposits of the Consolidated Mining and Smelting Company of Canada, Ltd., in the Rossland district, are compiled as one producer; statistics relating to employment, etc., at these properties are not available.

(a) Not including smelters and refineries.

(b) 1 firm is also included in Manitoba.

**Table 58.—Employees, Salaries and Wages in the Copper-Gold-Silver Mining Industry in Canada, by Provinces, 1942\***

Province	Number of employees					Salaries and wages
	On salary	Wage-earners			Total employees	
		Surface	Under-ground	Mill		
						\$
Quebec.....	113	512	1,126	250	2,001	3,686,099
Ontario.....	4	4			8	7,139
Manitoba.....	93	282	460	79	914	1,904,458
Saskatchewan.....	216	449	501	142	1,308	2,683,942
British Columbia.....	204	366	589	256	1,415	2,815,774
Canada.....	630	1,613	2,676	727	5,646	11,097,413

\* Not including smelters and refineries.



Table 59.—Wage-Earners, by Months, in the Copper-Gold-Silver Mining Industry in Canada, 1942\*

Month	Surface	Under-ground	Mill	Total
January.....	1,607	2,989	724	5,320
February.....	1,600	2,923	745	5,268
March.....	1,543	2,784	731	5,058
April.....	1,580	2,651	726	4,957
May.....	1,588	2,572	735	4,895
June.....	1,668	2,555	723	4,946
July.....	1,614	2,574	720	4,917
August.....	1,578	2,433	734	4,745
September.....	1,572	2,419	698	4,689
October.....	1,632	2,528	710	4,870
November.....	1,665	2,792	712	5,169
December.....	1,666	2,890	754	5,310
Average.....	1,613	2,676	727	5,016

\* Smelter employees not included.

Table 60.—Dividends Paid by Specified Copper-Gold-Silver Mining Companies

Company	Dividend 1942	Total Dividends Paid to end of 1942
	\$	\$
<b>QUEBEC—</b>		
Aldermac Copper Corporation Ltd.....	46,220	46,220
Lake Dufault Mines Ltd.....	8,959,098	80,295,836
Noranda Mines Ltd.....		
Normetal Mining Corporation Ltd.....	1,320,000	2,970,000
Waite Amulet Mines Ltd. (Waite Mine).....	1,408,000	2,464,000
Waite Amulet Mines Ltd. (Amulet Dufault Mines Ltd.).....		
<b>MANITOBA—</b>		
Emergency Metals Ltd.....	5,515,946	35,853,649
Hudson Bay Mining and Smelting Co. Ltd.†.....	587,443	1,762,330
Sherritt-Gordon Mines Ltd.....		
<b>BRITISH COLUMBIA—</b>		
Britannia Mining and Smelting Co. Ltd.....	266,701	11,327,516
The Granby Consolidated Mining, Smelting and Power Co. Ltd.....	315,163	11,465,005
Twin "J" Mines Ltd.....		

† Manitoba-Saskatchewan boundary passes through property.

Table 61.—Specified Data Relating to the Copper-Gold-Silver Mining Industry, 1929-1942\*

Year	Wage- earners	Wages paid	Salaried employees	Salaries paid	Total salaries and wages
	No.	\$	No.	\$	\$
<b>PRODUCING MINES—</b>					
1929.....	3,036	5,465,871	174	462,268	5,928,139
1930.....	4,634	7,394,741	195	536,482	7,931,223
1931.....	2,901	4,140,890	160	465,603	4,606,493
1932.....	2,900	3,392,322	131	328,079	3,720,401
1933.....	2,690	3,550,417	123	275,650	3,826,067
1934.....	2,878	4,357,517	168	413,127	4,770,644
1935.....	2,946	4,144,095	207	473,988	4,618,083
1936.....	3,328	4,608,774	308	708,200	5,316,974
1937.....	4,618	7,019,595	436	1,058,082	8,077,677
1938.....	5,051	7,694,141	418	1,075,014	8,769,155
1939.....	5,401	8,498,360	470	1,126,561	9,624,921
1940.....	5,605	9,434,060	479	1,313,509	10,747,569
1941.....	5,324	9,249,863	524	1,428,903	10,678,856
1942.....	4,957	9,455,565	616	1,520,803	10,985,458
<b>Total.....</b>		88,496,211		11,195,449	99,691,660
<b>NON-PRODUCING MINES—</b>					
1929.....	1,777	2,132,279	256	438,337	2,570,616
1930.....	775	1,037,743	90	187,793	1,225,536
1931.....	224	256,204	66	95,820	351,824
1932.....	33	27,439	12	22,787	50,226
1933.....	92	81,998	36	30,713	112,711
1934.....	87	65,485	36	33,672	99,157
1935.....	248	367,685	29	54,428	422,113
1936.....	84	119,084	18	37,267	156,351
1937.....	84	126,155	26	36,782	162,937
1938.....	93	129,246	15	23,064	152,310
1939.....	186	256,909	26	38,071	295,670
1940.....	18	18,746	13	11,512	30,258
1941.....	12	10,449	6	5,718	16,167
1942.....	59	94,021	14	17,933	111,954
<b>Total.....</b>		1,223,533		1,034,297	5,757,830

(\*) Not including smelters or refineries.

Table 62.—Specified Data Relating to the Copper-Gold-Silver Mining Industry, 1929-1942 (†)

Year	Producing Mines						Non-producing mines			
	Electricity purchased	Total fuel and power used	Hydraulic turbines used	Process supplies used	Freight on ore, etc. shipped	Smelter treatment charges (x)	Electricity purchased	Total fuel and power used	Hydraulic turbines used	Process supplies used
	k.w.h.	\$	h.p.	\$	\$	\$	k.w.h.	\$	h.p.	\$
1929.....	91,622,530	785,395	9,300	(a)	(a)	(a)	3,155,653	249,738	1,275	(a)
1930.....	124,395,046	1,173,447	9,300	(a)	(a)	(a)	731,964	98,815	690	(a)
1931.....	225,088,928	709,614	9,300	(a)	(a)	(a)	311,800	16,888	1,159	(a)
1932.....	127,331,868	446,736	9,300	(a)	(a)	(a)	1,584,700	16,727	609	(a)
1933.....	68,188,303	387,312	9,300	(a)	(a)	(a)	453,000	17,313	609	(a)
1934.....	90,097,659	526,941	9,300	(a)	(a)	(a)	1,108,500	15,729	.....	(a)
1935.....	91,828,181	520,724	9,300	2,892,443	(a)	(a)	1,108,500	13,428	.....	6,689
1936.....	71,134,263	441,132	9,300	3,127,527	(a)	(a)	2,253,803	54,711	.....	28,698
1937.....	199,045,597	871,002	9,300	4,808,504	344,818	9,735,199	.....	30,086	.....	43,341
1938.....	214,930,438	1,049,325	9,300	4,746,830	960,791	13,639,953	5,501,100	50,959	609	96,833
1939.....	247,180,650	1,203,878	8,900	5,539,545	1,582,350	16,587,402	2,119,520	19,645	1,250	46,071
1940.....	270,601,445	1,297,454	8,900	5,812,178	882,633	17,378,092	.....	.....	.....	.....
1941.....	251,488,789	1,264,533	10,520	5,504,530	1,873,728	25,964,492	.....	34	.....	1,425
1942.....	259,238,497	1,334,353	10,150	5,690,431	1,932,958	28,401,998	108,000	4,384	.....	13,024
<b>Total.....</b>	<b>2,332,172,194</b>	<b>12,611,846</b>	.....	<b>38,121,988</b>	<b>7,577,278</b>	<b>111,767,136</b>	<b>18,436,540</b>	<b>588,457</b>	.....	<b>236,681</b>

(a) Not available.

(x) Partly conjectural.

(†) Non including smelters or refineries.

Table 63.—Shipments from Copper-Gold-Silver Mines in Canada, 1941 and 1942

	Quantity	Value	Total metal content without any deductions				
			Gold	Silver	Copper	Sulphur	Zinc
	tons	\$	fine oz.	fine oz.	pounds	tons	pounds
<b>1941</b>							
11 mines shipped to Canadian plants (a)—							
Ores.....	865,921	8,451,805	159,647	320,094	22,516,954		
Copper concentrates.....	828,622	36,246,634	296,302	4,282,053	240,003,806		3,138,594
Zinc concentrates.....	135,582	3,611,904	6,263	212,115	1,240,645		125,006,638
Iron pyrites concentrates.....	94,818	184,020				45,446	
Slag, residues and gold precipitates.....	189	1,158,147	25,893	113,299	162,553		68,337
10 mines shipped to foreign plants—							
Ores.....	21	234	5	72	805		
Copper concentrates (†).....	145,549	9,564,563	49,802	430,563	68,313,800		
Zinc concentrates.....	51,983	4,515,184	471	47,051	397,450		57,515,573
Iron pyrites concentrates.....	208,542	1,096,532				103,762	
<b>Total.....</b>	<b>2,331,277</b>	<b>64,829,073</b>	<b>(c) 541,383</b>	<b>5,406,147</b>	<b>332,642,163</b>	<b>149,208</b>	<b>185,729,142</b>
Value of process supplies, etc. (b).....		34,608,742					
<b>Net Value.....</b>		<b>30,220,331</b>					
<b>1942</b>							
12 mines shipped to Canadian plants (a)—							
Ores.....	760,973	8,771,329	146,412	318,805	28,927,383		
Copper concentrates.....	819,793	38,161,711	342,995	4,709,629	234,276,609		
Zinc concentrates.....	172,519	4,613,158	11,424	293,259	1,409,389		159,543,348
Iron pyrites concentrates.....	69,014	132,063				32,580	
Slag, residues, bullion, and gold precipitates.....	193	1,440,349	35,146	227,770	129,659		
8 mines shipped to foreign plants—							
Ores.....							
Copper concentrates (†).....	101,752	7,273,864	19,892	283,596	50,619,295		
Zinc concentrates.....	92,135	7,453,208					94,931,818
Iron pyrites concentrates.....	310,479	1,302,108				150,199	
<b>Total.....</b>	<b>2,323,858</b>	<b>69,147,796</b>	<b>(c) 553,869</b>	<b>5,824,065</b>	<b>315,362,425</b>	<b>182,779</b>	<b>254,473,166</b>
Value of process supplies, etc. (b).....		35,459,148					
<b>Net Value.....</b>		<b>33,688,648</b>					

(†) Includes some copper precipitate.

(a) Certain mines operated in the Rossland area by leasers in 1941 and 1942 treated, statistically, as one mine.

(b) Includes freight on ore shipments, smelter charges and fuel and purchased electricity.

(c) Gross value.

NOTE.—The value of ores and concentrates shipped from mines to smelters operated by the same companies are often of a nominal or conjectural nature.

Table 64.—Ores Mined, Milled, and Concentrates Produced by the Copper-Gold-Silver Mining Industry, 1929-1942

Year	Ore mined	Ore milled	Copper concentrates produced (†)	Zinc concentrates produced	Iron pyrites concentrates produced	Net value of all mine shipments
	tons	tons	tons	tons	tons	\$ (c)
1929.....	5,134,824	4,512,806	262,941		76,581	21,859,907(a)
1930.....	5,768,664	4,926,431	298,085	72,112	53,453	15,629,584(a)
1931.....	6,002,865	5,243,382	469,050	63,828	63,293	15,951,103(a)
1932.....	5,453,173	4,607,659	518,609	76,507	71,945	11,143,759(a)
1933.....	5,448,600	4,521,301	521,399	88,645	59,354	7,707,270(a)
1934.....	6,065,692	5,127,189	587,045	81,811	80,684	8,265,071(a)
1935.....	5,650,665	4,693,387	614,042	96,466	66,709	16,676,447(a)
1936.....	5,052,222	4,091,570	503,650	101,303	105,669	19,271,065(a)
1937.....	6,749,809	5,802,031	630,664	116,698	201,494	30,655,784(b)
1938.....	7,929,434	6,901,188	756,065	123,887	173,444	34,739,439(b)
1939.....	8,474,855	7,760,725	828,963	105,842	161,238	32,991,716(b)(c)
1940.....	8,931,201	8,325,970	930,622	128,346	172,500	34,914,051(b)
1941.....	9,263,071	8,402,656	974,250	187,622	309,050	36,990,853(b)
1942.....	8,675,626	7,816,813	(d) 858,580	204,739	219,874	40,730,834(b)
<b>Total—14 years.....</b>	<b>94,500,881</b>	<b>82,793,117</b>	<b>8,754,874</b>	<b>1,505,806</b>	<b>1,818,279</b>	<b>327,527,763</b>

(a) Value f.o.b. mine and presumed gross value less freight and treatment charges which were not reported separately by operators prior to 1937.

(b) Gross value reported by operators less only freight and treatment costs deducted by D.B.S.

(c) Subject to revision.

(†) Includes a relatively small quantity of copper precipitates.

(d) In addition 15,554,164 tons of tailings were retreated.

NOTE.—Values for shipments made to smelters operated by the same company are often not available or nominal in nature, resulting in annual variations in the distribution of production values between the mining industry proper and the non-ferrous smelting and refining industry. This explains, to a considerable extent, such apparent incongruities as the value data for 1938-39.



Table 65.—Ore Mined and Milled in the Copper-Gold-Silver Mining Industry, in Canada, by Provinces, 1942

	Manitoba and Saskat- chewan	Quebec	British Columbia	Canada
	tons	tons	tons	tons
Ore mined.....	2,944,296	2,961,665	2,669,665	8,575,626
Ore milled.....	(a) 2,940,454	2,208,056	2,668,303	7,816,813
Copper concentrates produced.....	468,364	348,021	41,530	857,915
Copper precipitates produced.....			665	665
Pyrites concentrates produced.....		188,373	31,501	219,874
Zinc concentrates produced.....	189,347	76,392	—	264,739

(a) In addition 1,554,164 tons of tailings were retreated at the Flin Flon mine.

NOTE.—In addition some cyanide precipitate is produced in the recovery of gold from copper-gold ores; this is smelted in the production of blister or anode copper; also the Manitoba-Saskatchewan boundary passes through the Flin Flon mine.

Table 66.—Content (†) of Ores, Concentrates, Etc., Shipped from Copper-Gold-Silver Mines, 1929-1940

	Tons net	Content (†)				
		Gold	Silver	Copper	Zinc	Sulphur
		fine oz.	fine oz.	pounds	pounds	tons
TO CANADIAN SMELTERS						
1929—						
Copper ore.....	570,791	67,008	432,951	57,063,264		
Copper concentrates (*).....	117,744	9,914	227,113	35,814,481		
Zinc concentrates.....						
Pyrites.....						
1930—						
Copper ore.....	724,966	109,043	437,034	70,487,335	1,748,920	
Copper concentrates.....	172,772	39,583	659,875	46,921,698		
Zinc concentrates.....	20,800	2,870	52,950	767,000	13,478,000	
Pyrites.....						
1931—						
Copper ore.....	1,726,712	309,765	1,522,200	96,789,533	47,835,966	
Copper concentrates.....	177,211	54,337	475,920	62,557,732		
Zinc concentrates.....	63,828	5,808	126,379	1,928,000	35,056,199	
Pyrites.....						
1932—						
Copper ore.....	850,451	314,784	564,983	51,905,334		
Copper concentrates.....	451,063	117,783	1,288,360	110,256,022		
Zinc concentrates.....	76,507	7,535	157,843	2,181,377	68,258,142	
Pyrites.....	3,465					598
Precipitate.....	54	11,673	98,302	55,174		
1933—						
Copper ore.....	867,789	223,494	328,918	39,561,914		
Copper concentrates.....	495,305	156,924	1,463,446	107,886,584		
Zinc concentrates.....	80,780				55,938,897	
Pyrites.....						
Precipitate.....	65	15,080	155,941	65,873		
1934—						
Copper ore.....	868,467	162,797	282,391	33,173,070		
Copper concentrates.....	553,515	104,664	1,818,638	120,185,486		
Zinc concentrates.....	76,149	5,417	144,559	1,324,297	69,331,636	
Pyrites.....	1,199					593
1935—						
Copper ore.....	900,781	184,410	306,978	33,243,785		
Copper concentrates.....	578,206	203,509	1,753,871	123,750,525		
Zinc concentrates.....	93,105	6,482	168,298	1,591,969	84,283,903	
Pyrites.....	1,149					580
Precipitate.....	101	12,505	135,985	76,644		
1936—						
Copper ore.....	965,370	247,203	354,006	32,678,904		
Copper concentrates.....	458,065	215,183	1,586,085	85,709,434	27,715,850	
Zinc concentrates.....	100,615	6,017	176,085	1,465,980	91,008,780	
Pyrites.....	35,435					17,799
Precipitate.....	66	13,583	132,154	52,534		

Table 66.—Content (†) of Ores, Concentrates, Etc., Shipped from Copper-Gold-Silver Mines, 1929-1941—Continued

	Tons net	Content (†)				
		Gold	Silver	Copper	Zinc	Sulphur
		fine oz.	fine oz.	pounds	pounds	tons
To CANADIAN SMELTERS—Concluded						
1937—						
Copper ore.....	943,790	165,052	388,414	47,632,125		
Copper concentrates.....	528,641	236,596	2,090,353	119,755,349		
Zinc concentrates.....	106,074	8,135	184,248	1,593,711	95,941,609	
Pyrites.....	1,037					523
Slag, precipitate, etc.....	151	31,432	130,441	112,505		
1938—						
Copper ore.....	924,236	167,179	470,745	55,558,860		
Copper concentrates.....	606,255	271,009	2,565,893	138,288,971	1,668,410	
Zinc concentrates.....	94,994	8,199	175,391	1,440,591	86,892,822	
Pyrites.....	2,088					1,011
Slag, precipitate, etc.....	234	23,916	120,478	202,519		
1939—						
Copper ore.....	868,328	173,019	440,393	60,333,576		
Copper concentrates.....	616,071	237,742	2,637,065	145,937,499	1,683,442	
Zinc concentrates.....	96,817	7,378	182,517	1,320,610	91,116,593	
Pyrites.....	2,436					1,216
Slag, precipitate, etc.....	595	24,140	133,330	557,781		
1940—						
Copper ore.....	860,237	156,857	372,408	35,648,576		
Copper concentrates.....	768,833	258,692	3,514,614	208,421,117	2,492,666	
Zinc concentrates.....	108,328	5,250	185,406	954,803	102,169,600	
Pyrites.....	36,308					17,619
Slag, precipitate, etc.....	566	23,739	120,970	530,712		
1941—						
Copper ore.....	865,921	159,647	320,994	22,516,954		
Copper concentrates.....	828,622	206,302	4,282,053	240,003,806	3,138,594	
Zinc concentrates.....	135,582	6,263	212,115	1,240,045	125,006,638	
Pyrites.....	94,818					45,446
Slag, precipitate, etc.....	189	28,893	113,299	162,553	68,337	
Total for 13 years.....		4,986,811	33,602,292	2,199,719,272	1,063,824,954	85,383
To FOREIGN SMELTERS						
1929—						
Copper ore.....	3,352	192	5,876	233,719		
Copper concentrates (*).....	145,197	20,054	380,834	69,554,222		
Zinc concentrates.....						
Pyrites.....	76,581					38,203
1930—						
Copper ore.....	391	31	456	26,023		
Copper concentrates.....	126,250	10,877	335,134	65,656,756		
Zinc concentrates.....	11,082				11,627,280	
Pyrites.....	53,453					27,682
1931—						
Copper ore.....	55	58	150	5,345		
Copper concentrates.....	71,015	5,396	164,957	35,012,918		
Zinc concentrates.....						
Pyrites.....	63,293					31,771
1932—						
Copper ore.....	54	157	28			
Copper concentrates.....	37,558	8,868	87,346	18,625,044		
Zinc concentrates.....						
Pyrites.....	48,584					24,231
1933—						
Copper ore.....	120	132	193	11,578		
Copper concentrates.....	28,541	12,933	65,909	14,654,498		
Zinc concentrates.....	8,929				9,374,675	
Pyrites.....	58,694					28,178
1934—						
Copper ore.....						
Copper concentrates.....	31,856	11,261	79,358	15,348,073		
Zinc concentrates.....	5,899				5,374,023	
Pyrites.....	35,957	2,889		84,607		4,908
1935—						
Copper ore.....						
Copper concentrates.....	62,356	13,826	86,864	19,410,963		
Zinc concentrates.....	3,191	49,696			3,606,436	
Pyrites.....	28,056					13,942

Table 66.—Content (†) of Ores, Concentrates, Etc., Shipped from Copper-Gold-Silver Mines, 1929-1941—Concluded

	Tons	Content (†)				
		Gold	Silver	Copper	Zinc	Sulphur
	net	fine oz.	fine oz.	pounds	pounds	tons
<b>To FOREIGN SMELTERS—Concluded</b>						
1936—						
Copper ore.....	645				727,398	
Copper concentrates.....	58,114	13,039	100,192	23,514,161		
Zinc concentrates.....						45,374
Pyrites.....	91,777					
Slag, etc.....	5,004	169	7,345	450,133		
1937—						
Copper ore.....	131	43	164	13,222		
Copper concentrates.....	97,553	15,120	266,874	48,759,159		
Zinc concentrates.....	5,871				6,041,690	
Pyrites.....	118,420					59,657
1938—						
Copper ore.....	850	479	3,101	80,245		
Copper concentrates.....	152,955	23,759	476,207	79,978,954		
Zinc concentrates.....	5,966	103	12,577	133,526	6,270,471	
Pyrites.....	42,515					21,316
1939—						
Copper ore.....	108	101	55	5,425		
Copper concentrates.....	177,884	53,866	543,600	84,062,126		
Zinc concentrates.....	30,693			203,000	33,669,569	
Pyrites.....	225,200					113,231
1940—						
Copper ore.....	11	11	949	2,234		
Copper concentrates.....	159,316	39,952	492,352	78,778,442		
Zinc concentrates.....	30,389	456	45,552	444,808	32,558,961	
Pyrites.....	91,457					45,802
1941—						
Copper ore.....	21	5	72	865		
Copper concentrates and precipitates..	145,549	49,802	430,563	68,313,890		
Zinc concentrates.....	51,983	471	47,051	397,450	57,515,573	
Pyrites.....	208,542					103,762
<b>Total for 13 years.....</b>		<b>339,746</b>	<b>3,633,999</b>	<b>623,862,445</b>	<b>166,666,076</b>	<b>557,757</b>

(†) As determined by settlement assay and not necessarily all recovered.

(\*) Includes a relatively small quantity copper precipitate for some years.

## CHAPTER THREE

## THE SILVER MINING INDUSTRY IN CANADA

(a) The Silver-Cobalt Mining Industry; (b) the Silver-Lead-Zinc Mining Industry.

**Definition of the Industry.**—Silver Mining in Canada is not a distinct mining industry in as much as silver or silver-bearing minerals usually occur in association with other metals of economic value—with lead and zinc; with cobalt, nickel and arsenic; with lode and placer free gold; in copper-gold and nickel-copper ores, and at Great Bear Lake, Northwest Territories with pitchblende. Silver-lead-zinc mining is a very important industry in British Columbia and, to a lesser extent, in the Yukon Territory. In Eastern Canada, ores containing lead and zinc have been mined in Ontario, Quebec and Nova Scotia.

It is to be noted that, in addition to its recovery from silver-lead ores, zinc is now produced in large quantities from the copper-gold-silver ores of the Flin Flon and Sherritt-Gordon mines located on or near the Manitoba-Saskatchewan boundary. Zinc concentrates have been produced in British Columbia from copper-gold-silver ores by the Britannia Mining and Smelting Co. Ltd.; the metal also occurs with copper-gold-silver ores in Quebec and commercial shipments of zinc concentrates made from these particular ores have been made yearly since 1937.

Statistical data contained in this chapter are essentially those pertaining to the mining of silver-cobalt and silver-lead-zinc ores and, to a lesser extent, silver-pitchblende ores.



## (a) The Silver-Cobalt Mining Industry

The mining of silver-cobalt ores in Canada has been confined almost entirely to the district of Temiskaming in Northern Ontario. Veins containing these metals were discovered at or near the present town of Cobalt in 1903 and shipments of ores from this area have been continuous since 1904. Depletion and exhaustion of ore reserves during recent years have resulted in a relatively great decline in the production of metals from these deposits. In most instances, operations at properties, some of which were prominent as producers in the past, were conducted during recent years by lessees and shipments ranged from one to several hundred tons. The increased demand for cobalt as an alloying metal has, for some years, stimulated operations of a salvage nature at several of the older mines.

The gross value of shipments made by silver-cobalt mines in 1942 totalled \$750,250 and the net value of same was estimated at \$600,207. The number of operators totalled 13 and the quantity of ore hoisted amounted to 25,550 tons; in addition, 18,532 tons of ore were salvaged from the surface, ores milled in the camp during 1942 totalled 43,851 tons.

During the year under review, operations conducted by the Nipissing Mining Company Limited were restricted to the milling of ore salvaged from the surface. Cobalt Products Limited carried on mining at the old Foster, Provincial and Agaunico mines, and operated its mill continuously throughout the year. Both the O'Brien mine in Coleman township and the Miller Lake O'Brien property in Haultain township were reported as active during the year, while the customs mill operated by C. N. J. O'Shaughnessy was in production from May until November. Other properties operated chiefly under lease included the Cobnor, Tretheway, Coniagas, Kerr Lake, Sanymac, Sycee, Frontier Larrain and Silver Bar. Shipments of cobalt ore were also made from a property located at Werner Lake in the Kenora district of Ontario.

Table 67.—Statistics of the Silver-Cobalt Mines and Mill Operations in Canada, 1942

	1942
Number of mines in operation (*).....	14
Ore mined.....	tons (b) 44,082
Ore treated (milled) (a).....	tons 43,851
Tailings treated.....	tons .....
Concentrates produced.....	tons 1,415
Gross value of bullion, ore, concentrates and residues sold.....	\$ 750,250
Cost of freight.....	\$ 1,439
Smelter charges.....	\$ 16,255
Cost of fuel and purchased electricity used.....	\$ 68,340
Cost of process supplies used.....	\$ 64,000
Net value of sales.....	\$ 600,207

(\*) All mines located in Northern Ontario and includes properties on which the operations consisted only in salvaging ore from dumps, etc.

(a) Does not include crude ore shipped.

(b) Includes 18,532 tons salvaged from surface.

Table 68.—Capital Employed In the Silver-Cobalt Mining Industry in Canada, 1942

	\$
Present cash value of the land (excluding minerals).....	14,292
Present value of buildings, fixtures, machinery, tools and other equipment.....	117,972
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	23,040
Inventory value of finished products on hand.....	31,304
Operating capital (cash, bills and accounts, receivable, prepaid expenses, etc.).....	172,083
<b>Total.....</b>	<b>358,691</b>

Table 69.—Employees, Salaries and Wages in the Silver-Cobalt Mining Industry in Canada, 1942

	Number	Salaries and wages
		\$
<b>SALARIED EMPLOYEES—</b>		
Total.....	(a) 27	63,722
<b>WAGE-EARNERS—</b>		
Surface.....	54	220,258
Underground.....	80	
Mill.....	31	
Total.....	165	220,258
<b>Grand Total.....</b>	<b>192</b>	<b>283,980</b>

(a) Includes 3 females.

Table 70.—Number of Wage-Earners on Payroll or Time Record on the last day of Each Month, or Nearest Representative Date, in the Silver-Cobalt Mining Industry, 1926 and 1942

Month	1926	1942			Total 1942
		Mine		Mill	
		Surface	Under- ground		
January.....	1,496	42	89	13	144
February.....	1,456	34	62	13	109
March.....	1,501	41	61	13	115
April.....	1,478	47	74	20	141
May.....	1,480	53	82	44	179
June.....	1,490	56	79	48	183
July.....	1,501	64	90	46	200
August.....	1,533	69	84	47	200
September.....	1,592	67	84	44	195
October.....	1,560	58	81	41	180
November.....	1,478	62	84	26	172
December.....	1,426	44	92	14	150

## (b) The Silver-Lead-Zinc Mining Industry

**Quebec.**—At Montauban in Portneuf county, the old Tetreault mine was active from June 1; milling was conducted at the property from August 15. This mine was operated by Wartime Metals Corporation for the account of Metals Reserve Company of the United States under the management of Siscoe Metals Limited. Zinc and lead concentrates were exported to the United States.

New Calumet Mines Limited carried out extensive surface and underground development operations on a large lead-zinc deposit located on Calumet Island in Pontiac county. Considerable construction was completed and the mine was expected to come into production about midsummer of 1943.

Milling operations were commenced on August 4 by Golden Manitou Mines Ltd. at its property located in Bourlamaque township. Important shipments of zinc concentrates were made to the Metals Reserve Company in the United States. In addition to the production of zinc, this company recovers a considerable quantity of gold and silver in the form of precipitate.

In Lemieux township, Gaspé North, prospecting of lead-zinc deposits was carried on by Lyall and Beidelman and the Federal Zinc & Lead Company Limited.

**Ontario.**—Lake Geneva Mining Company Limited operated both its mine and mill located in Hess township, Sudbury district. Operations were continuous throughout the year and silver, lead and zinc concentrates produced were exported to the United States.

Zinc ore from the dump of the old Richardson mine situated at Long Lake, Frontenac county, was purchased and concentrated by Geo. Beausoleil & Company. Zinc concentrates obtained from these operations were shipped to the United States.

**British Columbia.**—At Kimberley the great Sullivan mine of the Consolidated Mining & Smelting Company of Canada Limited was in continuous production throughout the entire year. The company reported that mining costs increased during the year due partly to preparation for stope-filling, to taking more ore from the lower levels and to higher wages. It will be necessary to increase the rate of back-filling in order to draw more ore from the pillars. The grade of the ore mined was slightly lower with a higher zinc to lead ratio. Development work was very satisfactory. The ore reserves have been maintained in spite of the increased tonnage mined. The production of tin from the concentrator tailings was commenced early in the year. To the end of February, the number of men and women who had left to join His Majesty's Forces totalled 1,703.

Base Metals Mining Corporation, Limited, reported that mining and concentrating operations were carried on at Field throughout the year. Tonnage concentrated was lower than in 1941 chiefly because of labour shortage on the underground crew and power plant breakdowns. Grade of ore treated was lower also, because of decline in zinc content. Lead content was only slightly lower than for 1941. All concentrates produced were shipped to smelters in the United States. At the end of 1942 positive and probable ore reserves were sufficient for more than ten months' operation at the average monthly tonnage of 1942. There is an excellent chance of adding to this, as the Kicking Horse development proceeds. Labour turnover was high, and there was a serious shortage from July to November. The force was adequate at the end of the year. Practically all labour replacements were inexperienced men.

At Zincton in the Slocan mining division, the Lucky Jim mine was operated continuously by Zincton Mines Limited; silver-zinc concentrates produced by this company were shipped to Great Falls, Montana, U.S.A. for treatment.

During the year under review both mining and milling operations were conducted by Western Exploration Co. Ltd. at the Standard and Mammoth mines located at Slocan Lake in the Kaslo mining division. Both silver-lead and silver-zinc concentrates produced by this company were exported to smelters in the United States.

Other important silver-lead-zinc mining operations reported during the year included those of Highland-Bell Limited and the Providence mines in the Greenwood division. Several smaller operators made shipments of silver-lead-zinc ores to the Trail smelter of the Consolidated Mining & Smelting Company of Canada Limited. In December work on the Kootenay Florence Project was commenced by the Wartime Metals Corporation.

**Yukon.**—Operations carried on at Wernecke Mines, Galena Hill, by the Treadwell Yukon Corporation Limited were confined solely to salvage operations. Practically the entire plant was salvaged except the mill and tramway from the Calumet mine to the mill. The company shipped lead ore and lead concentrates to the Bunker Hill smelter at Bradley, Idaho, U.S.A. In addition to the shipments made from the Wernecke mines, lead ores were also exported by operators working the Mastiff, Elsa, Hector, Clarence, Jack and Annie mines in the Mayo district.

**Northwest Territories.**—Mining operations were carried on from August 5 by Eldorado Gold Mines Limited at its pitchblende (silver-bearing) mine located at Echo Bay. Ore milled totalled 6,369 short tons and a considerable tonnage of pitchblende concentrates were shipped to the company's refinery situated at Port Hope, Ontario.

**Table 71.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry\* in Canada, 1942**

	Quebec	Ontario	Yukon and Northwest Territories	British Columbia	Canada
	Tons	Tons	Tons	Tons	Tons
Ore mined.....	93,057	41,188	6,669	2,810,566	2,951,480
Ore milled.....	89,603	32,822	6,369	2,944,620	3,073,414
Concentrates produced—Lead.....	476	1,444	60	325,587	327,577
Zinc.....	7,653	5,181	.....	390,362	403,196
Pitchblende-silver.....	.....	.....	292	.....	292
Silver and silver-copper.....	.....	.....	.....	.....	.....

\* Includes silver-pitchblende ore mined in Northwest Territories.



Table 72.—Destination of Shipments from Silver-Lead-Zinc Mines of Canada, 1942

	Tons shipped	Value at shipping point	Total metal content as determined by settlement assay			
			Gold fine oz.	Silver fine oz.	Lead pounds	Zinc pounds
		\$				
To Canadian smelters—						
Lead ore.....	9,082	446,775	580	819,458	685,139	843,839
Lead concentrates (a).....	351,849	16,951,704	6	7,975,262	479,435,732	32,907,898
Zinc concentrates (*).....	366,158	7,217,077	6	726,986	29,459,849	365,643,581
Dry ore.....	2,346	20,379	429	7,401	71,092	100,116
Precipitates.....		6,488	143	4,080		
<b>Total.....</b>	<b>729,435</b>	<b>24,642,423</b>	<b>1,164</b>	<b>9,533,267</b>	<b>509,651,812</b>	<b>399,555,434</b>
To Foreign smelters—						
Lead ore.....	469	108,563	14	158,455	611,501	
Lead concentrates.....	5,954	525,623	194	428,818	8,163,186	350,077
Silver concentrates.....						
Zinc concentrates (*).....	45,157	2,433,515	94	145,037	598,272	49,339,769
Precipitates.....	3	62,870	1,163	36,955		
<b>Total.....</b>	<b>51,583</b>	<b>3,139,571</b>	<b>1,465</b>	<b>769,265</b>	<b>9,372,939</b>	<b>49,689,846</b>
<b>Grand Total (gross).....</b>	<b>781,018</b>	<b>27,772,994</b>	<b>2,629</b>	<b>10,302,532</b>	<b>519,024,751</b>	<b>449,245,280</b>
Cost of freight.....		1,662,341				
Cost of fuel and purchased electricity.....		791,772				
Smelter charges.....		650,420				
Cost of process supplies.....		1,163,810				
<b>Net Value.....</b>		<b>23,578,674</b>				

(\*) Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia (includes 52 tons crude ore to Canadian smelters).

(a) Includes shipment of silver-pitchblende concentrates from Northwest Territories. Information relating to content of pitchblende is not available for publication.

Note.—In addition to the metals contained in shipments listed in this table there are important quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, tin, antimony, indium and sulphur are also recovered from these ores (silver-lead-zinc).

Table 73.—Capital Employed in the Silver-Lead-Zinc Mining Industry of Canada, 1942

Province	Present, cash value of land, excluding minerals	Present value of buildings, fixtures, machinery, tools and other equipment	Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand	Inventory value of finished products on hand	Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)	Total
	\$	\$	\$	\$	\$	\$
Ontario, Quebec, Yukon and N.W.T.*.....	1,362,418	1,658,534	530,883	255,938	532,015	4,339,788
British Columbia.....	5,542,219	7,262,960	1,437,180	151,761	760,528	15,144,654
<b>Canada.....</b>	<b>6,904,637</b>	<b>8,921,500</b>	<b>1,968,063</b>	<b>407,699</b>	<b>1,292,543</b>	<b>19,484,442</b>

\* Includes data relating to silver-pitchblende mines in the Northwest Territories.

Table 74.—Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry in Canada, 1942

Province	On salary	Mine		Mill	Total	Salaries and wages
		Surface	Under-ground			
						\$
British Columbia.....	(a) 245	334	760	376	1,715	3,829,271
Ontario, Quebec, Yukon and N.W.T.†.....	63	182	194	31	470	901,099
<b>Canada.....</b>	<b>308</b>	<b>516</b>	<b>954</b>	<b>407</b>	<b>2,185</b>	<b>4,730,370</b>

† Includes data on silver-pitchblende mining operations in the Northwest Territories.

(a) Includes 26 females.

Table 75.—Number of Wage-Earners, by Months, in the Silver-Lead-Zinc Mining Industry, 1942

Month	Mine		Mill	Total
	Surface	Under-ground		
January.....	395	801	384	1,580
February.....	418	814	379	1,611
March.....	403	821	377	1,601
April.....	445	810	384	1,639
May.....	453	818	394	1,665
June.....	538	889	380	1,807
July.....	629	881	399	1,909
August.....	537	1,006	450	1,993
September.....	570	1,081	449	2,100
October.....	594	1,125	455	2,174
November.....	592	1,190	429	2,211
December.....	590	1,189	416	2,195
Average.....	516	954	407	1,877

Table 76.—Dividends Paid by Specified Silver-Lead-Zinc Mining Companies

Company	Dividend 1942	Total Dividends paid to end of 1942
<b>QUEBEC—</b>		
Golden Manitou Mines Ltd.....		
New Calumet Mines Ltd.....		
Siscoe Metals Ltd. (Tetreault).....		
<b>ONTARIO—</b>		
Lake Geneva Mining Company Ltd.....		
<b>BRITISH COLUMBIA—</b>		
Base Metals Mining Corporation Ltd.....		
Consolidated Mining and Smelting Company of Canada, Ltd.....	8,189,552	(b) 110,076,310
Highland Bell Limited.....	105,268	580,621
Providence Mine.....	24,440	88,714
Ruth-Hope Mining Co. Ltd.....		
Western Exploration Co. Ltd.....		
Zincion Mines Ltd.....		
<b>YUKON &amp; NORTHWEST TERRITORIES—</b>		
Eldorado Gold Mines Ltd. (Eldorado Mining and Refining Ltd. 1943) (a).....		
Treadwell Yukon Corporation Ltd.....	447,774†	447,774†

† Liquidating distributions.

(a) Produces Pitchblende Concentrates, etc.

(b) Includes some dividends paid in stock.

## ARSENIC

Production of arsenic in Canada during 1942 totalled 14,967,874 pounds valued at \$652,041. Comprising this output was the refined arsenic ( $As_2O_3$ ) produced at Deloro, Ontario by the Deloro Smelting & Refining Company Limited from Ontario silver-cobalt ores and from crude arsenic received from O'Brien Gold Mines Limited and Beattie Gold Mines Limited in the province of Quebec; also included was the arsenic content of crude arsenic shipped by Beattie Gold Mines to firms other than the Deloro Smelting & Refining Company Limited. The arsenic content of auriferous concentrates exported from British Columbia to the United States by Bralorne Mines Limited, Hedley Mascot Gold Mines Limited and Kelowna Exploration Company Limited, was recorded as production in 1942. The arsenic content of these shipments is not paid for by the American smelters and the value of the arsenic was estimated by the Bureau of Statistics at a nominal price of one cent a pound.

Crude arsenic is also recovered at the Little Long Lac mine in the Thunder Bay District of Ontario; however, no commercial shipments from this source were reported during the year under review.

Production of arsenic in all forms from Canadian ores since 1885 to the end of 1942 amounted to 77,593 short tons valued at \$7,396,895.

"Arsenic is used chiefly in the manufacture of insecticides. It is also used in the preparation of weed killers, sheep and cattle dip, wood preservatives, and in the manufacture of glass, minor uses being in pigments, tannery supplies, and pharmaceutical preparations. Arsenic salts are used to replace creosoting in the preservation of wood. The use of arsenic to manufacture chemical warfare materials has notably increased its consumption. Calcium arsenate, and to a much lesser extent, lead arsenate are the arsenicals ordinarily used in insecticides. Paris green, which is a copper acetoarsenite, is also used as an insecticide. Magnesium arsenate and manganese arsenate have also been used for this purpose. A considerable tonnage of white arsenic, in the form of crude arsenic or as sodium arsenite is used in the manufacture of weed killers. High-grade white arsenic is used in glass as a decolourizer, opacifier and refining agent. Small quantities of arsenic are used in the paint industry, as realgar or arsenic disulphide ( $As_2S_2$ ) and as orpiment or arsenic trisulphide ( $As_2S_3$ ).

"Although the world consumption of white arsenic has varied greatly during the past ten years, the quoted price remained steady at 3½ cents a pound up to the middle of 1941. As most of it is a by-product of metal recovery, through necessity rather than choice, and as the potential supply is far in excess of any normal demand, there seems to be little likelihood of any sustained increase in price.

"The nominal price of arsenious oxide in New York remained at 3½ cents a pound in the first half of 1941 and at about 3¾ cents during the last half of the year. In 1942 the price remained fixed at 4 cents a pound. The Canadian price of white arsenic, as given by Canadian Chemistry & Process Industries, remained at 5½ to 6 cents a pound throughout 1942."—(Bureau of Mines, Ottawa.).

Table 77.—Production of Arsenic in Canada, 1933-1942

Year	Arsenic in ore exported		White arsenic (†)	
	tons	\$	tons	\$
1933.....			734	56,534
1934.....			824	56,412
1935.....			1,279	75,326
1936.....			683	42,491
1937.....			695	41,032
1938.....			1,088	56,538
1939 (x).....			871	52,257
1940.....			1,047	82,798
1941.....			1,709	153,195
1942.....	3,557	71,148	3,927	580,893

(x) In addition crude arsenic was recovered at certain mines during 1939 in the treatment of Quebec and Ontario gold ores but no commercial shipments were reported.

(†) 1933-1940 recovered at the Deloro smelter from Ontario silver-cobalt ores only; in 1941 and 1942 includes arsenic recovered at Deloro, Ont., from crude arsenic received from Quebec gold mines plus the arsenic content of crude arsenic shipped to other than the Deloro smelter.

Table 78.—Consumption of Arsenious Oxide and Arsenic Acid in the Manufacture of Canadian Insecticides, 1932-1942

Year	Pounds	\$	Year	Pounds	\$
1932.....	1,721,044	69,250	1938.....	3,029,145	93,873
1933.....	3,116,401	110,011	1939.....	4,287,435	132,584
1934.....	4,709,443	168,185	1940.....	3,607,444 (x)	122,265
1935.....	2,736,089	86,983	1941.....	5,707,499 (x)	212,687
1936.....	3,368,956	106,132	1942.....	6,106,887 (x)	273,919
1937.....	3,296,559	102,651			

(x) In addition, 342,452 pounds of calcium arsenate valued at \$21,671 were used in 1940 and 509,381 pounds at \$34,704 in 1941 and 394,978 pounds at \$26,773 in 1942.



## COBALT

**Cobalt.**—The Canadian output of cobalt comes entirely from the cobalt-bearing deposits of Northern Ontario and usually includes cobalt recovered and sold in the metallic state, the cobalt content of oxides and salts made and sold and the metal content of cobaltiferous ores exported. Canadian production in 1942 totalled 83,871 pounds valued at \$88,444, all contained in ores or concentrates shipped to other than Deloro, Ontario and exclusive of metal contained in ores placed on a Government stock pile at Deloro.

There is at present only one smelter in Canada treating cobalt ores; this is the plant of the Deloro Smelting and Refining Company, Limited, located at Deloro, Ontario. In 1942 the company did not recover any cobalt from Canadian ores; however, considerable quantity of the metal in various forms was produced at Deloro from African ores during the year under review. In 1942 a relatively large quantity of Ontario silver-cobalt ores were received at Deloro on account of the United States Government. These were stock piled for future use and their metal content will be credited as Canadian production at the time of their export or possible consumption in Canada. A war-time scale of prices for cobalt ores was established by the Canadian Metals Controller in 1942 and is based largely on the cobalt content of the ores or concentrates.

The greater part of the world output of cobalt is used for metallurgical purposes; important quantities are also consumed by the ceramic industries. It is a very important constituent in some of the high speed cutting tools.

The nominal price for cobalt ores, 13 per cent grade, f.o.b. cars, Ontario, remained at about \$1.00 a pound of cobalt until July, 1942 and at \$1.10 for the remainder of the year.

Since 1904, the first year for which cobalt production was recorded in Canada, there were produced, to the end of 1942, in all forms, 34,205,142 pounds of cobalt valued at \$33,501,404.

**Table 79.—Cobalt Salts Used in the Manufacture of Canadian Pigments and Paints, 1935-1942**

Year	Pounds	\$	Year	Pounds	\$
1935.....	110,419	33,292	1939.....	52,979	21,638
1936.....	170,932	43,230	1940.....	89,332	28,111
1937.....	37,258	17,062	1941.....	74,445	39,349
1938.....	43,703	17,993	1942.....	200,228	145,433

## SILVER

Production of newly mined silver in Canada in 1942 totalled 20,695,101 fine troy ounces valued at \$8,726,296 compared with 21,754,408 fine troy ounces worth \$8,323,454 in 1941. The average price of the metal in Canadian funds was 42.17 cents per troy ounce in 1942 and 38.26 cents in 1941. The greatest annual production of silver in Canada was in 1910, in which year an output of 32,869,264 fine ounces was recorded; the highest average yearly price per fine ounce for the metal in Canada was 111.122 cents in 1919. Production of silver in Canada since 1887, the first year for which data are available, to the close of 1942 totalled 849,948,250 fine ounces valued at \$480,857,059.

The following information was abstracted from the 1942 Annual Review of the Silver Market, published by Handy and Harman, New York:

"The story of silver for 1942 must necessarily be incomplete; uncertainty of communications, censorship, and the disruption by warfare have caused a scarcity of information from abroad which makes our report on foreign markets lacking in many respects. Regarding the situation in the United States, there is but one outstanding feature—the transition of silver from civilian life to active service in America's war effort, a transition which involved at times sharp conflict between the natural law of supply and demand, politics, and control administered by Government agencies. . . . Silver consumption figures are available only for the United States and Canada; of the Canadian total of 4,000,000 ounces, about 40 per cent, represents war and essential

uses. Only if their silver was not needed in Canada were producers granted a licence to export, thereby permitting them to obtain the equivalent of 45 cents an ounce. . . . Nearly 60 per cent of the amount of silver consumed in the United States during 1942 is estimated to have gone into war production, or into uses classified by the War Production Board as essential, and thus covered by priority ratings. This silver was used mostly in the production of photographic film, airplane engine bearings, solders and brazing alloys, electrical contacts, insignia, silver-plated eating utensils for the Army and Navy, and chemical equipment. . . . Silver brazing alloys and electrical contacts made of silver have had the most widely diversified use in war production. In general it can be said that silver is finding an important place in the production of every airplane, battleship, submarine, cargo vessel or tank, and in many guns, bombs, torpedoes, shells and vital parts of other weapons. . . . Our information on the subject of foreign production is very scanty; we venture the following estimate covering the Western Hemisphere only: United States, 54,000,000 ounces; Canada, 21,000,000 ounces; Mexico, 74,000,000 ounces; Central America and the West Indies, 4,300,000 ounces; and South America, 29,000,000 ounces. We have no figures whatsoever for Europe, Asia, Africa and Australia."

Table 80.—Production of Silver in Canada, by Provinces and by Sources, 1941 and 1942

	1941		1942	
	Quantity	Value	Quantity	Value
		\$		\$
<b>NOVA SCOTIA—</b>				
In gold bullion.....Total	673	257	446	188
<b>QUEBEC—</b>				
In anode copper.....	1,467,574	561,508	1,438,907	606,730
In gold bullion made and in concentrates exported.....	189,508	72,508	216,135	91,135
Total.....	1,657,082	634,016	1,655,042	697,865
<b>ONTARIO—</b>				
In silver recovered in Canada from cobalt ores.....	383,720	146,815	837,615	353,189
In gold bullion.....	552,223	211,296	465,276	196,188
In blister copper.....	2,462,282	942,094	2,188,004	922,693
In ores, concentrates, residues, matte, etc., exported.....	1,579,251	604,237	961,893	405,592
Total.....	4,977,476	1,904,432	4,452,787	1,877,562
<b>MANITOBA—</b>				
In blister copper.....	954,781	365,309	809,318	341,257
In gold bullion (gold mines).....	11,324	4,332	12,506	5,273
Total.....	966,105	359,641	821,824	346,530
<b>SASKATCHEWAN—</b>				
In blister copper.....	2,039,074	780,170	2,058,385	1,120,935
In gold bullion and in crude alluvial gold.....	8,090	3,066	5,747	2,423
Total.....	2,047,164	783,236	2,064,132	1,123,358
<b>ALBERTA—</b>				
In alluvial gold.....Total	21	8	2	1
<b>BRITISH COLUMBIA—</b>				
In alluvial gold.....	7,880	3,015	5,923	2,498
In gold bullion.....	119,750	45,820	82,031	34,589
In base bullion and in ores, etc., exported.....	11,106,152	4,249,325	10,508,256	4,430,909
Total.....	11,233,788	4,298,160	10,596,204	4,467,996
<b>YUKON—</b>				
In alluvial gold.....	15,934	6,097	17,321	7,304
In silver-lead ores exported.....	840,838	321,713	464,812	195,992
Total.....	856,772	327,810	482,133	203,296
<b>NORTHWEST TERRITORIES—</b>				
In pitchblende-silver ores shipped to smelters (a) and in gold bullion.....Total	15,327	5,864	22,531	9,500
<b>Canada—Total.....</b>	<b>21,754,498</b>	<b>(b) 8,323,451</b>	<b>20,695,101</b>	<b>(c) 8,726,296</b>

(a) No recovery from pitchblende ores in 1941 or 1942; includes 19 oz. in gold ores exported in 1942.

(b) Silver in all crude ores, etc., exported totalled 3,711,186 ounces.

(c) Silver in all crude ores etc., exported totalled 958,193 ounces.

NOTE.—For 1942 silver was valued at 42.17 cents per fine ounce, the average price of the metal on the New York market adjusted and expressed in Canadian funds; for 1941 the corresponding price was 33.261 cents.

Table 81.—Source of Canadian Silver Production, by Percentages, 1939-1942

Source	1939	1940	1941	1942
In silver-cobalt ores.....	6.5	5.38	2.6	4.13
In base bullion (†).....	(*) 39.7	(*) 44.39	45.3	46.16
In gold ores (bullion and placer).....	4.6	3.60	4.1	3.71
In blister and anode copper.....	23.6	27.62	31.8	34.28
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores).....	25.6	19.01	16.2	11.72
	100.0	100.0	100.0	100.0

(†) Chiefly from silver-lead ores.

(\*) Includes silver recovered in Canada from pitchblende-silver ores.

Table 82.—Silver Consumed in Specified Canadian Industries, 1941 and 1942

	1941		1942	
	Fine oz.	Value	Fine oz.	Value
Scientific equipment.....(a)	690,516	268,349	744,175	295,189
Fountain pens and pencils.....				
Jewellery and silverware (fine silver).....		1,144,409		1,476,788
Jewellery and silverware (silver alloys).....		646,528		764,421
Medicinal and pharmaceutical preparations (bullion).....	90,203	35,912	141,875	57,928
Miscellaneous chemicals.....	10,928	4,370	6,944	2,780

(a) Consumed largely in the manufacture of photographic film.

## LEAD AND ZINC

The following is from a review of lead and zinc in 1942 by O. W. Roskill and is from the annual review number of "The Mining Journal", London:

"Information about lead and zinc in 1942 has been very scanty. In the case of Germany and occupied Europe, the zinc supply has probably continued to be relatively satisfactory, with a possible tendency for high-grade metal to be in short supply. The lead position is probably less good, but in view of the opportunities for curtailment of consumption for building and cables in war compared with peace it is doubtful if the lead shortage is likely to have any serious effect on the Axis. So far as the United Nations are concerned, most of what information there is has come from across the Atlantic, and beyond the general presumption that the Empire output has again risen there is little detailed information, except for Canada. Broadly speaking, the lead supply position of the United Nations is quite satisfactory, while the zinc position gives rise to somewhat more anxiety. The British price of lead remained unchanged at £25 per ton throughout 1942. The British price of foreign spelter (duty paid) remained unchanged at £25 15s. per ton throughout 1942 and of electrolytic at £27 5s.

Table 83.—Refined Lead Production in Canada,\* 1929-1942

Year	Pounds of refined lead produced	Year	Pounds of refined lead produced
1929.....	304,449,673	1936.....	1363,449,490
1930.....	304,471,706	1937.....	1399,394,939
1931.....	278,448,457	1938.....	1400,763,014
1932.....	253,136,522	1939.....	1381,137,424
1933.....	254,565,861	1940.....	1440,175,333
1934.....	1314,457,735	1941.....	1450,054,164
1935.....	1327,515,277	1942.....	1480,612,849

\* Includes the electrolytic lead produced from Canadian and foreign ores at Trail, B.C., and also the pig lead from Galetta, Ont., until 1931.

† Primary lead only.



Table 84.—Available Statistics on the Consumption of Lead in Specified Canadian Manufacturing Industries, 1941 and 1942

Industry	Items used	1941	1942
		Pounds	Pounds
Brass and copper products.....	Pig lead.....	1,459,661	1,780,402
	Scrap.....	748,746	641,465
White metal alloys.....	Pig lead.....	39,903,256	48,281,959
	Scrap lead.....	25,132,310	21,194,878
Electrical apparatus.....	Pig lead.....	37,433,241	39,690,349
	Scrap lead.....	207,713	127,733
Iron and steel.....	Lead.....	2,526,000	6,050,628
Ammunition.....	Pig lead.....	8,810,880	10,467,968
<b>Total Accounted for.....</b>		<b>116,221,867</b>	<b>128,235,282</b>

Table 85.—Refined New Zinc Produced in Canada, 1933-1942

Year	Price † per pound	Short tons	Year	Price † per pound	Short tons
	cents			cents	
1933.....	3.21	91,946	1938.....	3.07	171,932
1934.....	3.04	134,917	1939.....	3.07	175,641
1935.....	3.10	149,523	1940.....	3.411	185,722
1936.....	3.31	151,103	1941.....	3.411	213,609
1937.....	4.90	158,542	1942.....	3.411	215,795

† In Canadian funds.

Table 86.—Available Statistics on the Consumption of Zinc in Specified Canadian Manufacturing Industries, 1941 and 1942

Industry	Items used	1941	1942
		Pounds	Pounds
Brass and copper products.....	Zinc ingots and slabs.....	50,061,499	76,990,715
	Zinc scrap.....	76,044	525,767
White metal alloys.....	Zinc spelter.....	17,049,480	28,581,880
	Zinc scrap.....	1,028,061	1,746,106
Electrical apparatus.....	Zinc ingots and bars.....	2,830,304	2,826,831
	Zinc sheets.....	1,664,145	1,477,013
Acids, alkalies and salts.....	Zinc metal.....	12,896,774	16,033,434
Iron and steel.....	Zinc.....	49,327,893	45,378,520
Miscellaneous chemicals.....	Zinc sheets and spelter.....	149,619	342,000
<b>Grand Total.....</b>		<b>135,504,395</b>	<b>171,992,346</b>

In addition there are relatively large quantities of zinc oxide and lithopone used in the manufacture of paint.

## CHAPTER FOUR

## THE NICKEL-COPPER INDUSTRY IN CANADA

1. Definition of the Industry.
2. General Review.
3. Commodity statistics, including tables showing production, prices, etc., for nickel, copper and metals of the platinum group.

## 1. Definition of the Industry

The nickel-copper industry in Canada includes the mining, smelting and, to a certain extent, the refining of the nickel-copper ores of the Sudbury district in the province of Ontario. Smelting and copper refining operations are carried on in close proximity to the mines; nickel refining is conducted at Port Colborne, Ontario. Matte is exported for treatment in plants at Huntington, West Virginia, U.S.A., and Clydach, Wales; during recent years matte was also exported to Norway, however, exports to that country ceased after its invasion by Germany in 1940.

As thus described, the industry in Canada constitutes the national source of nickel, most of the platinum group metals and a large part of the Canadian copper production. Gold, silver, sulphur, tellurium and selenium in increasing quantities are also recovered from these ores.

Mines in the copper-gold-silver group also contribute largely to the total Dominion copper output; ores from these properties contain, in the aggregate, about 11 per cent of the annual gold production. The activities of the copper-gold mines are reviewed in the chapter on the gold mining industry. Production statistics on nickel, copper and the metals of the platinum group are given in this chapter.

## General Review

The industry as thus defined realized an estimated gross value of \$128,340,860 for its entire production in 1942 as compared with the previous all-time high record of \$117,287,713 in 1941. The quantity of nickel produced was the greatest ever recorded for any single year in the history of the industry and is a tribute to the energy and efficiency displayed by the operators in an all-out war effort.

Almost the entire production of Canadian nickel in 1942 originated, as in previous years, in the nickel-copper ores of the Sudbury district, Ontario, and represented the recovery of the metal in the refined state, in oxides and salts, and in matte exported. In addition to the nickel obtained from the Sudbury ores, there is a relatively small quantity of the metal recovered annually in the treatment of silver-cobalt ores from the Cobalt district of Northern Ontario.

Copper recovered from nickel-copper ores in 1942 represented 51.1 per cent of the total quantity of new copper produced from all sources in the Dominion during the year under review compared with 51.8 per cent in 1941. The nickel-bearing deposits of the Sudbury area also contain relatively high values in platinum metals which are recovered in refining operations.

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. Silver recovered from nickel-copper ores in 1942 comprised 10.8 per cent of the total quantity produced from all primary sources in the Dominion, and the quantity of gold obtained from these ores during the same period totalled 70,861 fine ounces. The nickel-copper deposits of the Sudbury area are now considered as the world's chief single source of the platinum metals.

Two companies operated both producing mines and metallurgical plants in the Sudbury area in 1942. The International Nickel Company of Canada, Limited, conducts smelting operations at Copper Cliff and Coniston, Ont., 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. is now treated in the Canadian plants of the International Nickel Company of Canada, Limited. Both these companies operated to capacity during the year.

Throughout 1942 the International Nickel Company carried on mining operations at and made ore shipments from the Creighton, Frood, Garson and Levack mines. The company also conducted development work throughout the entire year at the Murray mine in McKim township.

The Bureau of Mines, Ottawa, described other nickel mining operations in the Sudbury district during 1942 as follows:

"Ontario Nickel Corporation Limited actively developed the nickel-bearing property in MacLennan township, southeast of Capreol, district of Sudbury. Considerable drifting, cross-cutting and raising was carried out. A power line was brought in from the Falconbridge line, a distance of  $7\frac{1}{2}$  miles, a substation erected and a full set of mining buildings were put up, including head-frame, compressor house, machine shop, office building, and cookery and living quarters. An average of thirty-five men were employed during 1942, commencing in April. Early in 1943 the company was arranging to ship crude ore to one of the smelters.

"Nickel Offsets, Limited, with a property in Foy township, west of Capreol, Sudbury district, continued the extensive surface exploration and diamond drilling that was started in 1939. A shaft was sunk in 1941 to a depth of 500 feet, to open three levels, at 250-foot, 350-foot, and 500-foot horizons, and underground development was started in the latter part of that year. Further development work was carried on during 1942 on these three levels, with encouraging results. Sinking operations were resumed in December 1942, with an objective depth of 1,280 feet. Diamond drilling indicated ore averaging 1.9 per cent nickel and 1.5 per cent copper, and containing \$2.00 a ton in precious metals, with mining widths up to 30 feet. The underground development has shown a substantially higher content of metals. It is planned to commence mining and shipping ore by late spring in 1943.

"Denison Nickel Mines Limited did not operate its property in Denison township, near Worthington, southwest of Sudbury, but hopes to reopen the mine in 1943.

"Clifton Consolidated Mines Limited took over the old Alexo nickel-copper property at Porquis Junction, Cochrane mining division. A new company—Harlin Nickel Mines Limited—was formed late in 1942 to operate the property and ore shipments commenced in 1943."

The annual report of the International Nickel Company of Canada Limited for 1942 contained the following information:

"The war demand for our metals continues unabated and deliveries are directed by governmental authorities. It is gratifying to report, as forecast a year ago, that the increase in production of nickel in all forms of 50,000,000 pounds over the 1940 output has been realized. Work on production expansion has progressed according to schedule and is largely completed. The expanded production of nickel already attained, coupled with conservation in its applications and organized salvage of nickel-bearing scrap, has eased a threatened shortage of supply. It would now appear that a sufficient tonnage of this strategic metal is available to meet all vital requirements of our armed services. While in no way lessening its war efforts, the company has long been formulating plans in preparation for the post-war period."

Falconbridge Nickel Mines Limited in its annual report for 1942 stated:

"The program to expand capacity begun in 1941 was completed by the middle of the year. At the further request of the Government, another blast furnace was ordered during the year and will be in operation some time during the first quarter of 1943. Through the maintenance of Falconbridge mine reserves, in spite of the increased rate of extraction, and the favourable results presented by the exploration program at other properties, the total ore reserves again show a moderate gain."

Capital employed in Canada by the nickel-copper mining, smelting and refining industry in 1942 totalled \$159,777,493; employees numbered 13,778 and \$28,356,141 were distributed as salaries and wages. Fuel and electricity used were valued at \$11,188,825 and the cost of chemicals, explosives and other process supplies consumed amounted to \$15,911,153."



Table 87.—Principal Statistics of the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1940-1942 (\*)

	1940	1941	1942
	(a)	(a)	(a)
Number of firms.....	3	3	4
Number of mines.....	6	6	8
Number of smelters.....	3	3	3
Number of copper refineries.....	1	1	1
Number of nickel refineries.....	1	1	1
Capital employed.....	\$ 132,818,804	140,844,747	159,777,493
Number of employees—On salary.....	928	963	1,098
On wages.....	11,411	11,796	12,680
Total.....	12,339	12,759	13,778
Salaries and wages—Salaries.....	\$ 2,623,307	2,831,984	3,184,248
Wages.....	\$ 19,945,580	22,438,513	25,171,893
Total.....	\$ 22,568,887	25,270,497	28,356,141
Fuel and purchased electricity used (2).....	\$ 9,048,885	10,213,183	11,188,625
Process supplies used (1).....	\$ 13,150,095	13,991,741	15,911,153
Estimated gross value of matte exported and Canadian refinery products.....	\$ 103,109,213	117,287,713	128,340,860
Value of production less items (1) and (2).....	\$ 80,010,233	93,082,789	101,240,882

(\*) Does not include data for mines, power plants, etc., operated by subsidiary companies.

(a) All in Ontario.

Table 88.—Output from Canadian Nickel-Copper Mines and Smelters, 1939-1942  
(Short tons)

	1939	1940	1941	1942
Ore shipped from mines.....	7,850,636	8,356,196	9,969,843	112,072,485
Ore treated (*).....	7,839,187	8,342,323	9,974,409	12,078,722
Blister copper produced in Ontario (a).....	155,860	167,908	158,788	146,362
Nickel produced in Ontario (b).....	65,883	83,739	97,033	102,478
Matte exported (c).....	71,315	58,398	67,904	61,226
Nickel content of matte exported.....	47,057	38,867	43,955	40,112
Copper content of matte exported.....	8,212	5,835	7,735	7,582

(\*) Represents the tonnage of crude ore smelted together with the tonnage of ore milled.

(a) Copper content.

(b) Includes nickel content of salts and oxides produced from nickel-copper ore only.

(c) Less a relatively small tonnage of matte returned to Canada for retreatment.

† In addition 3,400 tons of copper-nickel ore were mined at new properties under development but not shipped.

Table 89.—Capital Employed in the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1942

	\$
Present cash value of land (excluding minerals).....	128,390,391
Present value of buildings, fixtures, machinery, tools and other equipment.....	18,934,810
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	4,005,779
Inventory value of finished products on hand.....	8,446,513
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	159,777,493
<b>Total</b> .....	

Table 90.—Employees, Salaries and Wages, in the Nickel-Copper Mining, Smelting and Refining Industry in Canada, 1940

	On salary		Mine		Mill	Total	Salaries and wages
			Surface	Under-ground			
	Male	Female					\$
Salaried employees—							
Mine and mill.....	345	23				368	1,124,038
Smelters and refineries.....	610	120				730	2,060,210
<b>Total</b> .....	<b>955</b>	<b>143</b>				<b>1,098</b>	<b>3,184,248</b>
Wage-earners—							
Mine and mill.....			1,302	5,202	275	6,779	14,241,169
Smelters and refineries.....			5,901			* 5,901	10,930,724
<b>Total</b> .....			<b>7,203</b>	<b>5,202</b>	<b>275</b>	<b>* 12,680</b>	<b>25,171,893</b>
<b>Grand Total</b> .....	<b>955</b>	<b>143</b>	<b>7,203</b>	<b>5,202</b>	<b>275</b>	<b>13,778</b>	<b>28,356,141</b>

\* Includes 96 females.

**Table 91.—Number of Wage-Earners Employed in the Nickel-Copper Mining, Smelting and Refining Industry in Canada, by Months, 1941 and 1942**

Month	1941	1942	Month	1941	1942	
					Male	female
January.....	11,428	12,412	July.....	11,877	12,870	
February.....	11,575	12,199	August.....	11,908	12,287	
March.....	11,590	12,014	September.....	11,996	12,234	101
April.....	11,554	12,143	October.....	12,076	12,961	262
May.....	11,581	12,560	November.....	12,137	13,216	379
June.....	11,521	12,966	December.....	12,048	13,444	411

**Table 92.—Dividends Paid by Specified Nickel-Copper Mining Companies**

	Dividend 1942 *	Total Dividends paid to end of 1942*
International Nickel Co. of Canada Ltd., only.†.....	\$ 34,511,638	\$ 297,509,989
Falconbridge Nickel Mines Ltd.....	600,620	8,135,900

† Letters Patent granted July 25, 1916.

\* Canadian dollars.

## NICKEL

Production figures include nickel in matte exported from the Canadian smelters valued at 18 cents per pound; refined and electrolytic nickel produced in Canada, valued at the average price received for sales of nickel metal from the refinery during the year, and the nickel equivalent in oxides or salts produced, valued in the aggregate at the price obtained from the sales of oxides or salts. Distribution of nickel, now restricted to essential war uses, remains entirely under the direction of governmental agencies. Canadian nickel production in 1942 totalled 285,211,803 pounds.

## COPPER

Canadian primary copper production from all domestic sources totalled 603,661,826 pounds valued at \$60,417,372 in 1942 compared with 643,316,713 pounds worth \$64,407,497 in 1941. The decrease in output from 1941 resulted largely from a shortage of skilled labour in the mines and reflected the increasing problem of sufficient man power to cope with the complex demands of a global war. Of the total quantity of copper produced in the Dominion in 1942, the mines of Ontario contributed 51.1 per cent and Quebec 23.3 per cent. The combined output from Manitoba and Saskatchewan, originating almost entirely in the Flin Flon mine, comprised 17.3 per cent of the 1942 recoveries. Production in British Columbia, largely from the Granby and Britannia deposits, contributed 8.3 per cent. A relatively small production in the North-west Territories represented copper contained in auriferous concentrates exported to the U.S.A.

The total figure of Canadian production for 1942 included 538,020,995 pounds of the metal contained in blister and anode copper produced in Canadian smelters and 65,640,831 pounds in ores, matte, etc., exported. The output in 1942 was evaluated in Canadian funds at 10.086 cents per pound for metal contained in blister and anode copper produced and in ores and concentrates exported. Copper in matte exported was estimated at 7 cents a pound.

Data relating to world production of copper are now almost negligible. The Mining Journal, London, comments as follows: "To attempt any review of the copper industry in 1942 along customary lines, where attention is devoted principally to the production in various copper mining fields, to estimates of consumption, and to a recension of copper prices and market features is obviously impossible today. . . . The vital fact remains that supplies in Great Britain and apparently in the United States were sufficient to enable all consumer requirements to be promptly met. We have no data on the extent to which substitution of other materials for copper has eased the situation. That in the last resort this practice can solve difficulties is illustrated in the case of Germany. They have little copper, but this has not hitherto prevented them from equipping huge armies. The categorical imperative, "must" is the answer to any complaints of "can't" in war industry".

Table 93.—Production of Copper in Canada, by Provinces and Sources, 1941 and 1942

	1941		1942	
	Pounds	Value \$	Pounds	Value \$
<b>PRODUCTION—</b>				
By Provinces—				
Quebec.....	143,783,978	14,502,052	140,911,876	14,212,372
Ontario.....	333,829,767	33,192,644	308,282,414	30,625,404
Manitoba.....	67,018,503	6,759,492	47,595,586	4,800,491
Saskatchewan.....	32,324,512	3,260,250	56,781,486	5,726,979
British Columbia.....	66,327,166	6,689,758	50,015,521	5,044,565
Northwest Territories.....	32,727	3,301	74,983	7,561
<b>Total.....</b>	<b>643,316,713</b>	<b>64,407,497</b>	<b>603,661,826</b>	<b>60,417,373</b>
By Sources—				
In blister and anode copper produced.....	561,055,782	56,568,086	538,020,905	54,264,798
In ores, concentrates and copper matte exported (*).....	66,790,216	6,736,461	50,476,883	5,091,098
In nickel copper matte exported.....	15,470,715	1,082,950	15,163,948	1,061,476
<b>Total.....</b>	<b>643,316,713</b>	<b>64,407,497</b>	<b>603,661,826</b>	<b>60,417,373</b>

(\*) Contains a relatively small quantity of copper contained in gold and silver ores shipped to Canadian smelters; no copper matte exported in 1941 or 1942.

Table 94.—Production (†) of Refined Copper in Canada for Years Specified

Year	Ton	Year	Ton
1916*	483	1935.....	173,290
1917.....	3,901	1936.....	191,595
1918.....	3,809	1937.....	215,080
1919.....	3,467	1938.....	227,204
1920.....	31,377	1939.....	231,684
1921.....	92,183	1940.....	201,878
1922.....	90,077	1941.....	278,224
1923.....	112,245	1942.....	268,447
1924.....	149,261		

\*First electrolytic copper produced commercially in Canada, at Trail, B.C.

† From all sources.

NOTE—Electrolytic copper refinery at Copper Cliff, Ont., came into production in 1930; electrolytic copper refinery at Montreal East came into production in 1931.

Table 95.—Available Statistics on the Consumption of Copper in Specified Canadian Industries, 1941 and 1942

Industry	Item (Used)	1941	1942
Brass and copper products (a).....	Ingots, wire bars, slabs, etc.....	lb. 270,679,478	335,793,693
	Scrap.....	lb. 12,198,905	12,617,777
	Pipe and tubing.....	lb. 188,074	191,108
	Plates and sheets.....	lb. 971,838	846,308
	Wire.....	lb. 384,929	348,000
White metal alloys.....	Scrap, all kinds.....	lb. 10,200,476	9,669,323
	Copper—ingots and slabs.....	lb. 590,178	4,470,119
Electrical apparatus and supplies.....	Castings.....	lb. 480,687	148,237
	Ingots, slabs, wire bars, etc.....	lb. 2,109,395	2,036,221
	Rods.....	lb. 61,700,539	62,982,899
	Scrap.....	lb. 91,333	149,731
	Tubing and pipe.....	lb. 941,402	542,064
	Sheets and plates.....	lb. 846,949	7,883,936
	Wire, bare.....	lb. 8,607,762	7,862,294
	Wire, enamelled.....	\$ 902,613	711,706
	Wire, other insulated.....	\$ 1,577,960	1,551,529
Iron and steel and their products.....	Copper sheets, bars, etc.....	lb. 17,400,122	18,629,920

(a) 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.

(b) Not available.



**Table 96.—Canadian Copper Ore Reserves as Officially Reported**  
(American Bureau of Metal Statistics)

	Year	Province	Short tons ore	Average grade	Short tons copper
Falconbridge (a).....	1940	Ontario.....	7,502,000	% 0.94	70,500
Granby Consolidated—Allenby.....	1941	British Columbia..	16,707,600	1.32	220,500
Hudson Bay.....	1938	Manitoba.....	27,534,000	2.23	614,000
International Nickel (a).....	1939	Ontario.....	224,594,000	.....	(b)7,214,000
Noranda.....	1939	Quebec.....	29,513,000	2.32	681,700
Normetal.....	1935	Quebec.....	782,600	2.13	10,700
Sherritt Gordon.....	1939	Manitoba.....	4,860,000	2.38	115,700
Waite-Amulet.....	1939	Quebec.....	.....	.....	.....
Amulet section.....	1940	Quebec.....	279,000	2.70	7,300
Waite section.....	.....	Quebec.....	550,000	4.25	23,400
Britannia.....	.....	British Columbia..	(c)	(c)	(c)
Aldermac Mines Ltd.....	1938	Quebec.....	1,716,000	2.00	34,300
Amulet Dufault (d).....	1940	Quebec.....	3,260,000	6.30	205,400

(a) Also produces nickel. (b) Copper-nickel content. (c) Data not available. (d) New Company which took over "Lower A" orebody of Waite-Amulet.

### METALS OF THE PLATINUM GROUP

The entire output of new metals of this group in 1942 was derived from the nickel-copper ores of the Sudbury district in Ontario, with the exception of 40 ounces of platinum recovered from alluvial deposits in the province of British Columbia.

Production from Ontario ores represented recoveries made from precious metal concentrates shipped by the International Nickel Company of Canada Ltd. and treated in plants located at Acton, England, and Newark, New Jersey, U.S.A.; precious metals contained in matte made at the Falconbridge smelter were recovered in Norway until April, 1940, at which time the refinery of the company was seized by the German army; since then all matte made at the Falconbridge smelter was treated in the plants of the International Nickel Company of Canada Ltd. and recoveries of such metals were included with those reported by that company.

The world production of platinum and allied metals in estimated to exceed 700,000 ounces. Canada has been the leading producer of platinum since 1934 when it displaced Russia; the other principal producers by order of importance being Russia, Colombia, and South Africa. Canada also leads as a producer of palladium, as a result of the great increase in recent years in the Canadian output of nickel. Owing to the disorganized state of the world markets and government restrictions on publication of statistics, estimates on world production and consumption for 1942 are not available. The world consumption of platinum metals in 1939 was about equal to production (about 540,000 oz.), a notable gain over the 1935 figure of consumption of 275,000 ounces.

Industrial uses of the platinum metals continued to expand in 1942. Palladium ranks second in consumption and iridium third. Osmium, rhodium, and ruthenium, are as yet consumed in relatively small quantities.

The market situation in 1942 is explained by Charles Englehard, President of Baker and Company, Incorporated, in the following, part of which is abstracted from his annual review:

"The increased war needs of the United Nations, development of new industrial processes, scientific research for more dependable materials, all combined to make 1942 the biggest year in the history of the platinum metals industry.

"It was necessary for the War Production Board (U.S.A.) in October, 1942, to restrict the use of platinum for jewelry so as to be able to meet the probable war needs of the United Nations.

"The most important war-time uses of platinum are in the chemical, electro-chemical, and electrical fields, where high resistance to corrosion, erosion, and oxidation are essential. The largest single use is as a catalyst in the production of nitric and sulphuric acid for munitions plants—various electrical uses are second in importance and are followed closely by the glass and the electro-chemical uses. There are numerous new and interesting developments with platinum in the latter field. Other important uses for platinum, as well as palladium, are for catalytic operation in organic chemistry, such as the production of essential components of vitamins.

"Many of the industrial fields have also shown heavy demand for platinum-clad materials.

"In the dental field palladium as well as gold and platinum have extended their scope of usefulness.

"Ample supplies of palladium exist to take care of jewelry requirements. For this purpose it is usually hardened with ruthenium and is similar in appearance to platinum".

Table 97.—Production of Platinum Group Metals in Canada, 1941 and 1942

	Platinum		Palladium, Rhodium, Iridium, etc.	
	Fine ounces	\$	Fine ounces	\$
<b>1941</b>				
Ontario.....	124,257	4,747,860	97,432	3,396,304
British Columbia.....	60	2,293		
<b>Total.....</b>	<b>124,317</b>	<b>4,750,153</b>	<b>97,432</b>	<b>3,396,304</b>
<b>1942</b>				
Ontario.....	Censured			
British Columbia.....				
<b>Total.....</b>				

Table 98.—Production of Certain Metals of the Platinum Group, 1926-1932\*

Year	Rhodium		Ruthenium		Osmium		Iridium	
	Fine oz.	\$	Fine oz.	\$	Fine oz.	\$	Fine oz.	\$
1926.....	204	9,969	16	791			14	3,252
1927.....	222	6,853	31	1,073			45	4,945
1928.....	895	20,951	561	16,331			342	78,953
1929.....	3,037	151,850	1,376	66,048			497	119,777
1930.....	(a) 4,133	206,650						
1931.....	(a) 7,605	431,457						
1932.....	(a) 7,886	353,308						

(a) Includes rhodium, iridium and ruthenium as other platinum metals.

\* Since 1933 these metals are included with palladium.

Table 99.—Platinum Consumed in Canadian Jewellery and Silverware Industry, 1933-1942

Year	Value	Year	Value
1933.....	\$ 35,714	1938.....	\$ 85,603
1934.....	38,307	1939.....	160,688
1935.....	45,627	1940.....	148,748
1936.....	101,129	1941.....	208,318
1937.....	112,295	1942.....	361,006

## CHAPTER FIVE

## MISCELLANEOUS METAL MINING INDUSTRIES IN CANADA

Including General Statistics Relating to the Industries in this Group and Commodity Statistics Showing Production by Provinces and Prices on Aluminium, Antimony, Barium, Beryllium, Cadmium, Chromite, Iron Ore, Pig Iron and Ferro-Alloys, Steel and Rolled Products, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Radium, Selenium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Indium, Vanadium and Zirconium.

## 1. General Review

Metal-bearing minerals, mined in relatively small quantities by a comparatively few operators, have been grouped by the Dominion Bureau of Statistics for consideration as a single industry. Included with the finally revised statistics relating to the Canadian production of these, are notes and statistical data pertaining to various rare or semi-rare metals or metalliferous ores produced in other countries. Metals or metal-bearing ores produced in Canada during 1942 and classified as miscellaneous include—antimony, bismuth, cadmium, iron ore, indium, magnesium, mercury, molybdenite, pitchblende products, selenium, tellurium, tin, tungsten concentrates and titanium ore. In addition to particulars relating to these metals or products, the report contains notes of a summary nature on beryl and beryllium, lithium, sodium, calcium, aluminium, vanadium and zirconium.

It is to be noted that the majority of the metals listed above as Canadian products and including bismuth, cadmium, indium, selenium, tellurium and tin represent by-products recovered in the refining of lead, zinc or copper and, for this reason, such statistics as relate to their production in Canada are included with those of either the silver-lead-zinc mining industry, the copper-gold-silver mining industry, or the non-ferrous smelting and refining industry. For convenience, the value of all tungsten concentrates shipped in 1942 is included with gold mining data.

The gross value of production credited to this industry in 1942 totalled \$5,516,241 compared with \$3,428,886 in 1941. Employees totalled 1,352 in 1942 and salaries and wages paid amounted to \$2,396,731.

### ALUMINIUM

The reduction of aluminium ores and the production of primary aluminium in Canada is confined to the province of Quebec. In this province the Aluminum Company of Canada Limited operates an ore treatment plant at Arvida and reduction works at La Tuque, Shawinigan Falls and Arvida. The Shawinigan Falls and Arvida plants were in continuous production throughout 1942 and the new works at La Tuque was brought into operation in November. Work on the great Shipshaw power development in the Saguenay district was advanced rapidly by the company during the year under review. The Aluminum Company of Canada also operated fabricating plants at Shawinigan Falls and at Kingston and Toronto in Ontario. Brucite granules were also produced by the Company at Wakefield in the Gatineau valley of Quebec.

Bauxite from British Guiana, used for the production of aluminium, is washed and dried before being shipped from South America; at Arvida, Quebec, it is treated by a standard chemical process to remove impurities, and pure aluminium oxide is recovered. Cryolite, necessary in the production of the metal, is largely imported from Greenland; synthetic cryolite is also employed in making aluminium. A very great amount of electrical energy is utilized in the production of new aluminium metal from bauxite concentrates. No bauxite ores are mined in Canada and the principal producing countries are France, Hungary, United States, Yugoslavia, Italy, British Guiana, Dutch Guiana and Russia.

It was reported unofficially that the expanded Arvida operations would eventually turn out more aluminium metal than the combined world production of 1937. Aluminium was quoted at 15 cents per pound f.o.b. New York, January, 1943.

**Table 100.—Consumption of Aluminium in Specified Canadian Industries, 1941 and 1942**

Industry	1941		1942	
	Pounds	Cost at works	Pounds	Cost at works
		\$		\$
Aluminium products (a).....	41,832,000	8,057,820	62,442,663	12,684,015
White metal alloys*.....	1,754,472	423,519	1,357,782	276,709
Electrical apparatus and supplies.....		925,733		944,003
Brass and copper products (b).....	2,367,307	613,638	3,108,889	911,757
Iron and steel products (b) (c).....	4,844,122	1,292,379	8,802,268	2,740,947

(a) Largely for the manufacture of cooking utensils, cable, etc.

\* In addition in 1942 there were consumed 4,522,083 pounds of scrap valued at \$500,596, and in 1941, 7,352,993 pounds at \$653,972.

(b) Includes scrap.

(c) Includes industries manufacturing cooking and heating apparatus, sheet metal products, etc.

### ANTIMONY

Antimony production in Canada during 1942 totalled 3,041,108 pounds valued at \$516,988 compared with 3,185,077 pounds worth \$445,911 in 1941. Output in both years consisted almost entirely of the element recovered in the form of metal at Trail, British Columbia, by the Consolidated Mining & Smelting Company of Canada Limited; antimony is produced by this company from flue dust, a by-product in silver refining.



In addition to the production of the metal at Trail, a small test shipment of stibnite-bearing ore was shipped in 1942 to the United States by Mr. Walter McAlister from the "Caroline Antimony Fissure" property located in the Wheaton mining district of Yukon. The ore was obtained from an open cut working and was hand picked for shipment; the cobbled ore was reported to assay 50 per cent antimony.

In Ontario, the Gates Lake antimony deposit was diamond drilled during 1942 by the Fred Austin Antimony Syndicate. This deposit is situated in the Lower Manitou Lake area of the Kenora District.

During 1941 small shipments of crude antimony ore were made in British Columbia from the Stuart property on Ferguson Creek and from the Fraser mine, near Minto. For a number of years prior to 1917, small amounts of refined antimony ore as well as antimony were produced intermittently in the Maritime Provinces. Antimony deposits have also been worked in the province of Quebec and in Ontario the metal in small quantities has been exported in the form of a complex bullion made from silver-cobalt ores.

The market for antimony depends especially upon the demand from automobile manufacturers, as it is used largely in alloys for storage battery plates, bearing and babbitt metals, solder, rubber goods, paints and fixtures. The use of antimony in the manufacture of chemicals has increased considerably during the last two years. The principal compound is the oxide of antimony, which is employed extensively as a pigment in sanitary enamelware and nitrocellulose enamels. The expansion in the manufacture of munitions of war is also an important factor in the increasing demand for antimony. Since December, 1935 the Chinese antimony trade has been under government control.

Complete world data relating to antimony production have not been available since 1937; for that year a world production of approximately 34,502 metric tons of metal was estimated. The world's principal primary producers of the metal have been China, Mexico and Bolivia.

Engineering and Mining Journal, New York, quoted antimony metal—New York, at 15.559 cents per pound car-load lots, December 31, 1942. Antimony ore, per unit of antimony contained, 50 to 55 per cent, \$2.10 to \$2.20; 55 to 60 per cent, \$2.15 to \$2.20; 60 to 65 per cent, \$2.20 to \$2.30.

Table 101.—Antimony Used in Specified Canadian Industries, 1941 and 1942

Industry	1941		1942	
	Pounds	\$	Pounds	\$
White metal alloys—Regulus .....	1,386,077	197,622	1,818,370	264,838
Antimony ore .....	11,044	539		
Electrical apparatus and supplies .....	230,433	33,494	234,545	35,200

### BERYLLIUM

"Beryl, a silicate of aluminium and beryllium, at present the only commercial source of beryllium, usually contains from 10 to 12 per cent of beryllium oxide, corresponding to 4 to 4.5 per cent of metallic beryllium. It occurs in pegmatite dykes, mainly in the form of disseminated crystals, and most of the comparatively small tonnage produced is a by-product from the mining of such dykes for their feldspar, lithium minerals, or mica. World output is relatively small and comes mostly from the United States, India, Argentina, Brazil, and South Africa. Known world reserves, however, are believed to be capable of meeting a considerable increase in the demand.

"Known occurrences of beryl in Canada include a deposit in Lyndoch township, Renfrew county, Ontario, and several scattered occurrences in southeastern Manitoba, Ontario, Quebec, and the Northwest Territories.

"There have been no recorded sales of beryl from Canadian sources. The only known shipment consisted of a few tons taken from the Lyndoch deposit about ten years ago and shipped for experimental purposes. No records of imports of beryllium or its compounds are available, and no beryl is known to be used or required for any purpose in Canada.

"The leading users of beryl on the American continent are Beryllium Corporation of Pennsylvania, Temple (Reading), Pennsylvania, and Brush Beryllium Company, 3714 Chester Avenue, Cleveland, Ohio, both of which are engaged in treating the mineral for the production of metal, alloys, and compounds. Beryllium oxide also is produced by Clifton Products Incorporated, Painesville, Ohio; and a plant for the manufacture of oxide and carbonate was being installed in 1941 at Harbor City, California, by the Calloy Company.

"Prior to 1941, nominal American quotations for beryl had remained steady at \$30 to \$35 per short ton, f.o.b. mines, or \$40 to \$45 at consumption point, for 10 to 12 per cent BeO material, though actual sales under contract averaged somewhat higher. Quotations advanced through 1941 to \$52 and \$55 for the above grades, with actual sales reported at \$60 to \$72 in the latter part of the year. The upward trend continued during 1942 and in the latter part of the year the price was stabilized by the U.S. Government at \$8.33 per unit of contained BeO, equivalent to \$83 and \$100 per ton for 10 per cent and 12 per cent grades, respectively, this price being for purchases for Government account."—(Bureau of Mines, Ottawa.)

### BISMUTH

Production of bismuth in Canada in 1942 totalled 347,556 pounds valued at \$479,627. The greater part of this output originated in the silver-lead ores of British Columbia and the recovery of the metal from these ores was made in the Trail plants of the Consolidated Mining and Smelting Company of Canada, Limited. In addition to the British Columbia production, a relatively small quantity of bismuth was recovered in the form of a lead-silver-bismuth bullion made by the Deloro Smelting & Refining Company Limited from silver-cobalt ores mined in northern Ontario.

It is impossible to arrive at any actual figure for the world output of bismuth and according to "The Mineral Industry" the world total in 1940 was probably not far from the 1,500 metric tons estimated in 1939. Peru, Mexico, Roumania, Japan, Bolivia and Australia are among the more important bismuth producing countries. The occupation of Yugoslavia in 1941 gave Germany control of the by-product bismuth from the Trepea mines.

Bismuth is used mostly in the manufacture of pharmaceutical products. A much larger portion than formerly is now used in the making of so-called fusible or low-melting alloys. Fusible bismuth alloys usually include lead, tin, cadmium, mercury, or antimony. An alloy of bismuth, lead, tin, and antimony has been introduced for use in mounting dies and punches. The Ekko process, for electroforming with iron, has provided an outlet for bismuth in the form of "cerrobaze", a nonshrinking bismuth-lead (Bi-Pb) alloy. One application of the Ekko process is the production of dies or moulds from which a photographic likeness can be transferred to iron. Although many applications of bismuth, introduced in recent years, have increased the demand for this metal, potential supplies have greatly exceeded the present demand. The war has restricted international trade in bismuth and encouraged the use of substitutes. The demand for bismuth increased recently owing to its greater use in metallurgical and pharmaceutical applications. Alloys containing bismuth find use to a greater extent in the aircraft, machine tool, munitions and other industries.

The price of bismuth at New York remained fixed at \$1.25 a pound throughout 1941 and 1942. For several years the United States price has been maintained at a little below the European parity, plus duty of 7½ per cent ad valorem, chargeable upon imports into the United States. For several years the price has been well controlled.

**Table 102.—Bismuth Used in the Manufacture of Canadian Medicinal and Pharmaceutical Preparations, 1941 and 1942**

Item	1941		1942	
	Pounds	\$	Pounds	\$
Bismuth metal.....	30,993	38,188	24,420	30,534
Bismuth salts.....	14,159	29,251	18,153	35,793

Canadian white metal alloy foundries consumed approximately 25,079 pounds of bismuth metal in 1942 and 1,810 pounds in 1941.

## BORON

According to the United States Bureau of Mines, boron alloys are supplied by United States manufacturers, small quantities being used in the non-ferrous metals industries and in steel making. In cast iron, boron opposes graphitization on solidification and exerts an energetic whitening effect, producing a hard strong iron but reducing malleability. Recently boron has been found to be one of the so-called minor elements that stimulate plant growth and inhibit the development of certain plant diseases.

Boron carbide, boron carbide shapes and calcium boride are now produced in Canada.

World reserves of boron minerals are abundant, but known sources are confined to a few countries, chiefly the United States, Chile, Argentina, Peru, Italy and Turkey, although borax also has been reported in Tibet, Persia, India and Ceylon.

A maximum price of \$41.50 per ton for borax was set by the United States Price Administration in 1941.

## CADMIUM

Cadmium production in Canada represents the recovery of the metal as a by-product in the electrolytic refining of zinc. Production up to 1935 came entirely from the treatment of zinc-bearing ores at Trail, B.C. by the Consolidated Mining & Smelting Company of Canada, Limited. The commercial production of the metal from the copper-gold-silver-zinc ores of the Flin Flon mine was commenced in Manitoba for the first time in 1936.

Cadmium is consumed largely in the manufacture of alloys and for plating, also in the making of such pigments as cadmium lithopone, cadmium yellows, etc. A relatively large quantity of the metal is used in the production of bearing metals for high-speed internal combustion engines. It was reported after the outbreak of war in September, 1939, that both the demand and market price of cadmium showed a decided increase. "Metal and Mineral Markets", New York, quoted cadmium, June, 1942, per pound, commercial stocks, wholesale quantities, 90 cents.

Canadian production of cadmium in 1942 totalled 1,148,963 pounds valued at \$1,355,776 compared with 1,251,291 pounds worth \$1,469,016 in 1941. Data relating to world production of cadmium have not been complete since 1938, for which year the American Bureau of Metal Statistics estimated a world output of 8,666,422 pounds. The United States is by far the greatest producer of cadmium; other important producers at the outbreak of war included Germany, France, Norway, Poland, Mexico, South West Africa, Russia, Belgium and Australia. "Mineral Industry" reported that almost one-third of the normal cadmium production of the world was now in German hands, but this does not necessarily mean that Germany is now well supplied with cadmium, for all the countries concerned except Germany and Poland depended almost entirely on imported ores which are no longer available. Cadmium is recovered as a by-product in the electrolytic refining of zinc and in the manufacture of lithopone, and therefore the volume of its output fluctuates with the production of these materials.

Table 103.—Cadmium Consumed by Specified Canadian Industries, 1940-1942  
(Pounds)

Industry	1940	1941	1942
White metal alloys.....	121,008	243,717	347,725
Steel foundries.....	8,000	32,000	18,000
Iron foundries.....	9,528	12,000	34,000
Non-ferrous smelters.....			2,000
Other industries.....	5,483	11,000	12,000
<b>Total Accounted for.....</b>	<b>142,019</b>	<b>298,717</b>	<b>413,725</b>



## CALCIUM

There is no commercial production of calcium metal in Canada and data relating to possible imports of metallic calcium into the Dominion are not published. Metallic calcium was produced almost exclusively abroad before the war, chiefly in France. It is now made in the United States, which is the leading consumer.

Metallic calcium was placed under allocation by the United States War Production Board through issuance, on April 1, 1943, of General Preference Order M-303. The metal is used exclusively in metallurgy, including production of magnesium for casting, stainless steel alloys, zirconium, and various special alloys. Distributors in the United States quoted the metal in April, 1943 at \$1.25 a pound, ton lots.

## CERIUM

"Cerium is obtained from monazite, a monoclinic phosphate of cerium metals, containing about 32 per cent cerium oxide ( $\text{Ce}_2\text{O}_3$ ) and up to 18 per cent thoria ( $\text{ThO}_2$ ). Monazite is distributed widely in igneous rocks throughout the world, especially in gneisses that have been intruded by pegmatites, but usually in forms only a small fraction of one per cent of the containing rock, and only the natural concentrations in stream gravels and beach sands have paid for exploration. The leading commercial sources of monazite sands are beach deposits in Brazil and India. In the United States there are commercial deposits in Carolina, Florida, and Idaho, and known occurrences in many other states. There are no known commercial deposits in Canada; there are a few known occurrences of monazite in Nova Scotia, Quebec, and British Columbia. It is usually found as small crystals in granites and pegmatites in the Canadian Shield. Small quantities occur in association with the black sands of the Quesnel River, Lillooet district, British Columbia. World production of monazite is approximately 5,000 tons a year.

"Cerium is usually regarded as belonging to the general group of "rare earths", as it invariably occurs in nature associated with the other members (15 in all) of the group, and is very similar to the other rare-earth elements in many of its chemical properties.

"Formerly the only commercial constituent of monazite was thoria, which was used in gas mantles, and monazite is still marketed on the basis of its thoria content, although commercial interest now centers on its content of ceria ( $\text{Ce}_2\text{O}_3$ ) and other rare-earth oxides. Probably 50 per cent of monazite derivatives are consumed, chiefly as fluorides, in the cores of arc carbons to increase lighting intensity in searchlights, motion-picture projectors, and therapeutic lamps. About 25 per cent of the consumption of monazite derivatives is used in pyrophoric alloys or ferrocerium for use in sparking flints for lighters and the remainder is distributed among a large variety of uses, principally for making optical glassware.

"Nominal prices for monazite as given by Metal and Mineral Markets, New York, remained at \$60 per short ton, 8 per cent minimum thoria, throughout 1942. Published quotations are not available for most of the rare-earth products, although prices for small lots may be obtained on request from mineral dealers and chemical manufacturers. Prior to the war the leading producers of rare-earth products were located in Berlin, London, and Paris, for Europe, and Chicago for the United States.

"In Canada, Shawinigan Chemicals, Limited, Shawinigan Falls, Quebec, has, since 1940, been producing cerium products from imported cerium chloride. The output is sold to Cerium Company, Limited of Montreal, for the manufacture of sparking flints."—(Bureau of Mines, Ottawa.).

## CHROMITE

"Pure chromite ( $\text{FeCr}_2\text{O}_3$ ) contains 68 per cent chromic oxide, but in nature it always contains besides iron, varying amounts of magnesia and alumina. It is a heavy, almost black, lustrous and brittle mineral and the ore usually occurs in dunite bands in serpentine rocks. Fresh dunite is a fine-grained dark grey-green olivine rock. Chromite is distinguished in the field from other black minerals of similar appearance by its chocolate-brown powder or streak when struck or scratched with a hammer.

"Shipments were made by four producers operating in the Eastern Townships of Quebec, the chief of which was Chromite Limited at St. Cyr, 30 miles north of Sherbrooke; other shippers were Orel Pare, who worked the old Montreal pit, Coleraine township, range 11, lot 25, under contract for Union Carbide (U.S.A.); Bruce Fletcher and later Orford Mining Company, from a deposit northwest of Sherbrooke, and W. Roberge from the old Hall mine (Thetford quarry), 7 miles southeast of Black Lake. Canadian production of chromite in 1942 totalled 11,456 tons valued at \$343,568.

"The two outstanding developments in Quebec during the year were the operations at Chromeraine on the old Reed-Belanger properties near Black Lake and the full-scale production by Chromite Limited near St. Cyr station (C.N.R.) in Cleveland township, range X, lots 7 and 8. During the last war the St. Cyr deposit, 5 miles east of Richmond, was known as the Sterrett mine and was opened by surface pits and underground workings for a length of 1,400 feet, and about 15,000 tons of ore were sold as crude or concentrate. Because of the favourable indications on the second level, a 100-ton mill was erected in the fall of 1941 and production was started early in 1942 and later the mill was increased to 150 tons. At the present output rate it is expected that before the end of 1943 the output during the last war will be exceeded.

"In the Black Lake area, Wartime Metals Corporation extensively diamond drilled and investigated the underground workings of the Reed-Belanger deposit in Coleraine township, range X, lot 19, from which about 100,000 tons of concentrate and crude ore were sold during the last war. Over a million tons of milling grade ore, with some high-grade shoots were indicated. Buildings and a 600-ton a day concentrator were erected, and production of concentrates is expected about the middle of May, 1943. The property is now known as Chromeraine. Wartime Metals Corporation also holds the old Provincial mine, half a mile to the north. This property was examined and mapped by geologists of the Federal Department of Mines in 1942 and diamond drilling was recommended.

"Many chromite deposits are known in the Black Lake-Thetford area and shipments to the Chromeraine mill are expected from a number of small and partly worked deposits. Several of these were prospected in 1942 and on some of them milling grade ore has been stockpiled.

"In the outlying districts, the Orford Mining Company operating with Dominion Government assistance, took over, late in the summer, the H. Bruce Fletcher deposits in Orford township, range XII, lot 7, about 15 miles northwest of Sherbrooke and worked No. 4 pit, which is 100 feet deep. A tunnel was driven under the pit and over a thousand tons of crude ore were shipped, but operations ceased late in the fall. In the Gaspé peninsula, Chromium Mining and Smelting Company is prospecting and diamond drilling chromite deposits in Weir township about 15 miles north of Port Daniel on the south Gaspé shore and also about 70 miles to the northwest in the Mount Albert district, Courcellette township, in north-central Gaspé. In the former, large boulders of chromite have been found and search for the ore in place is continuing. At Mount Albert small areas of high-grade lenses were discovered near the top of the mountain. Some work was done by Alchrome Prospecting Syndicate on a deposit in Awantjish township, range IV, lot 12, a few miles west of Lake Metapedia on north-central Gaspé.

"In Ontario, Donaldson Chromium Prospecting Syndicate did some work on the serpentine zone in Rheume township, concession VI, lot 10, about 11 miles southeast of Cochrane, where small segregations of low-grade ore, high in iron, were prospected by pits, trenching, and diamond drilling. A deposit west of Shebandowan Lake, 55 miles west of Port Arthur, was sampled and diamond drilled but as samples and mill tests gave low results with high iron content further prospecting was not recommended.

"In Manitoba, considerable interest has been aroused by the discovery by geologists of the Federal Department of Mines and the University of Manitoba, of large chromite deposits north of the Bird River about 20 miles from the railway at Pointe du Bois in the southeastern part of the province. In July 1942, the recognition of chromite in the gabbro and peridotite on the Page claim (being drilled for copper-nickel) suggested its occurrence in other areas of similar rocks, which was later confirmed. Many claims have been staked or acquired and are being drilled and prospected by Hudson Bay Exploration and Development, God's Lake Gold, Gunnar Gold, Central Manitoba, and others. The chromite occurs in alternate narrow bands of high- and low-grade ore. The main zone averages 7 feet in width and occurs in several separated groups, some of which have been traced for over 2,000 feet. The run-of-mine ore ranges



between 16 and 20 per cent  $\text{Cr}_2\text{O}_3$ , but is complex and high in iron. Several car lots were sent to the Bureau of Mines Laboratories, Ottawa, recently for concentration tests. Some difference was found in the character of the ores from the God's Lake and the Hudson Bay claims, the latter yielding a slightly better concentrate, but both contained a high proportion of iron, the best chrome-iron ratio being about 1.2 to 1. About a car lot of mixed concentrate from both properties was shipped to Sault Ste. Marie for test. Metallurgical research is being conducted at Ottawa to reduce the content of iron, but owing to its peculiar and intimate association with the chromite, satisfactory results are difficult to obtain at a reasonable cost.

"In British Columbia, a number of chromite deposits were examined by geologists of the Federal and Provincial Departments of Mines. A few were prospected but no shipments were made and substantial production is not likely from any.

"Until recently, metallurgical chromite had to contain a minimum of 48 per cent  $\text{Cr}_2\text{O}_3$  and a chrome-iron ratio of not less than 3 to 1. Basic ceiling prices are for ores of the above grade and ratio, but because of the present emergency, ores as low as 40 per cent  $\text{Cr}_2\text{O}_3$  and 2-1 ratio are acceptable at lower prices. When possible, lower grade ores are mixed with those of the highest grade, the proportion depending upon whether the ferrochrome produced is to be used for low- or for high-carbon steels. The maximum allowance for sulphur is 0.5 per cent and for phosphorus 0.2 per cent. Although lump ores are preferred, fines and concentrates are used in quantity; in some instances they are briquetted before use. The low iron content of the ore or concentrate is of the utmost importance.

"The principal Canadian buyers of chromite for metallurgical use are: Chromium Mining and Smelting Corporation, Sault Ste. Marie, Ontario, and Electro-Metallurgical Company of Canada, Welland, Ontario. The only important purchaser of refractory ore is Canadian Refractories Limited, Canada Cement Building, Montreal, Quebec. The types and grades of ore acceptable to these buyers are indicated under "Specifications".

"Canadian prices for high-grade ores are based upon the United States ceiling price, which is \$43.50 per long ton at seaboard for ore containing 48 per cent  $\text{Cr}_2\text{O}_3$  with a chromium-iron ratio of 3 to 1; plus or minus 90 cents per long ton unit of 22.4 pounds of contained  $\text{Cr}_2\text{O}_3$  above or below 48 per cent; plus or minus \$1.25 for each 0.1 chromium-iron ratio above or below 3 to 1, the limits being 3.5 to 1 and 2 to 1.

"The price at a Canadian mine at Black Lake in the Eastern Townships of Quebec would, for example, approximate this basic ceiling price; plus freight of \$2.28 from seaboard to Niagara Falls (near a Canadian consuming centre); plus exchange at 11 per cent to convert into Canadian funds; less \$5.12 freight from Black Lake to Niagara Falls. For a 46 per cent  $\text{Cr}_2\text{O}_3$  ore with Cr-Fe ratio of 2.8 to 1, this price per long ton at Black Lake would thus amount to about \$43.50, less penalties of \$4.30, plus freight of \$2.28, plus \$4.56 exchange, less \$5.12 freight, or to about \$40.83 in Canadian funds."—(Bureau of Mines, Ottawa.)

Prices of other grade ores can be obtained from the Metals Controller, Ottawa.

Table 104.—Consumption of Certain Chromium Products and Chrome Ore in Specified Canadian Industries, 1941 and 1942

Industry	Item	1941		1942	
		Pounds	\$	Pounds	\$
Ingots and castings.....	Chrome ore.....	1,248,000	30,619	2,464,000	58,095
Ingots and castings.....	Ferrochrome.....	6,878,000	690,600	11,262,000	1,445,089
Paints, pigments and varnishes.....	Chrome colours.....	2,370,872	464,089	2,669,978	551,855
Paints, pigments and varnishes.....	Sodium bichromate.....	887,797	88,329	1,015,065	105,731
Leather tanning.....	Sodium bichromate.....	1,905,201	179,306	2,107,737	203,305
Glass manufacture.....	Chromite.....	4,000	204	10,000	460

NOTE.—In addition to the items listed above, a considerable quantity of chromite is utilized in the manufacture of Canadian ferro-alloys, also a relatively small quantity of sodium bichromate is consumed in the chemical industry. Chromite is also employed in Canada in the manufacture of refractories.



**Table 105.—Chromite Mining in Canada, 1942**  
(all in Province of Quebec)

Active firms.....	No.	14
Capital employed.....	\$	380,027
Employees—Salaried.....	No.	45
Wage-earners.....	No.	286
<b>Total.....</b>	<b>No.</b>	<b>331</b>
Salaries and wages—		
Salaries.....	\$	57,926
Wages.....	\$	354,529
<b>Total.....</b>	<b>\$</b>	<b>412,455</b>
Gross value of production.....	\$	343,568
Fuel and electricity used.....	\$	34,567
Process supplies used.....	\$	116,725
Freight.....	\$	17,945
Net value.....	\$	174,331

NOTE.—In addition, exploratory work, including diamond drilling, was conducted in 1942 on chromite deposits located in south-eastern Manitoba, but no data are available.

### INDIUM

"Many zinc ores contain indium, which is frequently associated with gallium. Indium also occurs in tin and tungsten ores and in some iron and manganese ores. Indium production in Canada was reported for the first time in 1942. It is being recovered in small quantities at Trail, British Columbia, from treatment of the residues obtained at the zinc refinery of Consolidated Mining and Smelting Company.

"Refined indium has a silvery-white colour somewhat resembling that of platinum. It is ductile and slightly heavier than zinc. It has a low melting point (155°C.) and a relatively high boiling point (1450° C.).

"World production is still relatively small. Indium is being produced commercially in the United States, Germany, Belgium, and possibly in Japan and Russia.

"In the United States indium is now recovered as a by-product of zinc and lead operations by American Metal Company, American Smelting and Refining Company, Anaconda Copper Mining Company, and National Zinc Company.

"Indium is used for plating and as an alloy with other metals. It is desposited on and alloyed with cadmium-nickel and copper-lead on bearings for aeroplanes, automobiles, etc., and resists corrosive action of lubricants containing organic acids. Coatings of indium-alloys appear to have a diversity of uses. They are easily polished and burnished. Indium is alloyed with gold and silver and with various base metals. It is used in dental alloys and in making low melting alloys. Augmented production of engine bearings and war restrictions on ordinary plating metals have stimulated interest in indium during the past two years.

"The price of metallic indium was reduced in December 1940 from \$15 to \$12.50 a troy ounce, at which price it remained throughout 1941 and 1942."—(Bureau of Mines, Ottawa.).

Canadian production of indium in 1942 totalled 471 troy ounces valued at \$4,710.

### IRON ORE

"Deposits of iron ore in Canada are many and widespread and include hematite, siderite, magnetite, bog iron, and magnetic sand. Because of the availability at low cost of higher grade ores in the Lake Superior iron ranges of the United States and in Newfoundland, no iron ore from domestic sources was produced in Canada from 1923 until 1939. Production of iron ore in Canada in 1942 totalled 545,306 short tons valued at \$1,517,077.

"Dominion Steel and Coal Corporation, Limited, with plants at Sydney, Nova Scotia, obtains its iron ore from its own mines at Wabana, Newfoundland. Steel Company of Canada, Limited, at Hamilton, Ontario, and Canadian Furnace, Limited, at Port Colborne, Ontario, obtain their iron ore supplies from the Lake Superior region of the United States. Algoma Steel Corporation obtains most of its requirements from the United States and the remainder from the New Helen mine.

"In Ontario, Algoma Ore Properties, Limited, a wholly owned subsidiary of Algoma Steel Corporation, Limited, encouraged by the bounty of two cents per iron unit provided by the Ontario Government, began in 1937 development work at its New Helen mine in the Michipicoten area, Ontario, and the first sinter was produced in July, 1939. Operations during the last two years consisted mainly in open cut mining.

"The New Helen deposit is estimated by the company to contain at least 100,000,000 tons of siderite or carbonate ore, averaging about 35 per cent iron, and, to fit it for commercial use in blast furnaces, a sintering plant capable of treating 3,000 tons of ore a day was built, the sinter produced approximating the following analysis:

	%		%
Iron.....	53.40	Alumina.....	2.06
Phosphorus.....	0.03	Lime.....	3.95
Silica.....	7.00	Magnesia.....	7.50
Manganese.....	3.00	Sulphur.....	0.035

"The total shipments of sintered ore in 1942 were 481,800 tons. It was shipped via Michipicoten Harbour, 8 miles from the sintering plant, to the company's blast furnaces at Sault Ste. Marie, Ontario, and to the United States ports on the Lower Lakes for use in United States blast furnaces. The manganese content is of special interest to users.

"Exploratory work on the hematite property of Steep Rock Iron Mines Limited situated east of Atikokan, and about 135 miles west of Port Arthur, Ontario, indicates that the deposits which were discovered in the winter of 1937-38 under the bed of Steep Rock Lake by diamond drilling through the ice, are large and high in grade. The size of the hematite bodies can be gauged from what has been reported, namely, that the probable average widths of A, B, and C bodies are 205, 135, and 200 feet respectively, with explored lengths of over 3,000 feet in the case of A, which is still open at one end, and of 5,000 and 800 feet for B and C, each of which is open at both ends. Under the A orebody the greatest depth at which the ore has been found in a borehole is 1,400 feet below the surface of Steep Rock Lake, or 1,035 feet below the ledge; under the B zone ore was encountered 700 feet below lake level. High-grade ore occurs within these deposits and presumably makes up a considerable, but as yet very incompletely defined part of them.

"A shaft on the shore west of orebody "A" was sunk during the winter of 1939-40 to a depth of over 800 feet, and a crosscut was then driven on the 800-foot horizon toward the orebody. Water difficulties were so serious that the crosscut could not be completed, and it became evident that drainage of the lake was necessary to mine the ore. The company's development program includes the diversion of the Seine River, which now flows through the lake, and the pumping out of the lake itself for open-pit mining of the large orebodies already indicated. This deposit appears to be one of the most important mineral discoveries made in Canada in recent years. During the past winter churn-drilling operations were carried on through the ice to determine the continuity of the orebodies in depth. These holes showed similar high-grade ore as outlined by the earlier diamond drilling. Detailed surveys of the route of the diversion have been made and negotiations are under way toward the financing of the diversion of the river, the drainage of the lake, and to bring the property into production.

"Michipicoten Iron Mines Ltd. was formed in 1943 to take over the iron properties owned jointly by Sherritt Gordon Mines Ltd. and Frobisher Exploration Co. Ltd. (a subsidiary of Ventures Limited). These properties, which consist of the Josephine, Ruth, and Lucy mines are about 20 miles from Michipicoten Harbour, Algoma district. Construction work was started at the Josephine mine in the fall of 1941, a transmission line was built to connect with the power line at Hawk Junction and the necessary electrically driven plant for development operations was installed. Shaft sinking was started February, 1942 and completed to a depth of 1,055 feet early in September. The drainage of Parks Lake was undertaken and by the end of October the main basin of the lake under which the orebody is located was dewatered. Some experimental shipments of lump ore have been made for test purposes.



"The highest grade ore known is at the Josephine property, while large but lower grade ore deposits exist at the Ruth property about two miles away. The Lucy property has not yet been drilled. The Josephine mine is estimated to contain 1,271,000 tons of hematite averaging 51.3 per cent iron and 21 per cent silica, down to the 6th level. At the Ruth property drilling carried out since January 1942 shows an estimate of 11,200,000 tons of siderite, averaging 34.5 per cent iron. A pilot-plant has been in operation since the summer of 1942 for testing purposes. Consideration is being given to the erection, possibly in 1943, of the necessary mining, milling, and sintering plants for the production of about 500 tons of sinter a day.

"During the past year Frobisher Exploration Company, Ltd., an exploration subsidiary of Ventures Limited and associated companies, continued investigation of Bessemer, Childs, and Rankin magnetite deposits in Mayo township, Hastings county. Extensive underground sampling and diamond drilling were carried out at the Bessemer mine, and the program of surface drilling on the Bessemer commenced in 1941 was continued. At the Radenhurst-Caldwell magnetite property near Flower Station, in Levant township, Lanark county, a program of shallow diamond drilling was carried out in 1942. This exploration indicated a substantial tonnage of low-grade ore and further drilling is planned in 1943. Large-scale magnetic concentration tests on the Bessemer ore were continued, and small-scale testing on the Radenhurst-Caldwell ore was commenced, at the Bureau of Mines Laboratory in Ottawa.

"Extensive surveys and exploration work have been carried on by Labrador Mining and Exploration Company of Montreal, near Sawyer Lake and vicinity, along the Quebec-Labrador boundary line. The company reports that six deposits of iron ore were discovered during the short summer field seasons of 1936 to 1939 inclusive. The principal deposit located at Sawyer Lake, in the Newfoundland Labrador Concession, about 280 miles north of Seven Islands in the Gulf of St. Lawrence, is estimated by the Company to contain 2,200,000 tons of hematite ore (averaging 65% iron) per 100 feet of depth. The phosphorus content is under 0.04 per cent. Four other deposits are of good grade, and one of them is rich in manganese. The total possible reserve in these four deposits is estimated by the company at 70,000,000 tons to a depth of 1,000 feet. The other deposit is high in silica, and is believed to represent a large tonnage. Field work on this deposit was carried on in 1942 under the direction of Hollinger Consolidated Gold Mines, Limited which has acquired a controlling interest in Labrador Mining and Exploration Company. Geological and exploration work were also undertaken on the Concession in a contiguous area in Quebec, which area embraces a total of approximately 20,000 square miles. The field work of 1942 by Hollinger confirmed the results of the work of earlier years. The exploitation of these deposits would necessitate the construction of a railway line from the St. Lawrence River at Seven Islands, which port is open to navigation throughout the year.

"In British Columbia, the report on the proposed iron and steel works by Arthur G. McKee and Company of Cleveland, Ohio, for the British Columbia Department of Mines was made public on February 26, 1942. The general plan involves the annual production of 75,000 tons of finished steel products. The proposed site is at Union Bay, on the east coast of Vancouver Island. The province has many deposits of magnetite and a few of hematite and limonite. Three deposits, owing to their proximity to Union Bay, have been selected for consideration; Zeballos, on the northwest coast of Vancouver Island, with 500,000 tons of magnetite averaging 68½ per cent iron with low manganese and no undesirable elements; Iron Hill, south of Campbell River, on the east coast of Vancouver Island, with 1,000,000 tons of magnetite ore available; Texada Island, within 20 miles of Union Bay, with several deposits of good grade ore. The proposed site is adjacent to coking coal and limestone supplies.

"Bounties on the production of iron ore are offered by the provinces of Quebec, Ontario, and British Columbia. In Quebec, the premium is at the rate of four-fifths of one cent for each unit (22 lb.) of iron metal contained in every ton of iron ore. In Ontario, the bounty is 2 cents per unit of metallic iron in the long ton of low-grade iron ore beneficiated in Ontario so as to be suitable for use in the blast furnace, or on natural ore of commercial quality smelted in Canada. In British Columbia, the bounty paid must not exceed \$3.00 a ton on the proportion of pig iron produced from ore mined in the province, and must not exceed \$1.50 a short ton on the proportion of pig iron produced from ore mined outside the province. A bounty not to exceed \$1.00 a short ton is also offered on steel shapes of commercial utility manufactured in British Columbia."—(Bureau of Mines, Ottawa.).



During 1942 there were 187 short tons of magnetite valued at \$935 shipped from a deposit located near St. Jerome in the province of Quebec. The mineral was extracted by Laurentide Mining Reg.

There are no official Canadian price quotations for iron ore. Prices f.o.b. Lake Erie ports, per long ton for Lake Superior, U.S.A., iron ore, 51½ per cent iron ore are: Messabi, Non-Bessemer—\$4.45, Bessemer—\$4.60; Old Range, Non-Bessemer—\$4.60, Bessemer—\$4.75. The price of Brazilian ore, f.a.s. Brazilian ports, 68 per cent iron, is 7 cents per long ton unit or \$4.76 a long ton.

Table 106.—Shipments of Iron Ore from Wabana Mines, Newfoundland, 1931-1942

Year	To Nova Scotia	To United States	To Europe	Total Ship- ments
	(Short tons)			
1931.....	234,148	25,670	530,079	789,897
1932*.....			166,303	166,303
1933.....			254,383	254,383
1934*.....	346,178		344,769	690,947
1935.....	611,581		81,123	692,704
1936.....	527,540	12,656	252,676	792,872
1937.....	702,714	50,490	1,242,088	1,995,292
1938.....	555,348		1,305,068	1,860,416
1939.....	576,198	16,184	980,068	1,572,450
1940.....	762,310	26,118	789,578	1,578,006
1941.....	943,643	63,869	316,530	1,321,043
1942.....	735,324†		234,483	969,807

\* Shipments to Europe in 1930, 1932 and 1934 were to Germany only, while from 1935 to 1938 shipments went to both Germany and Great Britain. Shipments to Germany in 1938 totalled 1,256,230 short tons, and in 1939, 768,743 tons. In 1940 and following years, European shipments went to Great Britain.

† Includes 41,203 tons lost by enemy action.

Table 107.—Iron Ore Mining in Canada, 1942 (\*)

	Quebe	Ontario	Canada
Active firms.....No.	3	4	7
Capital.....\$	105,927	2,402,723	2,508,650
Employees—On salary.....No.	7	35	42
Wage-earners.....No.	5	313	318
Total.....No.	12	348	360
Salaries and Wages—Salaries.....\$	3,690	89,785	93,474
Wages.....\$	5,140	577,495	582,635
Total.....\$	8,839	667,280	676,119
Gross value of production.....\$	935	1,516,142	1,517,077
Fuel and electricity used.....\$		301,774	301,778
Process supplies used.....\$		347,690	347,690
Freight and treatment charges.....\$		236,307	236,307
Net value.....\$	935	630,367	631,303

\* Does not include data relating to titaniferous iron ores.

## IRON AND STEEL AND THEIR PRODUCTS

### The Primary Iron and Steel Industry

Statistics for the Primary Iron and Steel Industry include data for all establishments in Canada which were engaged chiefly in the manufacture of (a) pig iron, (b) ferro-alloys, (c) steel ingots and steel castings, (d) hot rolled iron and steel products, (e) cold rolled or cold drawn steel bars, strips and shapes. Forty-four firms were included in this industry in 1942 and reports were received for 61 different plants or departments, including 4 blast furnace departments, 4 ferro-alloy plants, 35 steel furnace divisions, and 18 rolling or drawing mills. Separate reports were received for blast furnace departments, for steel furnace divisions and for rolling mills even when all three were units of a single works.

Factory sales of pig iron, ferro-alloys, steel ingots and castings and finished rolled products were 41 per cent higher in 1942 than in 1941, the values being \$232,105,755 and \$164,566,392, respectively. Twenty-seven works in Ontario accounted for 60 per cent of the total for Canada or \$159,077,961; 6 plants in Nova Scotia accounted for 13 per cent or \$31,009,632; 16 plants in Quebec for 15 per cent or \$34,976,121, while the remaining \$7,042,041 or 3 per cent was accounted for by 4 plants in Manitoba, 5 in British Columbia and 3 in Alberta.

Fixed and working capital employed in this industry amounted to \$205,804,671, including \$122,624,037 for the value of land, buildings and plant equipment, \$45,440,893 for the value of raw and finished materials on hand and in process, and \$37,739,741 for operating capital, such as cash, bills and accounts receivable. For works in Ontario the capital was \$128,620,497; in Nova Scotia, \$44,723,425; in Quebec, \$28,499,707; in Manitoba, \$2,544,377; and in Alberta and British Columbia, \$1,416,665.

In 1942, an average of 33,245 people were employed in this industry, this being an increase of 40 per cent over the 1941 average of 23,735. About 1,655 persons worked in the blast furnace departments during the year, 11,894 in the steel furnaces, 17,410 in the rolling mills and 2,286 in ferro-alloy plants (exclusive of those producing ferro-alloys as a by-product). Fifty-five per cent of the employees or 18,147 worked in plants in Ontario, 6,679 in Quebec, 6,936 in Nova Scotia, 933 in Manitoba and 550 in Alberta and British Columbia.

Payments in salaries and wages during 1942 amounted to \$60,874,818, a gain of 35 per cent over the previous year's total of \$45,037,095. Salaries advanced to \$5,283,722 from \$4,163,580, and wages to \$55,591,096 from \$40,873,515.

Materials used in manufacturing processes cost \$110,551,516 in 1942 compared with \$78,824,366 in 1941, and the cost of fuel and electricity was \$18,734,178 against \$13,888,384, an increased expenditure of 40 per cent for materials and 35 per cent for fuel and power.

**Pig Iron.**—Output of 1,975,014 net tons of pig iron in 1942 was 29 per cent over the 1,528,053 tons reported for the previous year. Production of basic iron amounted to 1,646,001 tons or 83 per cent of the total; foundry iron amounted to 159,724 tons and malleable iron to 169,289 tons.

Producers' sales of pig iron totalled 387,997 tons at \$8,366,936 in 1942 compared with 338,066 tons at \$7,080,242 in 1941, a gain of 15 per cent in quantity and 18 per cent in value.

Charges to iron blast furnaces during the year included 3,383,439 tons of imported iron ore, 229,253 tons of Canadian ore, 1,795,875 tons of coke, 559,650 tons of imported limestone and 301,143 tons of Canadian limestone.

Imports of pig iron during the calendar year declined to 1,536 tons from 4,729 tons in 1941 and exports increased slightly to 427 tons from 380 tons.

Producers' stocks at the end of 1942 totalled 87,955 tons compared with 27,049 tons at the end of the previous year.

The apparent consumption of pig iron in Canada, as calculated by deducting the exports from the sum of the production and imports, and allowing for changes in producers' stocks, amounted to 1,915,217 tons in 1942 or 21 per cent more than in 1941 when the apparent domestic supply was 1,581,913 tons.

Producers of pig iron in Canada had 12 blast furnaces at the end of 1942 which could produce 2.1 million net tons a year if operated at rated capacity. Actual production of 1,975,014 net tons in 1942 showed an operating rate of about 94 per cent. Twelve furnaces were in blast during the year.

**Ferro-Alloys.**—Ferro-alloys were made in 1942 by 10 different concerns, 5 of which recovered ferro-silicon as a by-product in the manufacture of abrasives. Output of ferro-alloys in 1942 amounted to 209,017 net tons, a gain of 2 per cent over the 204,354 tons reported for 1941.

Altogether, ferro-silicon was made in nine different plants, spiegeleisen in two and ferrochrome in two. Other alloys produced by one firm only included ferromanganese, silicospiegel, silicomanganese, silicon metal, calcium silicon, calcium manganese silicon, and ferrophosphorus.

**Steel Ingots and Castings.**—Steel production advanced 15 per cent to 3,109,851 tons in 1942 from 2,712,151 tons in 1941, the output of steel ingots going to 2,958,906 tons from 2,593,512 tons and steel castings to 150,945 tons from 118,639 tons. Factory sales of ingots and castings totalled 286,007 tons at \$38,014,454.

Thirty-five steel plants were in operation during the year. At the end of 1942, these plants had 123 furnaces, including 50 basic open hearth with an annual capacity of 2,777,300 net tons, 70 electric furnaces rated at 672,700 tons, and 3 converters at 8,200 tons. There were just 11 makers of steel ingots with capacity of 3,196,000 net tons per annum. The total annual steel capacity of all plants, including ingots and castings, was 3,458,200 tons at the year end.

Operating steel furnaces in 1942 used 1,615,396 net tons of pig iron, 1,826,911 tons of scrap iron or steel, 198,890 tons of ores, 243,608 tons of limestone, 101,641 tons of dolomite, 59,301 tons of lime, 99,384 tons of silica sand, 20,665 tons of magnesite and 22,101 tons of ferro-alloys.

**Rolled and Drawn Steel.**—In 1942 there were 15 mills occupied chiefly in hot rolling of steel products and 3 mills making only cold drawn and cold rolled shapes. Ten of these mills were in Ontario, 3 in Nova Scotia, 3 in Quebec, 1 in Manitoba and 1 in Alberta.

Rolling mill sales advanced 38 per cent to \$157,973,074 from \$114,056,762 in 1941. The main items sold during the year under review were: 474,312 tons of hot rolled bars at \$37,442,850; 385,314 tons of plates at \$30,095,754; 245,908 tons of sheets, hoops, bands and strips at \$18,398,051; 224,665 tons of rails and rail fastenings at \$10,628,149; 341,068 tons of semi-finished rolled forms, such as blooms, billets, etc., at \$16,343,624; 191,319 tons of structural shapes at \$10,540,658, and 105,475 tons of wire rods at \$4,347,189.

**Table 108.—Provincial Distribution of Active Plants in the Primary Iron and Steel Industry, 1942**

Province	Number of firms	Pig iron		Steel ingots and castings		Rolling and drawing mills	Ferro-alloys (a)
		Number of plants	Number of blast furnaces	Number of plants	Number of steel furnaces		
Nova Scotia.....	1	1	3	2	16	3	.....
Quebec.....	.....	.....	.....	12	26	3	1
Ontario.....	3	3	9	11	63	10	3
Manitoba.....	.....	.....	.....	3	5	1	.....
Alberta.....	.....	.....	.....	2	2	1	.....
British Columbia.....	.....	.....	.....	5	9	.....	.....
<b>Canada.....</b>	<b>(b) 4</b>	<b>4</b>	<b>12</b>	<b>35</b>	<b>121</b>	<b>18</b>	<b>4</b>

(a) Not including artificial abrasive plants which made ferrosilicon as a by-product.

(b) Some firms operate in more than one province.

**Table 109.—Principal Statistics of the Primary Iron and Steel Industry, 1942**

	No. of plants	Capital employed	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
		\$		\$	\$	\$	\$
Nova Scotia.....	6	44,723,425	6,936	11,425,074	2,737,333	19,036,526	31,009,632
Quebec.....	16	28,499,707	6,679	12,101,633	3,361,715	15,524,075	34,976,121
Ontario.....	27	128,620,497	18,147	35,015,184	12,109,847	74,010,065	159,077,961
Manitoba.....	4	2,544,377	933	1,405,388	390,768	1,324,599	4,321,099
Alberta.....	3	954,842	274	434,270	73,589	393,720	1,411,967
British Columbia.....	5	461,823	270	493,263	60,926	262,525	1,308,975
<b>Canada.....</b>	<b>61</b>	<b>285,891,671</b>	<b>33,245</b>	<b>60,874,818</b>	<b>18,734,178</b>	<b>110,551,516</b>	<b>232,105,755</b>
Per cent change 1942 from 1941..		+21.9	+40.1	+35.1	+34.9	+40.3	+41.4

NOTE.—Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as, interest, rent, depreciation, taxes, insurance, advertising, etc.



Table 110.—Production of Pig Iron and Sale by the Producers, 1942 and 1941

Grade	Delivered in molten condition	Machine cast	Total tonnage made	Sales	
				Quantity	Income from sales
	Net tons	Net tons	Net tons	Net tons	\$
1941					
Basic.....	1,137,809	134,302	1,272,171	70,221	1,389,979
Foundry.....		115,791	115,791	119,930	2,508,086
Malleable.....	189	130,902	140,091	147,015	3,182,177
<b>Total.....</b>	<b>1,138,058</b>	<b>399,995</b>	<b>1,528,053</b>	<b>338,066</b>	<b>7,080,242</b>
1942					
Basic.....	1,487,581	158,420	1,646,001	67,242	1,307,715
Foundry.....		159,724	159,724	157,901	3,439,405
Malleable.....		169,289	169,289	162,764	3,619,816
<b>Total.....</b>	<b>1,487,581</b>	<b>487,433</b>	<b>1,975,014</b>	<b>387,907</b>	<b>8,366,936</b>

Note.—Silvery pig iron has been included with ferro-alloys.

Table 111.—Materials Charged to Iron Blast Furnaces, 1941 and 1942

Material	1941		1942	
	Quantity	Cost at furnace	Quantity	Cost at furnace
	Net tons	\$	Net tons	\$
Iron ore—Imported (crude).....	2,542,826	9,238,799	3,383,439	13,726,346
Canadian (beneficiated).....	163,890	569,853	229,253	798,974
Canadian (crude).....	2,373	6,662		
Mill cinder, roll scale, flue dust, etc.....	136,698	314,248	177,343	386,730
Scrap (net charge).....	47,271	581,717	64,624	803,172
Limestone—				
From Canadian quarries.....	182,605	237,578	301,143	447,107
From foreign sources.....	465,960	551,773	559,650	799,302
Coke.....	1,362,530	7,203,703	1,795,875	13,402,828
Other materials.....		136,245		163,675
<b>Total.....</b>		<b>18,840,578</b>		<b>36,528,134</b>

Table 112.—Blast Furnaces in Canada, 1940-1942

Name of company	Location of plant	Number of stacks 1942	Total daily capacity (24 hours) 1942	Number of days in blast		
				1940	1941	1942
Dominion Steel and Coal Corporation, Ltd.	Sydney, N.S.....	1	Net tons			
		1	392	357	365	365
		1	336	354	365	365
		1	616	358	298	365
<b>Total.....</b>		<b>3</b>	<b>1,344</b>			
Canadian Furnace Company, Limited.....	Port Colborne, Ont.....	1	466	*199	*279	304
		1	147			289
		2	613	199	279	593
The Steel Company of Canada, Limited...	Hamilton, Ont.....	1	364	366	365	365
		1	728	330	365	365
		1	980		110	365
		3	2,072			
Algoma Steel Corporation, Limited.....	Sault Ste. Marie, Ont.....	1	330	181	305	360
		1	336			184
		1	504	316	262	361
		1	616	366	365	349
<b>Total.....</b>		<b>4</b>	<b>1,792</b>			
<b>Total for Canada.....</b>		<b>12</b>	<b>5,821</b>			

\* For making pig iron; ferro-alloys also made in this furnace.

Table 113.—Production of Ferro-Alloys, 1928-1942

Year	Net tons	Year	Net tons
1928.....	50,223	1936.....	85,438
1929.....	99,810	1937.....	91,921
1930.....	73,050	1938.....	62,637
1931.....	52,376	1939.....	85,540
1932.....	18,100	1940.....	149,394
1933.....	33,749	1941.....	198,364
1934.....	35,751	1942.....	100,419
1935.....	63,410		

Table 114.—Production of Steel Ingots and Steel Castings, by Grades, 1938-1942  
(Net tons)

Year	Steel ingots		Steel castings			Total steel ingots and castings
	Open hearth	Electric	Open hearth	Converter	Electric	
1938.....	1,172,867	62,598	17,388	850	40,109	1,293,812
1939.....	1,410,339	79,718	17,473	934	42,590	1,551,054
1940.....	2,041,947	135,033	21,085	2,268	52,780	2,253,769
1941.....	2,394,098	199,414	29,401	3,371	85,867	2,712,151
1942.....	2,623,853	335,053	26,627	6,516	117,803	3,109,851

Table 115.—Materials Used in Steel Furnaces, 1941 and 1942\*

Material	1941		1942	
	Quantity	Cost of purchased materials	Quantity	Cost of purchased materials
	Net tons	\$	Net tons	\$
Pig iron—Own make.....	1,525,853		1,261,774	
Purchased.....	89,543	2,039,095	78,667	1,843,144
Scrap iron or steel—Own make.....	864,537		698,761	
Purchased.....	962,374	21,377,022	900,363	18,708,469
Spiegeleisen.....	2,911	153,054	5,316	365,656
Silico-spiegeleisen.....	439	51,827	9	2,120
Ferrovanadium.....	203	524,067	182	438,639
Ferromanganese.....	19,190	2,484,783	21,250	1,811,031
Silicomanganese.....	8,065	918,774	4,518	445,197
Ferroallicon.....	12,150	841,900	14,836	616,954
Ferrochrome, high carbon.....	3,060	724,819	1,692	210,621
low carbon.....	1,065	720,270	1,747	479,979
Ferromolybdenum.....	150	223,233	55	78,504
Ferrophosphorus.....	290	25,826	745	63,309
Ferroselenium.....	5	10,323	2	3,063
Ferrotitanium.....	439	66,555	181	52,128
Ferrotungsten.....	046	1,440,141	462	1,003,314
Ferrozirconium.....	51	7,337	40	1,647
Calcium silicon.....	421	135,680	380	110,503
Calcium manganese silicon.....	289	93,191	114	40,312
Other ferro-alloys.....	134	238,301	90	102,127
Aluminium ingots.....	807	285,025	638	261,350
Copper ingots.....	39	10,190	108	23,855
Nickel.....	3,392	2,025,604	2,348	1,225,715
Other metals.....		132,736		83,023
Ore, iron, crude.....	98,986	616,017	148,807	1,702,029
Ore, iron, calcined, roasted or treated.....	98,156	1,757,431	5,778	21,833
Ore, manganese.....	32	1,600	64	3,316
Ore, chrome.....	1,232	54,095	624	30,619
Bentonite.....	3,382	101,211	1,939	62,105
Coal, anthracite.....	755	8,055	587	5,946
bituminous.....	219	1,916	574	4,733
Coke.....	6,113 (a)	74,555	5,053	71,074
Charcoal.....	224	10,343	58	2,349
Dolomite, crude.....	79,001	225,393	71,087	159,037
calcined.....	22,550	179,427	21,608	160,602
Fluorspar.....	20,133	562,480	17,064	366,701
Lime.....	23,075	315,470	40,799	370,545
Limestone, Canadian.....	120,573 (a)	230,838	67,837	108,124
Imported.....	123,035	128,605	134,772	158,218
Magnesite.....	20,665	786,321	18,127	682,742
Electrodes.....		989,222		489,593
Silica sand.....	99,384	712,516	67,099	469,874
Other foundry sand.....	35,340	105,042		114,026
Firebrick, fireclay and other refractories.....		2,469,239		1,862,876
Calcium molybdate and molybdenum oxide briquettes.....		1,167,579		523,671
All other materials.....		3,570,856		1,951,951
<b>Total Value of Metals, Ores and Other Materials Used.....</b>		<b>48,611,494</b>		<b>37,444,624</b>

(a) In addition 706 tons of coke and 36,226 tons of limestone of the company's own production were used.

Table 116.—Summary of Steel Furnace Capacity in Canada, December 31, 1942

Type of furnace	Number of furnaces at end of year	Total rated annual capacity
		Net tons
Basic open hearth.....	33	2,018,300
Electric.....	42	432,281
Converter.....	1	4,800
<b>Total.....</b>	<b>76</b>	<b>2,455,381</b>

## LITHIUM

The first commercial shipment of Canadian lithium ore to be officially recorded was reported during 1937. This production came from deposits located at Bernic Lake, Manitoba, and was valued at \$1,694; the mineral was consigned to the United States for the manufacture of lithium compounds and possible lithium metal. No commercial shipments of lithium ores from Canadian mines were reported since 1937.

"Amblygonite, spodumene, and lepidolite are the chief lithium minerals of commerce and their ores usually contain respectively about 8, 6, and 4 per cent of lithium oxide. The known Canadian occurrences of these minerals of present economic interest are confined to Manitoba, where there is a considerable development of lithium-bearing pegmatites, notably in the Pointe du Bois area in the southeastern part of the Province. This district has furnished all of the small Canadian production, amounting to a few hundred tons, the material shipped being mainly spodumene. Lithium Corporation of Canada, 403 Avenue Building, Winnipeg, is the company that has been most actively interested in promoting development of deposits in the above section and it has carried out considerable work on its holdings, mainly on those at Bernic Lake.

"Lithium and its compounds have risen from a position of only minor importance a few years ago to one of considerable significance; war needs, and military uses in 1942 were greater than industrial requirements. The chloride is one of the most hygroscopic inorganic compounds known and is being used to an interesting extent as a drying agent in air-conditioning units.

"Lithium is the lightest of all the metals, having a specific gravity of only 0.53. A wide range of master alloys of lithium with calcium, silicon, brass, copper, manganese, zinc, lead, tin, magnesium and aluminium, has been developed in the United States. The lithium content of the base metal varieties ranges from 0.5 per cent to 10 per cent, and rises to as high as 50 per cent in the light calcium and silicon series.

"No plants for the chemical treatment of lithium ores exist in Canada and consequently, any production must find an export market. Most of the ore marketed prior to the war was treated by a few large chemical firms specializing in the business, the principal plants being in the United States, Great Britain, Germany, and France. Such firms usually purchase their requirements under individual contract and there is thus little in the way of an open market, price quotations given in trade journals being merely nominal. Some of the larger consumers own and operate their own mines.

"Figures of world production, exports and imports are not published. The United States, Southwest Africa, Sweden, Portugal, Spain, Germany, and Argentina are the chief producers, output in the United States being probably over 50 per cent of the total."—(Bureau of Mines, Ottawa.).

## MAGNESIUM

Production of magnesium in Canada from domestic ores totalled 808,718 pounds valued at \$355,836 during 1942 compared with 10,905 pounds worth \$2,944 in 1941. The output in 1941 represented the metal in the form of powder produced by the Consolidated Mining and Smelting Company of Canada Limited at Trail, British Columbia; magnesite used in the production of this powder was obtained from deposits located at Marysville in the Fort Steele mining district. The production in 1941 was the first to be recorded in Canada since 1918.



The statistics of production for 1942 include the metal produced for the market at Trail, B.C. in the form of ingots and powder, and in magnesium chloride and alloys together with the metal produced in Ontario by the Dominion Magnesium Limited. The plant of Dominion Magnesium Limited, located near Renfrew, was brought into production in September, 1942. This company employs the ferrosilicon process and utilizes dolomite as the source of the metal; the rock is quarried in the immediate vicinity of the plant; calcined brucite rock shipped from Wakefield, Que. was employed at the commencement of operations.

National defence requirements, especially in the aircraft industry, have created a tremendous demand for magnesium metal. Complete data relating to world production of the metal are not available; in 1940 world output was estimated by "The Mineral Industry" at 44,000 short tons; eight nations producing in order of importance were Germany, United Kingdom, United States, U.S.S.R., Switzerland and Italy. In 1940 the only process commercially used in the United States for the production of magnesium metal involved the electrolysis of magnesium chloride in a fused salt bath, the raw material being derived from brine obtained from saline wells or sea water.

Late in 1941 it was reported that the Defence Plant Corporation, United States, had financed an expanded magnesium production totalling approximately 150,000 tons annually.

Magnesium was quoted in the United States, June, 1941: per pound ingots (4 x 16 inch) 99.8 per cent, carload lots, 27 cents; 100 pound lots or more, l.c.l., 29 cents. Extruded sticks, carload lots, 34 cents. Prices, July, 1943, were: per pound ingots (4 x 16 inch) 99.8 per cent, carload lots, 20½ cents; 100 pounds or more l.c.l., 22½ cents. Extruded sticks, carload lots, 27½ cents.

Magnesite is available in many countries. Russia is probably the world's greatest producer of magnesite, but almost all is for domestic use.

Magnesite is usually calcined before shipment and the resultant magnesia is used for the making of refractory products to withstand extremely high temperatures, for making oxychloride cement, and for magnesium metal. It is also the basis of a number of magnesium salts and has many minor uses. The world-wide demand for magnesium metal has greatly stimulated interest in deposits of magnesite. Although until three years ago almost all the world's magnesium was made from magnesium chloride brine and from waste water used in treating potash minerals, magnesite is now an important source of this light metal in Europe, England and the United States.

Table 117.—Consumption of Magnesium Ingots in Canada, 1940-1942

	1940	1941	1942
	pounds	pounds	pounds
In non-ferrous smelters.....	192,000	825,717	1,072,346
In white metal alloy foundries.....	7,770	9,515	9,850
In brass and bronze foundries.....	163	42,821	44,553
In aluminium products.....	240	127	
In ammunition.....	404		
In pharmaceuticals.....			
<b>Total Accounted For.....</b>	<b>200,577</b>	<b>878,180</b>	<b>1,126,749</b>

## MANGANESE

Mine production (shipments) of manganese ores in Canada during 1942 totalled 435 short tons valued at \$8,932. This output comprised 61 tons of very low grade material shipped by the Atlantic Manganese Company from a stockpile on the Dean and Chapter and Cain mines located at New Ross in Nova Scotia. The Dominion Department of Mines did about 6,000 feet of diamond drilling on these deposits in 1942. The balance of Canadian shipments of manganese ores during the year under review came from New Brunswick, where the Nabco Manganese Mining Company operated the mine and concentrator on Gowland Mountain, near Elgin. After shipping a number of car lots of concentrates, the mine and mill were closed down in August. One or two car lots of ore were shipped by the Turtle Creek Manganese Prospecting Syndicate from the Turtle Creek deposit 35 miles northeast of Sussex.

In 1942 the Sussex Manganese Mining Company deposit and equipment at Jordan Mountain, 7 miles north of Sussex, were taken over by the British Manganese Mining Company. A few tons of ore from the dumps were put through the new mill early in 1943. The British Manganese Mining Company also acquired and opened up the old Shepody Mountain deposit north of Hopewell Hill, about 40 miles east of the Jordan Mountain deposit.

Official returns were received in 1942 from 5 firms reporting manganese mining operations; 1 in Nova Scotia, 3 in New Brunswick, and 1 in British Columbia. Capital totalled \$5,900; employees numbered 5, and salaries and wages paid amounted to \$5,316; \$1,125 were expended in fuel and process supplies.

A report prepared by the Bureau of Mines, Ottawa, contains the following information:

"The manganese ores that have been mined in Canada are pyrolusite ( $\text{MnO}_2$ ), psilomelane ( $\text{H}_4\text{MnO}_6$ ), manganite ( $\text{Mn}_2\text{O}_3 \cdot \text{H}_2\text{O}$ ) and braunite ( $\text{Mn}_3\text{O}_4$ ), all of which are black or grey-black and comparatively hard; bog manganese, a soft earthy black oxide; and a small amount of rhodochrosite ( $\text{MnCO}_3$ ), a pink, fairly soft, mineral. Pyrolusite is the most common and most important and when pure contains 63 per cent manganese. It is much softer than the other hard rock ores and can be distinguished in the field by the ease with which it blackens the fingers. Most of the hard rock deposits are replacements in limestone, but they also occur in the form of accumulated nodules and cementing material in siliceous sediments, and as veins in metamorphosed precarboniferous rocks. Canadian production is small and is far short of wartime requirements.

"Nearly 70 per cent of the imports of manganese ore in 1942 were from the Gold Coast, Africa, about 20 per cent from British India, and most of the remainder from the United States.

"Estimates of world production are in the neighbourhood of 6,000,000 tons annually, those countries that probably produced 200,000 tons or over in 1941 in order of their output being Russia, British India, Gold Coast, Brazil, Union of South Africa, Egypt (Sinai), and Cuba.

"It is estimated that over 90 per cent of the world consumption of manganese ore is used in the manufacture of iron and steel, the ore so used being termed 'Metallurgical'. The remainder is termed 'Chemical'. Metallurgical ore is used for making ferro manganese, silico-manganese, and spiegeleisen, in which forms it is added to the steel bath. Manganese is beneficial mainly in improving the workability of the steel, and in improving the product by acting as a deoxidizer, a desulphurizer, and a re-carbonizer. Until fairly recently, about 14 pounds of manganese were used on the American Continent in each ton of steel, but in order to conserve manganese, the average has been reduced to about 11.8 pounds per short ton of steel. Ferro manganese, containing 75 to 82 per cent manganese, is by far the most important addition agent, and to make it, the highest, or 'ferro grade' ore is used.

"Ferro grade ore should contain at least 48 per cent of manganese and not more than 7 per cent iron, 8 per cent silica, 0.15 per cent phosphorus, 6 per cent alumina, and one per cent zinc. It must be low in copper, lead, and barium, and the ratio of manganese to iron should not be less than seven to one. The ore should be hard and in lumps of less than four inches, and not more than 12 per cent should pass a 20-mesh screen. Soft ores, such as bog manganese, are objectionable unless they are briquetted. United States Metals Reserve Company buys ores down to a minimum of 35 per cent manganese and maxima of certain impurities, details of which are given below under 'prices'.

"Chemical grade ores are used mainly in the manufacture of dry batteries. Specifications call for high-grade pyrolusite because of its high available oxygen, which acts as a depolarizer. The ore should contain not less than 75 per cent manganese dioxide ( $\text{MnO}_2$ ) and not more than 1.5 per cent iron; 1.0 per cent alumina; 6.0 per cent silica; 0.02 per cent copper; less than 0.05 per cent of any other metal; and 1.0 per cent moisture. It should also be finely ground (80 per cent through 150-mesh). Canadian requirements of chemical ore range from 3,000 tons to 4,000 tons a year and nearly all of it is used by two manufacturers of dry batteries in Toronto and another in Niagara Falls, Ontario. Chemical ore is used also in the glass and ceramic industries; as paint and varnish driers; as pigments and dyeing materials; and as salts for disinfecting; bleaching, and fertilizers.

"Each ore or individual deposit presents a separate treatment problem, thus differing from the ores of copper, zinc, lead, and of other non-ferrous metals.

"Prices of ferro grade ore depend on manganese content and the amount of harmful impurities. Imported ore is usually quoted in cents per long ton unit of 22.4 pounds of contained manganese. United States prices for metallurgical ores are based on a standard duty free ore (Cuban and domestic) containing 48 per cent manganese, 6 per cent iron, 11 per cent silica and alumina combined, and 0.18 per cent phosphorus. The quotation for this grade is 85 cents per long unit of contained manganese at Gulf of Mexico ports, and 90 cents at New York and other Atlantic ports.

"The price premiums and penalties for ores varying from the standard grade are as follows: Premium per long unit is  $\frac{1}{2}$  cent for each per cent Mn above 48 per cent and  $\frac{1}{2}$  cent for each per cent iron below 6 per cent. Penalties per long unit are one cent for each per cent Mn below 48 per cent down to 44 per cent and on an increased scale down to 20 cents for the minimum 35 per cent Mn. Penalties are also deducted for the excess of impurities above the standard up to the maxima of 8 per cent Fe ( $3\frac{1}{2}$  cents); 15 per cent  $\text{SiO}_2 \div \text{Al}_2\text{O}_3$  (7 cents) and 1 cent for each 0.03 per cent P above 0.18 per cent P.

"Prices of chemical grade (battery grade) manganese ores early in 1943 were \$55 per ton for Brazilian or Cuban ores (80 per cent minimum content of  $\text{MnO}_2$ ) in car lots, f.o.b. New York, exclusive of duty. The delivered price in Canadian currency for finely ground battery grade ore in bags imported into Canada from Africa or Montana, U.S.A., was about \$60 to \$80 a ton depending on mesh and origin."

Table 118.—Production (Sales) of Manganese Ore in Canada for Years Specified

Year	Tons	Value	Year	Tons	Value
		\$			\$
1915.....	201	9,360	1935.....	100	800
1916.....	957	89,544	1936.....	221	1,596
1917.....	158	14,836	1937.....	85	817
1918.....	440	6,230	1938.....		
1924.....	584	4,088	1939.....	396	3,688
1925-1929.....			1940.....	152	4,315
1930.....	273	1,356	1941.....		
1931.....	117	2,893	1942.....	435	8,932
1932-1934.....					

\* 7,500 pounds manganese metal produced at the mine from Nova Scotia manganese ore.

Table 119.—Consumption of Manganiferous Ore and Manganese Compounds in Specified Canadian Industries, 1941 and 1942

Industry	Items	Quantity	Value
			\$
1941			
Electrical apparatus and supplies.....	Manganese dioxide..... pound	6,245,993	208,806
Paints, pigments and varnishes.....	Manganese salts..... pound	68,623	9,416
Steel ingots and castings.....	Ore, manganiferous (foreign)..... pound	128,000	3,316
	Spiegeleisen..... long ton	5,316	365,656
	Ferromanganese..... long ton	21,250	1,811,031
	Silicomanganese..... long ton	4,518	445,197
1942			
Electrical apparatus and supplies.....	Manganese dioxide..... pound	5,377,505	202,273
Paints, pigments and varnishes.....	Manganese salts..... pound	88,676	8,748
Steel ingots and castings.....	Ore, manganiferous (foreign)..... pound	64,000	1,600
	Spiegeleisen..... long ton	2,599	153,054
	Ferromanganese..... long ton	1,714	2,484,783
	Silicomanganese..... long ton	7,201	918,774

NOTE.—In addition to the consumption recorded in the table above, a considerable quantity of manganiferous ore is employed in the manufacture of ferro-alloys. Also, in 1941, approximately 38 tons of manganese metal was consumed chiefly in the non-ferrous industries.



## MERCURY

"Cinnabar ( $\text{HgS}$ ), the principal ore of mercury, is a heavy mineral (s.g. = 8.1) with a deep cochineal-red colour and scarlet streak, and contains 86 per cent mercury. In Canada the ore occurs in porous rocks, such as altered limestones (ankerite), volcanic breccias or greenstones, and green and purple andesitic lavas. The cinnabar often occurs in veins and stringers of calcite or dolomite within these rocks and may be associated with stibnite (antimony sulphide) and accompanied by globules of metallic mercury.

"The only known deposits of cinnabar in Canada are in British Columbia, by far the most important development being that on the northwest side of Pinchi Lake, Omineca Mining Division, about 40 miles north of Vanderhoof station on the Canadian National Railway. The deposit was discovered in the summer of 1937 by J. G. Gray of the Geological Survey, Ottawa, and claims were staked in May, 1938, by A. J. Ostram and others. Late in that year they were optioned to Consolidated Mining and Smelting Company. Prospecting disclosed large cinnabar-bearing areas in veins and impregnations mainly in dolomitized and brecciated limestone along zones of fracturing and shearing. A plant was erected and production was started in June, 1940. The present plant, consisting of Wedge roasters, kilns, and condensers, has been enlarged periodically and is over twenty times the capacity of the original. The grade of ore treated is about 0.3 per cent mercury. The deposit is on a steep mountain side and has been developed by adits at a number of different levels. Prior to the discovery of the Pinchi Lake deposits little mercury was produced in Canada and their successful operation has brought about a complete change in the Canadian situation in respect to the metal. This mine is probably one of the largest single producers of mercury on the American continent and its output is far in excess of the domestic requirements. Ore reserves are estimated to be sufficient to assure continuous output at the present rate for several years.

"A number of cinnabar claims have been staked on both sides of Yalakom River above the mouth of Shulaps Creek, 30 miles northwest of Lillooet. The Red Eagle group, staked in 1937 by C. J. Parker, has changed hands several times and is now being worked by John Thompson of Moha. Ore was treated in a small crushing unit and a retort and about five flasks of mercury were produced in 1942. Copper Creek Mercury Mines (F. L. Gorse) operated the old Copper Creek deposits on the north shore of the west end of Kamloops Lake that was worked in 1894. A small tonnage of ore was treated in a retort and a few flasks of mercury were produced. Late in the year the Gould plant of Empire Mercury Mines north of Minto City in the Bridge River area was dismantled and shipped to Copper Creek and production on an increased scale is expected by midsummer of 1943. A few miles northwest of Copper Creek, G. F. Dickson and T. R. Hardie did some work on the Hardie Mountain deposits. A few tons of ore were roasted in a small retort and a few flasks of mercury were produced.

"A number of mercury discoveries have been made in the area 50 to 100 miles northwest of the Pinchi Lake mine and where extensive prospecting work is being maintained by Consolidated Mining & Smelting Company; Hollinger Exploration Company; Bralorne Mines Ltd., and others. The more important are those at the head of Silver Creek, 18 miles east of Takla Landing, where diamond drilling and stripping has given encouraging results and shaft sinking preparatory to underground development is underway. The installation of a treatment plant is expected in the near future. Bralorne Mines is developing a mercury property at Relay Creek, about 35 miles from the Bralorne Gold Mine in the Bridge River district and where the erection of a treatment plant is contemplated. Prospecting is active on several other cinnabar showings in the Bridge River and Yalakom River areas. New discoveries in the Poison Mountain area, west of Clinton and of Fraser River are also being prospected.

"World production just prior to the war was estimated to be slightly in excess of 5,000 metric tons a year. For many years Italy and Spain have shared honors as the leading producer and prior to the war they accounted jointly for 70 per cent of world output, while the United States contributed about 15 per cent. Mexico, Russia, Czechoslovakia, China, and Japan are also producers of mercury.

"In Canada about 75 per cent of the mercury consumed is used in the medicinal, pharmaceutical, and in heavy chemical industries, particularly in the form of mercury sulphate as a catalyst. The consumption of mercury in Canadian gold mines has decreased owing to wider use of cyanidation and improvements in the recovery of the mercury after amalgamation. Gold mining now uses about 7 per cent of the total mercury consumed.

"The New York prices for the iron flask of 76 pounds of mercury averaged \$75.00 in 1938; prices at the end of January, 1943 were \$196 to \$198 in 100-flask lots. Imports of mercury into Canada from the United States are not subject to duty, but have a sales and war tax amounting to 18 per cent of the value in Canadian funds. The present price of Canadian mercury is largely governed by that of the United States. Canadian imports into the United States are subject to a tariff of 25 cents per pound, or \$19 a flask, in the United States currency.

"Specifications call for a minimum of 99.5 per cent mercury and a maxima of 0.3 per cent antimony and 0.1 per cent arsenic.

"Because of the present substantial surplus production in Canada the larger Canadian buyers are not purchasing in less than 50 to 100-flask lots. Considerable difficulty is, therefore, experienced in disposing of small lots of a few flasks.

"Owing to the greatly increased production of mercury from Canada, United States, and Mexico, the position of the Allied countries, which prior to the war were largely dependent on Spain and Italy for their supplies is now so much stronger that there is no longer an urgent need for an intensive search for new deposits. Only large deposits of economic grade ore are of interest at present. If such a deposit can be mined cheaply and on a large scale, ore grading as low as 0.25 per cent mercury or even slightly less could possibly be mined at a profit."—(Bureau of Mines, Ottawa.).

Production of mercury in Canada during 1942 totalled 1,035,914 pounds valued at \$2,943,807.

**Table 120.—Consumption of Mercury in Specified Canadian Industries, 1941 and 1942**

	1941	1942
	pounds	pounds
Medicinals and pharmaceuticals.....	67,607	78,362
Heavy chemicals (catalyst).....	35,310	50,968
Electrical apparatus.....	25,738	42,313
Non-ferrous smelters.....	4,635	1,201
Petroleum refineries.....	920	684
Gold mines.....	11,091	10,000
Ammunition.....	8,217	.....
Other industries.....	2,501	1,650
<b>Total Accounted For.....</b>	<b>156,118</b>	<b>185,178</b>

**Table 121.—Mercury Mining in Canada, 1942 (all in British Columbia)**

Active firms.....	No.	4
Capital employed.....	\$	(*)
Employees—On salary.....	No.	28
Wage-earners.....	No.	252
<b>Total.....</b>	<b>No.</b>	<b>280</b>
Salaries and wages—Salaries.....	\$	67,271
Wages.....	\$	713,749
<b>Total.....</b>	<b>\$</b>	<b>781,020</b>
Gross value of production.....	\$	2,943,807
Cost of fuel and electricity.....	\$	229,118
Process supplies used.....	\$	72,058
<b>Net Value.....</b>	<b>\$</b>	<b>2,642,631</b>

(\*) Partly included with silver-lead mining industry.

## MOLYBDENITE

"Molybdenite, the chief ore of molybdenum is a soft and shiny steel blue-grey sulphide containing 60 per cent of the metal. In Eastern Canada it is usually found in pegmatite dykes or along the contacts of limestone and gneiss, commonly associated with greenish-grey pyroxenites in which other metallic minerals, such as pyrite and pyrrhotite often occur. In northern and western Ontario and in British Columbia, molybdenite is usually associated in quartz veins, intruding granites, or diorites. It generally occurs in the form of soft, pliable flakes or leaves, but is sometimes semi-amorphous, filling cracks and smearing the rock surface. It can readily be distinguished in the field by rubbing on glazed white porcelain or enamel when it leaves an olive grey-green smear. Graphite, which closely resembles and for which it is often mistaken, leaves a grey-black smear.

"Quyon Molybdenite Company, Quyon, Quebec, about 35 miles northwest of Ottawa, was by far the largest producer in 1942. The ore is treated in a 100-ton mill and the concentrate is roasted to produce molybdenum trioxide, which is sold to steel manufacturers. The company treated about 5 car lots of ore from Alice Arm, British Columbia, that had been lying in the old mill dump at Renfrew since 1917. About a car lot from Mount St. Patrick, Ontario and from Gayhurst township, Quebec, were also treated in the company's mill. The Government-sponsored Wartime Metals Corporation controls two molybdenite properties, one being the Molybdenite Corporation deposit in LaCorne township, 15 miles northwest of Val d'Or, Quebec, which is being operated by Siscoe Gold Mines Ltd. The pilot mill was remodelled and a few tons of concentrate were shipped to Quyon for roasting. A substantial tonnage of ore has been blocked out and plans are underway to erect a mill suitable for full-scale operations. The other Wartime Metals project is the Zenith Molybdenite property southwest of Renfrew, Ontario. A few hundred tons of ore obtained from underground development were hoisted and stockpiled; but operations ceased early in 1943. Farley Mining Company is operating a deposit that was prospected about 50 years, near Montceuf, north of Maniwaki, Quebec. A few car lots of ore and picked flake have been shipped from the property to Zenith and LaCorne for treatment. A car lot of ore was shipped to the United States by Edgemont Molybdenite Mines Ltd. from the property at Shutt in Raglan township, south of Barry's Bay, Ontario. A car lot was shipped to the Quyon mill by T. Doyn from Bayhurst township, about 12 miles north of Megantic in the Eastern Townships of Quebec.

"Owing to the greatly increased demand for molybdenum, there was considerable development and prospecting activity on some of the 400 occurrences and deposits known throughout the Dominion.

"The outstanding development in 1942 resulted from the discovery by Dome Exploration Company of a large body of good grade disseminated molybdenite on the south of the old St. Maurice Mines property on the Indian Peninsula, Kewagama Lake, Preissac township, in the Abitibi district, Quebec. It is being operated by Indian Molybdenum Limited. Tunnelling and shaft sinking is in progress and a 500-ton treatment mill is being erected. Production is expected to start before mid-summer of 1943. Neighbouring claims are being prospected by various companies.

"World production in 1939 (1940 to 1942 not available), was 16,500 tons of metallic molybdenum, of which 91 per cent came from the United States. In 1942, the United States produced concentrate estimated to contain about 21,000 tons of the metal, against 17,580 short tons in 1941. Climax Molybdenum Company, at Climax, Colorado, the world's largest producer, is treating daily 18,000 tons or more of approximately 0.5 per cent  $\text{MoS}_2$  ore and contributed about 67 per cent of the United States output in 1941. Most of the remainder was obtained as a by-product in the treatment of copper ores from New Mexico, Arizona, and Utah. Vanadium Corporation's Urad mine in Colorado was recently purchased by the Defence Plant Corporation and will be operated by Molybdenum Corporation of America; production is expected by the middle of 1943.



"Production from Cananea, Mexico, is estimated at the equivalent of 750 tons of the metal a year; and molybdenite concentrate is being recovered as a by-product from the Braden Copper Mine at Sewell, Chile. Prior to the war, the Knaben mine in Norway was the largest producer outside the American continent, its output in 1940 being about 500 short tons. It is reported that Germany has been obtaining 2,000 tons of  $\text{MoS}_2$  annually from Norwegian mines, but that the Knaben mine was bombed recently and the plant is reported to have been seriously damaged. Other producing countries were Mexico, Peru, French Morocco, Korea, Greece, Turkey, Yugoslavia and Australia.

"In spite of the large output of molybdenum in the United States the demand is still very urgent. It should be pointed out, however, that although hundreds of occurrences are known in Canada—and many more are likely to be found—the great majority are so small and irregular that costs of production from them would be considerably higher than the present increased Canadian price of the mineral. It is expected that before the end of 1943 production from the Dome and LaCorne properties in the Abitibi region of Quebec will take care of at least half the domestic consumption of the metal.

"The price at New York of 90 per cent molybdenite concentrate is nominally 45 cents (49.5 cents in Canadian funds) a pound of contained molybdenum sulphide, but the duty on ore or concentrate into the United States is 35 cents a pound of the metallic molybdenum contained therein (about 20 cents a pound for a 90 per cent concentrate). The price of Canadian concentrate is approximately 85 cents per pound of contained molybdenum sulphide in a concentrate of not less than 85 per cent  $\text{MoS}_2$ , delivered at mill."—(Bureau of Mines, Ottawa).

Table 122.—Production of Molybdenite in Canada, 1925-1942

Year	Ores treated	Ores and concentrates shipped or used		MoS <sub>2</sub> content of shipments
	Tons	Tons	Value (a)	Pounds
			\$	
1925.....	2,779	15.3	11,176	22,350
1926.....	4,490	12.0	10,472	20,943
1927.....				
1928.....				
1929.....	2,900	9.5	6,400	16,150
1930.....				
1931.....	12	0.61	280	1,222
1932-1936.....				
1937.....	5,307	8.25	8,147	(b)
1938.....	(b)	6.5	4,500	(b)
1939.....	1,492	1.3	816	(b)
1940.....	3,936	11	10,290	(b)
1941.....	28,100	(c) 98.3	88,470	173,991
1942.....	28,793	(c) 114	134,963	158,780

(a) Values as recorded by operators 1925-1940; values estimated for 1941 and 1942.

(b) Not known.

(c) Used entirely for making oxide at Quyon, Quebec.

Table 123.—Molybdenite Mining in Canada, 1942

	Quebec	Ontario	British Columbia	Canada
Active firms.....No.	11	3	2	16
Capital.....\$	194,871	42,173	(*)	237,044
Employees—On salary.....No.	39	3	1	42
Wage-earners.....No.	118	5	4	127
Total.....No.	157	8	5	170
Salaries and wages—Salaries.....\$	27,576	1,510	396	29,482
Wages.....\$	177,495	5,238	7,516	190,249
Total.....\$	205,071	6,748	7,912	219,731
Gross value of production.....\$	131,905	150	12,907	134,963
Fuel and electricity used.....\$	29,953	1,012	(*)	30,965
Process supplies used.....\$	17,566	226	3,332	21,124
Freight and treatment charges.....\$	34,243	(*)	(*)	34,243
Net value of production.....\$	50,144	-1,089	-425	48,631

† Shipped to Quyon, Quebec from old stock stored in Renfrew county, Ontario, since World War No. 1.

(\*) Data not available.

## PITCHBLEND

Production of pitchblende products in 1941 was valued at \$925,196; the corresponding information for 1942 is not available for publication. Pitchblende ore from which these materials were recovered was obtained entirely from the mine of Eldorado Gold Mines Limited, located at Echo Bay, Great Bear Lake, Northwest Territories. Treatment of this ore is carried out at the company's refinery located at Port Hope, Ont. The mine was active in 1942 from April with actual mining operations being conducted from August 5; all concentrates produced at the property were consigned to the Port Hope refinery, which was in continuous operation throughout the year. Female labour was introduced at the refinery in the month of June.

"Most of the world production of radium and uranium ores has come from the Belgian Congo, Canada, and the United States. The American material consists mainly of low-uranium carnotite, found mainly in Colorado and Utah, and now mined chiefly for its vanadium content, the present recovery of uranium and radium being small. Ores of the Belgian Congo are mainly a complex assemblage of secondary uranium minerals resulting from the weathering of original pitchblende. The remainder of the world production has come mostly from Czechoslovakia, Portugal, England, Australia, and Russia, but the deposits in most of these countries are small and low-grade and are of minor importance at present.

"Although its fields of uses are increasing, radium continues to be used chiefly in the treatment of cancer. It is recovered in the form of the bromide salt of 90 per cent purity and is usually converted into sulphate for hospital use. When so used, the salt is loaded into fine gold or platinum-iridium needles containing usually one to ten milligrams of radium element. Larger dosages are given by means of so-called radium 'bombs', containing up to five and ten grams of the element. Radium is also employed at certain clinical centres for the production of radon, or radium emanation, a heavy gas of short-lived radioactivity, which is used in a form of cancer treatment. Because of its high cost, much of the radium used in hospitals for research, etc., is hired or loaned either from the producers or from loan firms. The current rate for leased radium in the United States is stated to be about 40 cents a milligram a month. Radium is used in place of X-rays in engineering radiography to detect flaws in heavy castings and welds, and its employment in this field has been increasing rapidly in the heavy industries. It is used in self-luminous paints for clock, watch, and compass dials, aircraft instruments, boards, and panels, and for gun-sights, etc.

"Uranium, the heaviest known element, is used chiefly in the form of various salts, mainly the oxide and sodium uranate, which are employed as colouring agents in the ceramic industry.

"Prices for radium are not openly quoted, sales being mostly in lots of one gram or less, and are by individual tender. Before Canada became an important producer the price was about \$60.00 a milligram. Nominal quotations in the United States in 1940-42 ranged between \$20 and \$30 a milligram."—(Bureau of Mines, Ottawa.).

Table 124.—Value of Canadian Refinery Production of Pitchblende Products

Year	\$	Year	\$
1933 (*)	247,900	1938	1,045,458
1934	159,400	1939	1,121,553
1935	413,700	1940	410,176
1936	605,500	1941	925,196
1937	876,540	1942	(a)

(\*) First production.

(a) Not available for publication.

## SELENIUM

Selenium, although fairly widely distributed, is not abundant in nature. It occurs in association with sulphur, and frequently accompanies the sulphides of heavy metals in the form of selenides. In no case does it occur in quantities large enough to be mined for itself alone.

Selenium production in Canada represents a by-product in the electrolytic refining of blister and anode copper made from Saskatchewan, Manitoba, Ontario and Quebec ores. It is recovered at Copper Cliff, Ont. by the International Nickel Company of Canada, Ltd., and at Montreal East, Que. by the Canadian Copper Refiners, Ltd. Canadian production in 1942 totalled 495,369 pounds valued at \$951,108 compared with 406,930 pounds worth \$777,236 in 1941.

World production of selenium is believed to approximate 300 to 500 short tons a year, the United States and Canada being the principal sources of supply.

Selenium is at present used chiefly in the glass and pottery industries, both as a colouring agent—as in ruby glass—and to neutralize the effect of objectionable oxides. To a minor extent, it is used in the photo-electric cell, or electric eye, which is finding many industrial applications, and in alloying stainless steel for screw and bolt stock, where it develops improved cutting and threading qualities. It is employed to improve the machinability of copper and copper alloys. It has a large potential market in certain rubber compounding industries and is now being used for the vulcanizing and fireproofing of switchboard cables and to increase the resistance of rubber to abrasion, these applications being still subjects of research. Selenium is used in the manufacture of certain kinds of paint and of certain dyes. As selenium oxychloride, it is a powerful solvent of many substances. The use of the metal in the production of improved cutting-tool steels and in the vulcanizing of rubber appears to offer the best opportunities for the expansion of the market. Rapid progress is also being made in the production of high-quality, selenium rectifiers, which require large quantities of selenium.

Selenium is marketed as a black to steel-grey amorphous powder, but cakes and sticks are also obtainable. Among the other products marketed are ferro-selenium, sodium selenite, selenious acid, and selenium dioxide. The nominal price per pound for black powdered selenium, New York, was \$1.75 in both 1941 and 1942.

Consumption of selenium in the manufacture of glass in Canada during 1942 was estimated at 3,647 pounds compared with 4,211 pounds in 1941 and 4,532 pounds in 1940.

General statistics on employment, etc., as relating to the production of both selenium and tellurium are included with those compiled for the Canadian non-ferrous smelting and refining industry.

### TANTALUM-COLUMBIUM

Neither tantalum nor columbium ores are commercially produced in Canada; however, it is interesting to note that the Department of Mines and Resources, Ottawa, reports that columbite-tantalite has been found in small quantities in a number of feldspar mines in the Dominion.

Ferrocolumbium is used in the manufacture of stainless steels and it has been reported that the pure metal may be utilized in the construction of certain vacuum tubes.

Tantalum is strongly resistant to acid corrosion, is weldable and easily fabricated. It is used in chemical process equipment and electronic tubes. Due to its hardness and high melting point, tantalum carbide is a constituent of hard cutting-tool mixtures. Ferrocolumbium has become an important alloy for the manufacture of weldable high-speed steels.

Tantalum ore prices, New York, March, 1943, were: per pound  $Ta_2O_5$ , \$2 to \$2.50 for 60 per cent concentrate, the price depending on source of supply.

Tantalum metal was quoted in the United States throughout 1942 at \$160.60 (base) a kilogram for C. P. rod and \$143 for sheet, subject to discounts on volume business. Corresponding figures for columbium metal were \$560 a kilogram for rod and \$500 for sheet. Ferrocolumbium, 50 to 55 per cent, was quoted at \$2.25 to \$2.35 a pound of columbium contained (f.o.b. producer's plant). These same prices prevailed in March, 1943.

### TELLURIUM

As with selenium, the metal is recovered in Canada as a by-product in the electrolytic refining of anode copper at Montreal East, Que. by Canadian Copper Refiners, Limited, and at Copper Cliff, Ont. by the International Nickel Company of Canada, Limited. The production in Ontario represents the recovery of the metal solely from nickel-copper ores; whereas at Montreal East the metal originated in copper-gold ores mined in Manitoba, Saskatchewan and Quebec. Commercial production in Canada from all ores totalled 11,084 pounds valued at \$17,735 in 1942 compared with 11,453 pounds worth \$18,394 in 1941.



"Metallic tellurium, until quite recently, was of little industrial importance. Formerly it was used to a small extent in some radio work and was used also in the photographic arts and for blackening art silverware. Small quantities are used as a colouring agent in the ceramic industry. More recently industrial research has shown that when alloyed with lead, the tensile strength and toughness of the lead is increased greatly. The use of small quantities of tellurium as a substitute for tin in the lead used for sheathing electric wire cables is reported to improve the resistance of the cables to heat and corrosion. It has also been used for improving the machining qualities of certain steels. Very finely powdered tellurium may be used as rubber-compounding material. Its presence is stated to shorten the time of curing, and to greatly improve the resisting qualities of the product. Tellurium is also used in the steel industry, but so far mainly in an experimental way. A newly patented 'daylight lamp' employed tellurium vapour in a tube to fill in certain wave lengths to produce a continuous spectrum".—(Bureau of Mines, Ottawa.)

A nominal price for tellurium of \$1.75 per pound at New York prevailed throughout 1942.

In 1942 Canadian steel foundries consumed 50 pounds of tellurium compared with 185 pounds in 1941. White metal foundries used 612 pounds in 1942 against 492 pounds in 1941.

### TIN

Metallic tin was commercially produced in Canada from domestic ores for the first time in 1941. Production totalled 64,744 pounds valued at \$33,667. The metal was recovered in British Columbia from British Columbia ores mined and treated by the Consolidated Mining and Smelting Company of Canada, Limited. Canadian production in 1942, all from the same source, totalled 1,237,863 pounds worth \$643,689.

"The tin produced at Kimberley and the small domestic recovery of secondary tin are far from sufficient to meet the Canadian requirements, which in peacetime amounted to about 2,700 tons a year and are now much larger. They were obtained mostly from smelters in the Straits Settlements. The position of the Allied countries in respect to tin has become critical since the capture by Japan of these smelters and of the Malayan tin mines, with the result that the civilian use of the metal is being increasingly curtailed. The search for commercial deposits in Canada has acquired added importance.

"Because of changing conditions and the wide range in the market value of the metal, no definite statement can be made as to what constitutes payable ore. Under wartime conditions, however, provided the deposit is reasonably large, it is worthy of attention, even though the grade of the material is lower than would ordinarily be regarded as suitable for commercial development. Most tin ores are too low in grade to be treated directly and accordingly must be concentrated. Concentrates are in most cases purchased on a 60 per cent tin basis and for each unit or fraction above or below 60 per cent the returning charge is reduced or increased. They are subject to penalties if they contain more than one per cent sulphur and 5 per cent iron. Antimony, arsenic, bismuth, copper, lead, and other impurities are not penalized. Consolidated Mining and Smelting Company is prepared to treat tin concentrate at its new smelter at Kimberley to the limit of its relatively small capacity.

"The prices of tin in New York were fixed in August, 1941 at 52 cents a pound and remained at that level to the end of the year and throughout 1942."—(Bureau of Mines, Ottawa.)

Table 125.—Consumption of Tin in Canada, by Industries, 1939-1942

	1939	1940	1941	1942
	(short tons)			
Brass and bronze foundries.....	129	338	437	217
White metal foundries.....	1,640	2,021	3,141	1,530
Steel foundries (chiefly for tin plate).....	810	1,270	2,346	1,428
Iron foundries.....	52	84	224	49
Galvanizing plants.....		90	50	226
Jewellery and silverware plants.....	45	49	146	15
Electrical apparatus plants.....	34	43	56	24
Miscellaneous industries.....	77	82	36	30
<b>Total accounted for.....</b>	<b>2,787</b>	<b>3,977</b>	<b>6,436</b>	<b>3,519</b>

Production of secondary tin in Canadian plants in 1942 was estimated at 64,511 pounds compared with 201,969 pounds in 1940 and 384,000 pounds in 1941.

### TITANIUM

Production of titanium ores in Canada during 1942 totalled 10,031 short tons valued at \$50,906 compared with 12,651 short tons worth \$49,110 in 1941. Commercial production of these ores in Canada has been confined for several years to the St. Urbain deposits, Charlevoix county, province of Quebec. In 1942 shipments from this area were made by the Baie St. Paul Titanic Iron Ore Company and J. A. Coulombe and Company Limited. In addition, a few tons of ore from Bourget township, Chicoutimi county, were employed for experimental purposes by Titanium Products Corporation.

"All known occurrences of titanium in Canada of any possible economic interest are in the provinces of Quebec and Ontario.

"Ilmenite or titanic iron ( $\text{FeTiO}_3$ ) in commercial quantities and carrying from 18 to 25 per cent of titanium is found at St. Urbain in Charlevoix county, and at Ivry in Terrebonne county, Quebec. Rutile ( $\text{TiO}_2$ ), which usually contains 54 to 59 per cent titanium, is found mixed with the ilmenite in parts of one of the St. Urbain occurrences and in sufficient quantities to make it of possible importance for the rutile alone, this being the only known workable deposit of rutile in Canada. Titaniferous magnetite deposits (magnetite carrying 3 to 15 per cent titanium) occur on the Saguenay River, near Lake St. John, and at Bay of Seven Islands, both in Quebec, and on the shores of Seine Bay and Bad Vermillion Lake in western Ontario.

"Commercial uses for titanium in recent years have continued to increase independently of the trend of general business. Ilmenite continues to be used chiefly in the manufacture of white pigment, and it is used to a smaller extent for making ferro-alloys.

"The world production of titanium ore is estimated at about 260,000 tons of ilmenite, which would yield 115,000 tons of titanium pigment, and 3,000 tons of rutile. India is the principal producer of ilmenite, the other producers being Norway, Malaya, Portugal, Australia, United States and Canada. Brazil is the principal producer of rutile, and Norway is second in importance."—(Bureau of Mines, Ottawa.)

Table 126.—Consumption of Titanium Pigments in Canadian Paint Industry, 1931-1942

Year	Pounds	Cost at works	Year	Pounds	Cost at works
		\$			\$
1931 .....	745,207	89,761	1937 .....	3,748,341	362,569
1932 .....	691,304	96,759	1938 .....	3,903,337	378,548
1933 .....	1,061,249	128,969	1939 .....	5,088,234	494,914
1934 .....	1,710,188	186,678	1940 .....	6,138,760	616,363
1935 .....	2,513,026	261,506	1941 .....	8,071,865	1,004,591
1936 .....	2,456,265	269,130	1942 .....	7,034,376	578,894

Table 127.—Consumption of Titanium White in Canadian Paint Industry, 1936-1942

Year	Pounds (*)	\$ (*)
1936 .....	1,396,337	193,638
1937 .....	1,299,857	193,107
1938 .....	1,341,359	200,552
1939 .....	1,865,288	275,103
1940 .....	2,297,248	344,945
1941 .....	3,076,490	560,621
1942 .....	4,168,097	820,990

(\*) Included with annual data as shown in Table 126.

NOTE.—Neither titanium white nor titanium alloys are commercially produced in Canada.

In 1939 there were 118 tons of ferrotitanium valued at \$23,498 consumed in the manufacture of steel in Canada; in 1940, 118 tons worth \$24,233, in 1941, 181 tons valued at \$52,128, and in 1942, 439 tons worth \$66,555.

## TUNGSTEN

The following information was obtained from a report "Tungsten in 1942" as prepared by the Bureau of Mines, Ottawa:

"Wolframite,  $(\text{Fe}_2\text{Mn})\text{WO}_4$ , is the principal ore of tungsten, the next in importance being scheelite  $(\text{CaWO}_4)$ , a calcium tungstate. The former is a dark brown to black heavy mineral, which contains 76.4 per cent  $\text{WO}_3$  (tungstic oxide) when pure, and is not common in Canada. Scheelite, the chief Canadian ore of tungsten, is a heavy, usually buff, but sometimes white mineral with a dull lustre, which contains 80.6 per cent  $\text{WO}_3$  when pure. It is commonly associated with quartz and frequently occurs in gold-bearing veins. It can be detected readily (in the dark) by its brilliant pale bluish-white fluorescence under ultra-violet light and purple filter. The lamps for this purpose are at present made only in California, but all duties into Canada on them have been removed. Full details regarding these lamps may be obtained from the Federal or Provincial Departments of Mines.

"Production of concentrate in 1942, although over five times greater than in 1941, was still far short of domestic requirements. The two chief producers during 1942 were Consolidated Mining and Smelting Company's Red Rose property in central British Columbia, and Hollinger Consolidated Gold Mining Company at Timmins, Ontario. International Tungsten Mines Limited made shipments from its property on Outpost Island, Great Slave Lake, Northwest Territories; and small amounts of ore or crude concentrate were shipped to Ottawa for treatment from properties in every province, except Alberta and Prince Edward Island. The shipments were chiefly low-grade concentrate from the Indian Path property of Tungsten Mines Limited, in Nova Scotia.

"In Nova Scotia, Tungsten Mines Limited (Ventures Limited) erected a 70-ton stamp flotation mill at the Indian Path mine, near Lunenburg and continued underground development to a depth of 230 feet. Several thousand tons of low-grade ore was treated and the crude concentrate was shipped to Ottawa for final treatment.

"In Quebec, small amounts of scheelite occur at a number of gold producing mines, particularly in the general region east of Rouyn to Val d'Or. With Dominion Government financial assistance, the Quebec Department of Mines erected a small scheelite treatment plant at the Mine School west of Val d'Or, and late in the year started treating custom ore from the Lamaque, Sigma, Perron, Central Cadillac, McWatters, and Wood Cadillac mines, which ore had previously been shipped to Ottawa. The principal shipper to Val d'Or early in 1943 was Kerr-Addison Gold Mines on the Ontario side of the boundary. Sullivan Consolidated Mines, 3 miles northwest of Val d'Or is making a high-grade table concentrate from ore picked from the belt. Prospecting was continued on the Manley property in La Reine township and by Toburn Gold Mines on the Kayrand claims in Dalquier township northwest of Amos, but the company relinquished its option. Upstream Gold Mines (Donhurd) prospected claims in the vicinity of Dasserat Lake, 18 miles west of Rouyn; and prospecting was continued in the Marlow-Rishborough area about 30 miles northeast of Megantic in the Eastern Townships.

"In Ontario, scheelite is known to occur at at least 70 different properties throughout the province, but, with a few exceptions, the amounts are too small to be worthy of attention. The main producers are the large gold mines of the Porcupine area, principally the Hollinger mine, and properties in the Beardmore, Little Long Lac, Red Lake, and Larder Lake areas.

"In the Hollinger mine, scheelite zones or bodies have been found in quartz in or close to the porphyry in at least 100 separate places from the surface down to the 5,150-foot level. The scheelite mill started to produce in March, 1942, and is treating 135 tons of ore daily. The company reports shipments of 67.6 tons of high-grade concentrate during 1942. Some custom ore was treated in the Hollinger mill from nearby Porcupine mines, including Aunor, McIntyre, DeSantis and Dome, but Aunor is now the only steady shipper. Small regular shipments of ore were received at Ottawa from Preston East Dome. Delnite is tabling and jigging its flotation tailing and shipping the resulting low-grade concentrate (high in iron and arsenic) to Ottawa for cleaning tests.

"In the Thunder Bay district east of Lake Nipigon, Little Long Lac Gold Mines at Geraldton stockpiled scheelite ore obtained from a picking belt over which an ultra-violet lamp is set up. A 20-ton scheelite mill was installed and treatment started in January, 1943.



"In Manitoba and Saskatchewan, prospecting was carried out on a number of scheelite occurrences on both sides of the boundary, south of Flin Flon, mainly in the vicinity of Phantom Lake, the most promising being the Mosher-Lundmark claims on the east side of the lake. About 20 miles to the east, Gold Hill development is prospecting a deposit near Cranberry Portage. At Herb (Wekusko) Lake in north-central Manitoba, considerable prospecting was done by Tungold Mines (Jack Nutt), the principal showing being the old Apex claim on the east side of the lake from which a few tons of picked ore was shipped to Ottawa for tests in the fall of 1942. There was considerable prospecting activity on the Falcon-West Hawk Lake area in the southeast corner of Manitoba. Scheelite was discovered here in 1917, and about 4 tons of cobbled ore was shipped during the next year. Recent discoveries have extended the zone to a length of about 10 miles, along which the principal showings have been staked by Thor Gold and by J. A. Poirier. A ton or two of low-grade ore was shipped to Ottawa recently by N. S. Black from the north end of West Hawk Lake.

"British Columbia is the leading Canadian producer of scheelite, the chief source of its output being the Red Rose mine on the Skeena River, near Hazelton. The discovery of large bodies of scheelite at the Emerald property, south of Nelson, is one of the outstanding Canadian developments in connection with strategic minerals. Close to 100 occurrences of scheelite have been found so far in the province.

"Production of concentrate from its Red Rose property was started early in the year by Consolidated Mining and Smelting Company. The small mill was later enlarged to 75 tons a day and a 5,200-foot aerial tram line was installed to connect the mill with the top workings at 6,500-foot elevation. Scheelite and some ferberite occur in a quartz vein in a 400-foot thick diorite sill in contact with sediments. The company also operated the Tungsten (Queen) property in the Bridge River district and shipped ore to Kimberley for concentration. Late in the year, however, the property reverted to Ed. Phillips, who is again shipping high-grade massive white scheelite to Ottawa. Bralorne Mines is producing small quantities of scheelite concentrate from its gold property in the Bridge River area, a portion of which is being shipped to Ottawa for the removal of the sulphur. About a car lot of ore was shipped to Ottawa by J. W. Tillen from dumps of the Lucky Boy mine near Trout Lake, Lardeau area. About a ton of rough concentrate was shipped to Vancouver for re-concentration by Selkirks Tungsten-Tin Mines (Regal Silver) from its Woolsey property at Albert Canyon, northeast of Revelstoke. This property and the adjoining Snowflake were diamond drilled recently for tin and tungsten by the Department of Mines and Resources, Ottawa, but the results were inconclusive.

"Scheelite was discovered early in 1942 in the old Iron Mountain or Emerald mine, 6 miles southeast of Salmo and not far from the United States boundary. The ore is rather finely disseminated in several separate contact metamorphic zones between granite and argillite and to a lesser extent between granite and limestone and also in narrow bands of lime-bearing silicates (garnet, epidote, diopside) known as 'Skarn'. Large tonnages averaging 1.0 per cent WO<sub>3</sub>, or better, have been estimated in the main Emerald zone. The property has been extensively diamond drilled and is being developed by Wartime Metals Corporation, a Dominion Government Company, and the 300-ton a day mill, connected to the mine workings by a 1½-mile aerial tram, is expected to be completed before midsummer of 1943. Several scheelite discoveries in the vicinity of the Emerald are being prospected.

"In the Yellowknife-Gilmour Lake region, north of Great Slave Lake, Northwest Territories, more than 1,000 scheelite bearing veins, mostly quartz, have been found by Dominion Government geologists and by private companies. Only a few of them, however, are sufficiently large to be of commercial importance.

"The property of the International Tungsten Mines on Outpost Island in Great Slave Lake has been developed down to the 425-foot level for the production of gold. The ore is a gold-copper-tungsten (scheelite and ferberite)-tin complex and difficulty is being encountered in producing a tungsten concentrate to meet specifications. During the past two years, a few car lots of low-grade concentrate produced in the company's mill, were shipped to the United States for tests and for commercial treatment. Several shipments were also made to Ottawa. An appreciable tonnage of tungsten ore is present, but production will depend largely upon the overcoming of metallurgical problems.

"In Yukon, placer operations were continued on the Taylor, Seaholm, Lund, and Swanson claims in Haggart Creek and at Dublin Gulch in the Mayo district. Shipments of the gold clean-ups containing high percentages of scheelite and wolframite were made to Ottawa. Dominion Government geologists have estimated a fair tonnage of tungsten minerals in these gravels and have also found occurrences of scheelite in place in the metamorphosed limestone beds of Ray Gulch, Cement Creek, and Lynx Creek in the Mayo district. These new finds will be investigated during the summer of 1943.

"World production of tungsten ore and concentrate in 1939 (figures since outbreak of the war are not available) on a basis of 60 per cent  $WO_3$ , was about 34,000 tons, the principal producing countries being Burma, China, United States, Portugal, Bolivia, Korea, Japanese controlled areas in south China, and Argentina.

"Custom ores and crude concentrates are treated at the Ore Dressing plant of the Bureau of Mines, Booth Street, Ottawa; at the Quebec Department of Mines plant, Val d'Or, Quebec; and by War Metals Research Board, University of British Columbia, Vancouver.

"Tungsten ores are concentrated to a 60 per cent or higher of tungsten trioxide ( $WO_3$ ). For adding to steel, the ore is generally converted into ferro-tungsten, but sometimes into tungsten oxide, calcium tungstate, or tungsten powder. Canada has as yet no plants for the manufacture of ferro-tungsten or other tungsten addition agents and the only plant making tungsten steels is Atlas Steels, Welland, Ontario. Only scheelite is used at present, and the high-grade concentrate of not less than 70 per cent  $WO_3$  is added directly to the steel bath. This is possible because of the comparative ease with which the calcium forms a slag.

"United States specifications for scheelite are:— $WO_3$ —60 per cent minimum, the maximum percentages of the following harmful impurities being: copper and phosphorus each 0.05; arsenic, antimony and tin each 0.10; bismuth and sulphur 0.50 each; molybdenum, 0.40; and manganese, 1.00. For wolframite (or ferberite), 1.50 per cent tin is allowed, and a little more arsenic and bismuth. The ores may be in lump, fine, or a mixture of both.

"The price in Canada of scheelite concentrate containing 70 per cent  $WO_3$  (within specifications) is \$26.50 a short unit of  $WO_3$ , delivered at Welland, Ont., equivalent to about \$1,855 a short ton of 70 per cent concentrate, delivered. All sales of Canadian concentrate must be made through the Metals Controller, Ottawa, who also buys wolframite concentrate for export."

Table 128.—Tungsten Mining in Canada, 1942\*

	British Columbia	Other provinces	Canada
Active firms.....	No. 7	(t) 8	15
Ore mined.....	Ton 8,471	9,968	18,439
Capital.....	\$ 712,434	87,872	800,306
Employees—			
On salary.....	No. 15	16	31
Wage-earners.....	No. 107	51	158
Total.....	No. 122	67	189
Salaries and wages—			
Salaries.....	\$ 18,673	17,396	36,069
Wages.....	\$ 183,935	69,724	253,659
Total.....	\$ 202,608	87,120	289,728
Fuel and electricity used.....	\$ 12,421	13,185	25,606
Process supplies used.....	\$ 18,527	23,341	41,868
Freight and smelter costs.....	\$ 3,473	874	4,347

(\*) Not including data relating to the production of tungsten concentrates at auriferous quartz (gold) mines.

(t) Includes 2 in Nova Scotia; 3 in Quebec; 2 in Manitoba and 1 in Northwest Territories.

NOTE.—Owing to the difficulty of obtaining accurate production data direct from certain of these mines, the statistics of Canadian tungsten production for 1942 were compiled largely from customs mills returns and represent the combined tungsten recoveries from both "straight" tungsten ore and auriferous quartz ores. Canadian tungsten production in 1942 as thus defined totalled 520,981 pounds of concentrates valued at \$406,275.

Table 129.—Production of Crude Tungsten Concentrates in Canada

Year	Pounds	\$	Average per cent WO <sub>3</sub>
1912.....	28,000	(a)	72
1917.....	580	234	89.41
1918.....	(c) 27,000	11,700	73.8
1919.....	8,825	4,917	(a)
1940.....	12,002	7,303	70-75
1941.....	(b) 82,846	38,712	51.1
1942.....	(b) 520,981	406,275	62

(a) Not recorded.

(b) Includes export of considerable low-grade material to U.S.A.

(c) Included 11 tons produced at Burnt Hill, N.B., with smaller shipments from Yukon, Nova Scotia and Manitoba.

NOTE.—1942 production represents shipments of relatively high grade concentrates from Canadian customs mills plus exports of crude concentrate.

Table 130.—Tungsten Wire Used in the Manufacture of Canadian Electrical Apparatus and Supplies, 1931-1942

Year	Value	Year	Value
	\$		\$
1931.....	79,659	1937.....	52,768
1932.....	53,802	1938.....	50,594
1933.....	48,701	1939.....	52,207
1934.....	48,996	1940.....	62,175
1935.....	52,192	1941.....	82,096
1936.....	47,856	1942.....	139,265

Table 131.—Tungsten Consumed in Specified Industries, 1938-1942(a)

Year	Ferro-tungsten consumed in Canada in the manufacture of steel		Tungsten metal consumed in Canada in the manufacture of steel and alloys
	Long tons	Value \$	Pounds
1938.....	30	89,806	
1939.....	95	173,250	13,089
1940.....	336	829,850	15,474
1941.....	482	1,003,314	29,729
1942.....	577	1,440,141	36,882

(a) Other than tungsten-chromium.

## VANADIUM

Some of the magnetites of the Rainy River and other districts in Ontario are known to contain relatively small quantities of vanadium and some research has been conducted as to its economic recovery. There is no production of either the metal or its ores in Canada at the present time.

The principal occurrences of vanadium are in Arizona, Colorado, and Utah in the United States; Minasragra in Peru; Broken Hill in Northern Rhodesia; and Grootfontein district in South West Africa.

The metal is employed chiefly in the manufacture of alloy steels and irons. It is also used in the form of ammonia meta-vanadate as a catalyst in the manufacture of sulphuric acid and in the non-ferrous, glass, ceramic and colour industries.

In 1943 vanadium-bearing soot and ash from certain South American fuel oils was being collected by the Canadian Wartime Metals Corporation from Canadian vessels at Canadian ports, in comparatively small quantities, and shipped to an American smelter for treatment.

Possible imports of vanadium or vanadium ores into Canada are not shown separately in Canadian trade reports. Metal and Mineral Markets—New York—quoted ferrovanadium, June, 1943—per pound of vanadium contained, delivered \$2.75 to \$2.90. Vanadium ore per pound V<sub>2</sub>O<sub>5</sub> contained, 27½ cents f.o.b. shipping point.



## ZIRCONIUM

The metal is not produced in Canada; zircon is the most common zirconium mineral and the Department of Mines and Resources, Ottawa, states that it, or cyrtolite, commonly occurs in greater or less amount in Canadian Precambrian pegmatites, also in the pegmatitic apatite-phlogopite deposits of the Grenville areas in Ontario and Quebec.

Zircon is used to a steadily growing extent in refractories, specialized porcelains and heat-resisting glass.

New York quotations for zirconium alloy—July, 1943 were: 12 to 15 per cent Zr, 39 to 43 per cent Si, \$102.50 to \$107.50 per gross ton; 35 to 40 per cent Zr, 47 to 52 per cent Si, 14 to 16 cents per pound. Zirconium per pound commercially pure, powdered \$7. Zircon ore—per ton f.o.b. Atlantic seaboard, minimum 55 per cent  $ZrO_2$  \$60 to \$70.

Table 132.—Principal Statistics (\*) of the Miscellaneous Metal Mining Industry in Canada, 1941 and 1942

	1941	1942
Number of firms.....	46	68
Capital employed (**)...	2,931,695	3,956,427
Number of employees—On salary.....	78	191
On wages.....	647	1,161
Total.....	725	1,352
Salaries and wages—Salaries.....	149,149	286,932
Wages.....	992,095	2,109,799
Total.....	1,141,244	2,396,731
Value of production (gross).....	3,428,886	5,516,241
Cost of fuel and electricity.....	359,005	623,665
Process supplies used.....	217,494	600,900
Smelter charges.....	—	33,910
Freight.....	233,904	261,211
Value of production (net).....	† 2,618,483	3,996,555

(\*) Does not include data relating to smelters and refineries or to pitchblende mining in the Northwest Territories.

(\*\*) Exclusive of ore reserves.

† Revised.

Table 133.—Capital Employed in the Miscellaneous Metals Mining Industry in Canada, 1942

	\$
Present cash value of the land (excluding minerals).....	787,413
Present value of buildings, fixtures, machinery, tools and other equipment.....	2,423,881
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	334,359
Inventory value of finished products on hand.....	45,446
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	305,328
Total.....	3,956,427

Table 134.—Employees, Salaries and Wages in the Miscellaneous Metal Mining Industries in Canada, 1942

	Number of employees		Salaries and wages
	Male	Female	\$
Salaried employees—			
Total.....	169	22	286,932
Wage-earners—			
Surface.....	605		2,109,799
Underground.....	355		
Mill.....	141		
Total.....	1,101		2,109,799
Grand Total.....	1,330	22	2,396,731

Table 135.—Average Number of Wage-Earners Employed, by Months, 1939-1942

	1939	1940	1941	1942		
				Surface	Under-ground	Mill
January.....	144	296	415	441	250	92
February.....	143	253	415	459	271	96
March.....	166	244	501	439	306	113
April.....	190	307	533	464	320	132
May.....	228	370	599	473	313	125
June.....	289	390	704	579	315	130
July.....	310	435	749	655	346	151
August.....	377	417	776	778	341	163
September.....	376	450	822	817	362	165
October.....	394	475	799	862	429	172
November.....	425	410	774	959	461	182
December.....	415	368	659	980	538	160

## CHAPTER SIX

## THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA

The Non-ferrous smelting and refining industry, as defined by the Dominion Bureau of Statistics, comprises those firms engaged primarily in the smelting of non-ferrous ores or concentrates and the refining of metals recovered therefrom.

The net value added by the industry in the processing of crude or semi-crude material during 1942 totalled \$125,881,047 compared with \$119,736,294 in the preceding year. Refined products included gold, silver, nickel, copper, lead, zinc, aluminium, tin, magnesium, indium, antimony, bismuth, cobalt, cadmium, selenium, tellurium, pitchblende products and sulphur; other end products of individual plants or companies were copper-nickel matte, cobalt salts, nickel salts, nickel and cobalt oxides, arsenious oxide, sulphuric acid, platinum metals residues, zinc dust, zinc oxide, and blister and anode copper.

The net value added by the industry in the treatment of various ores, metals, etc., in 1942 represents a 5 per cent increase over the all-time high record of \$119,736,294 established in 1941. This continued increase realized by the smelters and refineries reflects Canada's unabated effort to provide, to her full capacity, the essential materials for the successful waging of a total war. The production of the light metals was particularly impressive—aluminium output was far greater than in the previous year and the recovery of magnesium metal reached an important volume. The greater part of the production of this latter metal comes from the new plant of Dominion Magnesium Ltd. It is also worthy of note that the commercial recovery of indium in Canada was recorded for the first time in 1942. Not included with the products credited to the non-ferrous smelting and refining industry was an important production of quicksilver in British Columbia. This metal is produced at or near the mines and statistics relating to its production are included with those of the miscellaneous metal mining industry. The production of chrome-bearing ferro-alloys in Ontario, principally from foreign ores, is classified under manufacturing and the data relating to same are therefore not included in this chapter.

The total cost of ores, concentrates, matte and other material treated in all Canadian non-ferrous metallurgical plants during 1942 was estimated at \$258,903,818 compared with \$213,542,005 in 1941. In this regard, it should be noted that companies operating both mines and smelters may vary from year to year the nominal values of crude ores, etc., shipped from their mines to their own smelters, with the result that in some years the mining industry proper is favoured at the expense of the non-ferrous smelting and refining industry and vice versa. The total annual net income of the nation as a whole is, however, not affected by these arbitrary (internal) evaluations. Fuels and purchased electricity consumed by the industry in 1942 totalled \$35,748,639 and the value of chemicals and various other process supplies used amounted to \$27,083,695.

Capital employed in 1942 was reported at \$356,052,965, which figure includes the value of land, plant, materials on hand and in process, finished products and operating funds. Employees totalled 21,162 compared with 16,014 in 1941 and salaries and wages aggregated \$37,340,556 as against \$27,482,689 in the preceding year. Female wage-earners in 1942 averaged 185.

Table 136.—Principal Statistics of the Non-Ferrous Metallurgical Industry in Canada, 1940-1942

	1940	1941	1942
Number of companies.....	9	9	10
Number of plants.....	13	13	15
Capital employed.....	\$ 234,826,742	309,963,342	356,052,965
Number of salaried employees.....	1,558	1,750	2,625
Salaries.....	\$ 3,661,048	4,117,398	5,286,755
Number of wage-earners.....	11,908	14,264	18,537
Wages.....	\$ 18,105,149	23,365,291	32,053,801
Value of plant products (gross) (*).....	\$ 305,360,547	379,322,270	447,617,199
Estimated cost of ores, concentrates, etc., treated (a).....	\$ 174,274,655	213,542,005	258,903,818
Cost of fuel and purchased electricity (b).....	\$ 19,510,664	26,771,809	35,748,639
Process supplies, other than items (a) and (b).....	\$ 13,515,941	19,272,162	27,083,695
Value added by smelting (net).....	\$ 98,059,287	119,736,294	125,881,047

(\*) The gross value of production should not be interpreted as the ultimate sale value of finished metal only, as it represents the combined values of all industry (smelting, refining, etc.) end products (blister, copper matte, etc.)



Table 137.—Capital Employed in the Non-Ferrous Smelting and Refining Industry in Canada, 1942

	\$
Present cash value of the land (excluding minerals).....	3,452,543
Present value of buildings, fixtures, machinery, tools and other equipment.....	226,904,716
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	60,220,508
Inventory value of finished products on hand.....	6,451,828
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	59,014,370
<b>Total.....</b>	<b>356,052,965</b>

Table 138.—Number of Wage-Earners, by Months, 1932 and 1939-1942

Month	1932	1939	1940	1941	1942	
					Male	Female
January.....	5,490	11,138	11,225	12,927	15,778	31
February.....	5,400	11,123	11,297	13,052	16,298	32
March.....	5,355	11,334	11,298	13,102	16,434	34
April.....	4,750	11,371	11,403	13,617	16,617	39
May.....	4,297	11,380	11,691	14,275	17,223	53
June.....	4,475	11,390	11,794	14,503	18,297	68
July.....	4,205	11,486	12,102	14,634	18,900	75
August.....	4,160	11,476	12,256	14,788	19,346	81
September.....	4,198	11,454	12,251	14,815	19,091	206
October.....	4,326	11,327	12,316	14,995	20,076	424
November.....	4,316	11,401	12,481	15,055	20,953	570
December.....	4,274	11,424	12,771	15,371	21,239	606
<b>Average.....</b>	<b>4,604</b>	<b>11,360</b>	<b>11,908</b>	<b>14,264</b>	<b>18,352</b>	<b>185</b>

The agreement made in 1939 by the large base metal producers and the Imperial Government, by which the producers were to supply the Imperial Government with copper, lead and zinc at prices which prevailed shortly before the outbreak of the war, was continued with some adjustments or revisions for increases in prices due to the increased cost of labour and materials. Canada can now furnish large quantities of these metals in the refined state, whereas in 1914 no refined copper, nickel or zinc and only a comparatively small amount of refined lead were produced in this country.

Tables of world metal production were omitted from this report due to the fact that recent data for most countries were unobtainable or conjectural in nature; also, data relating to capacities of Canadian metallurgical plants have been withheld for confidential use only until the termination of the war.

The following information has been abstracted from the 1942 annual reports of some of Canada's more important mining and metallurgical companies:

**Falconbridge Nickel Mines Ltd.**—"Full effect of the expansion program commenced in 1941 was not realized until the end of the second quarter when it was finally completed. However, full advantage was taken of all units as they became available and the substantial increase shown in ore treated and metals produced records the greatest production effort of any year in the history of the company.

"Early in 1942, after fully exploring the possibilities, it was decided to further increase the production capacity by additions to the smelting plant. It was hoped that the second project could be completed by the end of the year but unexpected delays have upset the schedule to such an extent that little gain can be expected from it before the end of the first quarter of 1943."

**International Nickel Company of Canada Limited.**—"All of the Company's works ran continuously throughout the year and considering the shortage of labour and the difficulty in securing supplies, the operating results were satisfactory. ... The expanded production of nickel already attained, coupled with conservation in its applications and organized salvage of nickel-bearing scrap, has eased a threatened shortage of supply. It would now appear that a sufficient tonnage of this strategic metal is available to meet all vital requirements of our armed services. While in no way lessening its war efforts, the Company has long been formulating plans in preparation for the post-war period."

**Noranda Mines Limited.**—"Production at the Horne mine was at full capacity as permitted by sound and safe mining practice and limitations of the capacity of the smelter and of the customs refinery operated at Montreal East by the Company's subsidiary, Canadian Copper Refiners Limited. Since the commencement of the war, the production of copper and zinc by another subsidiary, Waite-Amulet Mines Limited, has been greatly expanded and the combined copper-zinc production of Noranda and Waite-Amulet has been a very important contribution to Canada's war effort. The copper refinery at Montreal East operated at full capacity during 1942. The estimated copper and gold content of the ore indicated in the Horne mine above the 2,975 foot level, as of January 1, 1943, is sufficient to maintain production of these metals for fifteen years at the 1942 rate of production."

**Hudson Bay Mining & Smelting Co. Limited.**—"The capacity of the copper smelter was further increased during 1942. The tonnage of pay charge of Hudson Bay material and of customs ore and concentrates was an all-time high, and the year's production of gold, silver, and copper from all sources reached a new peak. A fifth copper roaster was installed and placed in operation early in May.

"There were slight increases in the tonnage of zinc concentrates treated, the average zinc assay per ton of zinc concentrates treated, and the percentage of recovery of zinc from concentrates treated to slab zinc produced. The year's production of slab zinc was the highest on record. The cadmium plant treated all available precipitates from the zinc purification plant. The cyanide plant again treated a greater tonnage of flotation tailings than had been treated in any previous year. Women are now being employed on various types of work in the metallurgical and other surface plants and over 200 farmers worked for the company during the winter."

**Consolidated Mining & Smelting Co. of Canada Limited.**—"The metallurgical and chemical plants at Trail, British Columbia, were operated in 1942 at full capacity. Recoveries were satisfactory, but costs were slightly higher.

"The cooperation of the company was invited by the British and Dominion Governments in connection with the production of certain chemicals for war purposes. The company's directors agreed to place at their disposal all technical and engineering information in possession of the company, together with such facilities as might be required to plan, construct and operate these plants on the basis of actual cost. Expenditures amounting to approximately \$16,000,000 were undertaken. Construction estimates were not exceeded and operations were commenced within the time specified. It is a matter of much satisfaction to record that production has been greater than rated capacity and costs per unit below estimates. The construction and operation contracts with the governments in connection with these plants do not include any remuneration to the company. . . . Most of the company's production of lead and zinc were still under contract to the British Government. The balance of the output, together with the company's other metal and fertilizer production, was practically all required directly or indirectly for war purposes."

The Aluminum Company of Canada Limited reported continuous operations throughout 1942 at its Arvida ore plant and at both the Arvida and Shawinigan Falls reduction plants. The new reduction plant of the company at La Tuque, Quebec, came into production in November.

At Deloro, Ontario, the plant of the Deloro Smelting & Refining Company Limited was operated steadily during the year under review. The company treated both Canadian and foreign ores and products included silver, arsenic and cobalt and nickel in various forms.

Dominion Magnesium Limited conducted operations at its new property located near Renfrew, Ontario, from August; magnesium metal is produced in the company plant by the ferrosilicon process. The metal is recovered from dolomite rock which is quarried near the plant.

Operations at the refinery of Eldorado Gold Mines Limited, located at Port Hope, Ontario, were continuous throughout 1942. Pitchblende concentrates shipped from the company's mine situated at Great Bear Lake, Northwest Territories, are treated in this Port Hope refinery.

## CHAPTER SEVEN

THE COAL MINING, COKE, NATURAL GAS AND PETROLEUM INDUSTRIES  
(Fuels) IN CANADA

The Coal Mining Industry in Canada.

The Coke and Gas Industry in Canada.

The Peat Industry in Canada is included under non-metals, chapter 8.

The Petroleum Industry in Canada.

1. Production of Crude Petroleum.

2. Production of Petroleum Products.

NOTE:—In order to correlate data regarding fuels in Canada, this chapter has been prepared to include statistics of the coal, natural gas, and petroleum industries. This survey presents information regarding these industries as a whole, dealing principally with the mineral industry, although supplementary data are shown for closely allied manufacturing operations.

The Bureau issues an annual report on Coal Statistics for Canada which may be referred to for complete details of the Coal Mining Industry.

## THE COAL MINING INDUSTRY

Dominion Fuel Board—The Board was created in 1922 to meet the need for a permanent organization responsible to the Government for a thorough and systematic study of the fuel situation and recurrent shortages experienced throughout Canada. It is composed of permanent members of the Dominion Civil Service and the staff of the Board constitutes a division of the Bureau of Mines and Geology, Department of Mines and Resources.

In recent years the policy of the Government has been to extend the market for Canadian coal and to that end financial assistance in the form of subventions has been given to the coal industry since 1928, the Board being responsible for the administration of subvention payments. The amount of coal moved under these assisted rates increased from 146,126 short tons in 1928 to a maximum of 3,403,581 short tons in 1939 and was 1,091,887 net short tons in 1943. Of the total moved under assisted rates in 1943, 809,161 short tons were from Nova Scotia and New Brunswick and 282,726 short tons from Western Canada.

The Dominion Fuel Board also administers the Domestic Fuel Act (17 Geo. V, c. 52) authorizing a bonus on Canadian coal converted to coke and sold for domestic use, and, from April 1, 1941, the Act (20-21 Geo. V, c. 6) to place Canadian coal used in the manufacture of coke for metallurgical purposes upon a basis of equality with imported coal.

Coal Administration—Since the outbreak of war, the Dominion Fuel Board has collaborated closely with the Coal Administrator of the Wartime Prices and Trade Board, and on Aug. 6, 1941, the Coal Administrator took over, for the duration of the War and until further order, the powers, duties, functions, staff and establishment of the fuel Board.

In December, 1942, P.C. 10674 was passed establishing the Emergency Coal Production Board. On this Board the Coal Administrator acted as Chairman.

Coal Control.—Order-in-Council P.C. 1752 of March 5, 1943, transferred the Coal Administration from the Wartime Prices and Trade Board, Department of Finance, to the Department of Munitions and Supply and the Coal Control was created. The duties and functions of the Coal Control in general are to study the production and importation of coal into Canada and to maintain an equitable distribution thereof; to regulate and maintain price control and prevent infraction of the price ceilings, and to carry on the powers and duties of the Dominion Fuel Board.

The Emergency Coal Production Board formerly under Department of Finance also was transferred to Department of Munitions and Supply, by Order-in-Council 1752, dated March 5, 1943. During 1943 the Emergency Coal Production Board actively assisted coal mine operators where necessary in maintaining and increasing production, either through production subsidy or by financial assistance in the form of loans or grants. Also initiated and financed by the Board were six stripping operations in Alberta which were to provide a reserve to meet emergencies. It was also instrumental in the re-opening of a large stripping operation in southern British Columbia.



The Board, in co-operation with the Department of Mines in Quebec, assisted in developing small local peat fuel production operations in various parts of the Province, and assisted them financially.

Expenditures for these purposes since the inception of the Board up to the end of 1943, amounted to \$4,624,908.

The fuel situation in Canada is somewhat anomalous, as, in spite of the enormous resources of coal in the country, about 50 per cent of the requirements is imported. The Canadian coal areas are situated in the eastern and western provinces, while the areas of densest population and greatest industrial development, in Ontario and Quebec, are more easily and economically supplied with coal from the nearer coalfields of Pennsylvania and Ohio.

Canadian coal exported in 1942 amounted to 815,585 tons, compared with 531,449 tons in 1941. Ports in Nova Scotia, New Brunswick, Quebec and central Ontario cleared 505,578 tons of Canadian coal and exportations through western ports reached 310,007 tons.

Imports of coal into Canada in 1942 were 17 per cent higher at 25,609,267 tons. Anthracite imports amounted to 4,802,023 tons and consisted of 4,422,499 tons from the United States and 379,524 tons from Great Britain. The United States supplied 92 per cent of Canadian anthracite requirements in 1942 compared with 84 per cent in the preceding year. Great Britain supplied 8 per cent of Canada's requirements of this coal during the year as against 16 per cent in 1941. Receipts of bituminous coal totalled 20,807,005 tons or 16.4 per cent above the 1941 total. Lignite coal imports amounted to just 239 tons in 1942.

Production of coal in Canada during 1942 totalled 18,865,030 short tons valued at \$62,897,581 compared with 18,225,921 short tons worth \$58,059,630 in 1941. The quantity produced in 1942 established an all-time high record; however, the value of same was surpassed in each of the years 1920, 1921, 1922, 1923, 1928 and 1929. The 1942 output comprised 13,616,215 tons of bituminous, 733,547 tons sub-bituminous and 4,515,268 tons of lignite. Of the total Canadian output in 1942, Nova Scotia mines contributed 7,204,852 tons; New Brunswick 435,203 tons; Manitoba, 1,265 tons; Saskatchewan 1,301,116 tons; Alberta 7,754,053 tons and British Columbia 2,168,541 tons.

The rough average British Thermal Unit values per pound of Canadian coals delivered to consumers (1941) was estimated by the Department of Mines and Resources, Ottawa, as follows:—Bituminous—Maritime Provinces, British Columbia and Alberta, grade 1—14,000; grade 2, 13,000 and grade 3, 11,000 to 12,000. Sub-bituminous—Alberta and British Columbia, 10,000 to 11,500. Lignite—Domestic, Alberta and British Columbia, 7,500 to 10,000. Lignite—Saskatchewan, 6,500 to 7,500.

The entire coal mining industry of Canada provided employment for 26,194 persons and distributed \$42,091,137 as salaries and wages in 1942. During the year under review every effort was made by the Government and the operators to sustain and increase the trained personnel at the mines. The only serious labour difficulty experienced was a week long strike of miners in Cape Breton; this commenced on April 14.

The production of coal in Canada is confined to the western and eastern provinces. Ontario and Quebec have no commercial coal mines and the production of coal in Manitoba is limited to a small tonnage of lignite.

Nova Scotia produces bituminous coal from Cape Breton Island and the mainland collieries in the Cumberland and Pictou areas. New Brunswick produces at Minto a small portion of the bituminous coal of Eastern Canada. Lignite is produced in Saskatchewan, the main producing areas being the Bienfait and Estevan divisions.

Alberta produces all ranks of coal, including sometimes a small tonnage of anthracite coal. Bituminous coal is produced in the Crownsnest field and the mining areas of the foothills. The coal mined in the central area of the province is lower in rank and is classed as sub-bituminous and domestic or lignite.

British Columbia produces bituminous and sub-bituminous coal from Vancouver Island, the Crow's Nest area, which is adjacent to the Alberta field, and also from the inland area located near the towns of Princetown and Merritt.

The major portion of the coal produced in Canada is mined in Nova Scotia and Alberta, the production from each of these areas being approximately 40 per cent of the total production for Canada.

The coal production from Nova Scotia, augmented by a small tonnage from New Brunswick, provides, in peacetime, not only for the requirements of the railways of the area, the steel industry and the domestic market, but also for much of the fuel requirements of the Province of Quebec and, to a lesser degree, Ontario. The increasing wartime expansion of industry and transportation during 1942 however, considerably reduced the movement of coal from this area.

The development of markets in Ontario for Alberta coal has also been discontinued due to the increased demand in the western provinces.

The output from most of the Canadian collieries for 1942 has been increased and development work undertaken to increase production and in a measure offset the adverse effect of the reduction in manpower. A major development of the year was the construction of the Elk Colliery near Fernie, B.C. to replace the operations of the Coal Creek Colliery which are to be abandoned.

**Table 139.—Capital Employed in the Coal Mines of Canada, by Provinces, 1941 and 1942**

Province	1941				1942			
	Capital employed as represented by:				Capital employed as represented by:			
	Cost of land, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total	Cost of land, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	33,003,311	2,973,555	7,170,721	43,147,587	31,838,558	2,964,078	10,034,232	44,836,869
New Brunswick....	894,214	57,566	526,292	1,478,072	849,793	46,722	489,914	1,386,429
Manitoba.....	2,500	100	500	3,100	2,500	100	500	3,100
Saskatchewan.....	2,982,495	98,898	447,780	3,529,173	2,718,080	136,398	428,553	3,283,031
Alberta.....	20,092,375	966,049	6,705,091	36,763,515	28,945,543	1,165,047	7,327,893	37,438,483
British Columbia..	19,311,940	307,967	1,896,096	21,515,903	20,045,265	372,650	1,400,865	21,818,780
<b>Canada.....</b>	<b>85,286,835</b>	<b>4,484,135</b>	<b>16,747,386</b>	<b>106,498,356</b>	<b>84,399,745</b>	<b>4,684,995</b>	<b>19,681,957</b>	<b>108,766,697</b>

**Table 140.—Employees, Salaries and Wages in the Coal Mines of Canada, by Provinces, 1942**

Province	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Surface	Under-ground				
						\$	\$	\$
Nova Scotia.....	435	129	2,116	10,450	13,130	1,142,691	19,539,546	20,682,237
New Brunswick....	43	6	319	714	1,082	105,556	1,143,562	1,249,118
Manitoba.....			1	2	3		1,703	1,703
Saskatchewan.....	38	6	252	340	636	93,140	729,000	822,206
Alberta.....	505	40	2,159	5,840	8,544	1,250,161	13,456,002	14,706,763
British Columbia..	202	27	689	1,881	2,799	550,048	4,079,059	4,629,107
<b>Canada 1942.....</b>	<b>1,223</b>	<b>205</b>	<b>5,536</b>	<b>19,227</b>	<b>26,194</b>	<b>3,141,599</b>	<b>38,949,538</b>	<b>42,091,137</b>
<b>Canada 1941.....</b>	<b>1,228</b>	<b>122</b>	<b>5,372</b>	<b>19,668</b>	<b>26,330</b>	<b>2,844,051</b>	<b>35,305,519</b>	<b>38,149,602</b>

**Table 141.—Wage-earners Employed and Days' Work Done, by Months, in the Coal Mines of Canada, 1942, with Comparative Totals for 1941**

Month	Number of wage-earners			Days' work done		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	5,898	21,733	27,631	140,650	498,909	648,619
February.....	5,768	21,348	27,116	134,234	461,201	595,435
March.....	5,542	20,314	25,856	135,511	451,071	586,582
April.....	5,319	19,237	24,556	126,244	428,410	554,654
May.....	5,249	18,313	23,562	122,650	388,120	510,770
June.....	5,393	18,803	24,196	127,330	388,314	515,644
July.....	5,470	18,618	24,088	133,250	422,320	555,570
August.....	5,428	17,987	23,415	135,450	410,345	545,795
September.....	5,401	17,698	23,099	133,376	396,021	529,397
October.....	5,480	17,927	23,407	136,043	413,764	549,807
November.....	5,664	19,077	24,741	139,401	428,323	567,724
December.....	5,822	19,666	25,488	141,512	450,051	591,563
<b>Total for 1942.....</b>				<b>1,617,666</b>	<b>5,131,912</b>	<b>6,749,572</b>
<b>Total for 1941.....</b>				<b>1,542,936</b>	<b>5,111,538</b>	<b>6,653,615</b>

Table 142.—Output of Coal in Canada, by Grades, 1918-1942

Calendar year	Anthracite		Bituminous		Sub-Bituminous*		Lignite		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$		\$		\$
1918.....	115,405		11,636,190				3,226,331		14,977,926	55,192,896
1919.....	85,579		10,892,046				2,941,471		13,919,096	55,622,670
1920.....	127,513		13,122,924				3,696,327		16,946,761	62,496,538
1921.....	96,964	330,699	11,680,477	58,848,444			3,280,052	13,272,513	15,057,493	72,451,656
1922.....	40,417	122,538	11,630,488	53,348,507			3,486,526	12,047,452	15,157,141	65,518,497
1923.....	107	322	12,941,877	58,478,670	466,492	1,399,423	3,582,095	12,180,576	16,990,571	72,058,986
1924.....			9,483,732	40,662,894	590,168	1,761,086	3,564,297	11,170,038	13,618,197	53,593,988
1925.....			8,939,607	36,793,501	570,654	1,731,267	3,624,707	10,737,183	13,134,968	49,261,951
1926.....			12,303,079	48,153,572	489,736	1,458,116	3,595,316	10,263,436	16,478,141	59,875,094
1927.....			13,006,990	49,385,818	596,155	1,784,973	3,823,716	10,096,672	17,426,861	61,867,463
1928.....			12,971,744	50,584,108	740,496	2,076,212	3,852,053	11,097,513	17,561,293	64,757,833
1929.....			12,859,822	49,995,261	668,702	1,908,954	3,968,033	11,160,956	17,406,557	64,065,170
1930.....			10,824,839	41,789,061	603,358	1,705,236	3,453,127	9,355,451	14,881,321	52,849,748
1931.....			8,861,360	33,165,730	471,343	1,211,197	2,910,508	6,830,757	12,244,211	44,207,682
1932.....			7,714,276	28,073,744	560,902	1,329,316	3,403,732	7,714,635	11,748,913	42,117,695
1933.....			7,079,283	27,757,150	554,118	1,274,017	3,369,943	6,892,795	11,903,341	35,923,962
1934.....			10,058,782	34,356,274	537,508	1,256,936	3,213,903	6,432,732	14,810,199	44,045,912
1935.....			9,748,841	33,150,781	506,425	1,410,026	3,572,740	7,401,403	13,888,006	41,963,110
1936.....			10,790,135	36,256,347	506,235	1,432,741	3,866,812	8,102,840	15,229,188	45,791,944
1937.....			11,634,379	39,661,259	500,260	1,314,106	3,995,315	7,776,503	15,845,951	48,752,048
1938.....			10,329,782	35,403,781	488,915	1,269,131	3,476,021	7,309,259	14,294,718	41,982,171
1939.....			11,769,296	40,119,005	512,101	1,323,401	3,431,301	7,233,684	15,692,698	48,676,090
1940.....			13,333,037	45,350,050	598,686	1,569,771	3,635,161	7,755,123	17,566,884	54,678,844
1941.....			13,603,307	47,391,274	585,453	1,593,549	4,037,161	9,074,807	18,225,927	54,059,630
1942.....			13,616,215	49,730,504	733,547	2,100,889	4,515,268	11,066,188	18,865,030	62,397,581

\*Not separately reported prior to 1923.

Table 143.—Output and Value of Coal in Canada, by Kinds and Provinces, 1941 and 1942

(Short tons)

Province	1941			1942		
	Number of mines	Quantity	Value	Number of mines	Quantity	Value
NOVA SCOTIA (Bituminous).....	38	7,387,762	28,446,204	36	7,204,852	29,116,118
NEW BRUNSWICK (Bituminous).....	34	523,344	2,021,394	36	435,203	1,826,403
MANITOBA (Lignite).....	1	1,246	3,411	1	1,265	3,783
SASKATCHEWAN (Lignite)*.....	102	1,322,763	1,713,478	82	1,301,116	1,760,065
ALBERTA—						
Bituminous.....	14	3,671,357	10,431,004	15	3,807,619	11,221,161
Sub-bituminous.....	13	585,453	1,593,549	13	733,547	2,100,889
Lignite.....	191	2,713,152	7,357,918	164	3,212,887	9,302,360
Total†.....	218	6,969,962	19,382,471	192	7,754,053	22,624,410
BRITISH COLUMBIA (Bituminous).....	26	2,020,844	8,492,672	29	2,168,541	7,566,822
YUKON (Bituminous).....						
CANADA—						
Bituminous.....	112	13,003,307	47,391,274	116	13,616,215	49,730,504
Sub-bituminous.....	13	585,453	1,593,549	13	733,547	2,100,889
Lignite.....	294	4,037,161	9,074,807	247	4,515,268	11,066,188
Total.....	419	18,225,921	58,059,630	376	18,865,030	62,897,581

\*Exclusive of 25 small mines in operation during part of 1941 and 30 small mines operating during part of 1942.

†Exclusive of 24 small mines operated under special permits in 1941 and 13 small mines in 1942.



## THE COKE AND MANUFACTURED GAS INDUSTRY, 1942

Production from coke plants and from illuminating and fuel gas plants in Canada during 1942 was valued at \$55,788,491. This output was 9.7 per cent above the \$50,818,720 of the previous year and set a new record for the industry. Output for the year under review included 3,265,549 tons of coke valued at \$27,711,673 at the works, 68,839,292 M cubic feet of gas of which 67,755,949 M cubic feet valued at \$23,466,041 were sold or used, and by-products valued at \$4,610,777.

Twenty-eight coke and gas works operated in 1942, including 10 by-product and bee-hive plants and 18 retort coal and water gas plants. Fourteen of these works were located in Ontario, 4 in British Columbia, 4 in Quebec, 2 in Manitoba, 2 in Nova Scotia, and 1 in each of New Brunswick and Alberta. In addition to these producers, 1 company in Quebec and 2 in Ontario purchased coke-oven gas and distributed it for domestic or commercial use and data covering their operations have been included to round out the figures for the industry.

Output of coke from gas retorts, by-products and bee-hive ovens totalled 3,265,549 tons in 1942 compared with 3,145,715 tons in 1941 and 3,015,394 tons in 1940. By-product and bee-hive ovens produced 2,966,983 tons of coke in 1942 and gas retorts made 298,566 tons. In addition, 73,411 tons of petroleum coke were recovered in petroleum refineries and 17,234 tons of pitch coke in coal tar distillation plants.

Data on the distribution of coke (except petroleum and pitch coke) by the producers show that 176,865 tons were sold direct to domestic consumers; 1,744,106 tons were used in metallurgical works operated by the producing companies; 275,790 tons were used by coke plants as fuel or to make water gas; 77,308 tons were sold direct to consumers for foundry and other uses (other than domestic); 387,749 tons were sold to dealers for resale, and 42,374 tons were sold for export. The total distribution was 3,549,078 tons, including about 132,000 tons withdrawn from producers' stocks during the year, and imports by the producers of 168,000 tons. Total stocks of coke in the hands of producers amounted to 83,469 tons at the end of 1942.

Imports into Canada of coke made from coal increased to 719,910 tons in 1942 from 614,417 tons in 1941, and exports increased to 44,764 tons from 40,167 tons. Imports of petroleum coke during this period rose to 312,917 tons from 235,852 tons and exports (including re-exports of imported coke) declined to 53,080 tons from 67,738 tons.

Manufactured gas, sold and used, amounted to 67,775,949 M cubic feet in 1942, including 51,143,019 M cubic feet from by-product ovens and 16,612,930 M cubic feet from gas plants. Sales of gas by the producers totalled 18,913,230 M cubic feet, of which 11,041,002 M cubic feet were from by-product ovens and 7,872,228 M cubic feet were from gas works. Most of the remaining gas was used as fuel in the producing plants or in their associated metallurgical works. These figures do not include 49,962 M cubic feet of (Pintsch) oil gas for lighting railway cars, 7,843,715 M cubic feet of still gas recovered at petroleum refineries, nor iron blast furnace gas and some producer gas which was recovered and used by the producers but for which no records are available.

The number of customers served with manufactured illuminating and fuel gas in 1942 was 497,903; the number of active meters was 521,793; the length of distributing mains was 3,870 miles, and the average calorific value of the gas sold ranged from 450 to 570 B.T.U. per cubic foot.

Table 144.—Materials Used in Coke and Gas Plants, 1941 and 1942

Material	1941		1942	
	Quantity	Cost at works	Quantity	Cost at works
Bituminous coal carbonized in ovens or retorts—		\$		\$
(a) Canadian.....	1,434,215	6,237,832	1,487,994	6,835,656
(b) Imported.....	2,884,107	15,805,353	2,979,867	17,617,276
Bituminous coal for making water gas—				
Imported.....	3,522	34,463	4,030	35,985
Coke for gas-making—				
(a) Purchased.....	7,447	75,197	9,356	97,281
(b) Companies' own make.....	84,331	630,176	128,777	1,104,075
Oil used for enriching water gas.....	5,204,117	329,986	7,772,275	593,015
Absorbing and wash oil.....	255,563	30,926	276,019	36,317
Caustic soda.....	1,502,879	33,462	2,014,886	30,042
Lime.....	2,613	27,935	2,517	27,427
Water.....		18,836		24,325
Iron oxide.....	8,574	36,480	4,600	33,790
Sulphuric acid, 66° Bé.....	47,693,474	473,238	64,114,815	403,332
All other materials.....		173,994		356,984
<b>Total Cost.....</b>		<b>23,997,478</b>		<b>27,294,595</b>

Table 145.—Products Made in Coke and Gas Plants, 1941 and 1942

Product	Unit of measure	1941		1942	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
<b>GAS MADE—</b>					
Retort coal gas.....	M cu. ft.	5,662,989		5,131,152	
Coke oven gas.....	M cu. ft.	40,143,240		43,228,790	
Producer gas.....	M cu. ft.	9,415,880		16,171,807	
Water gas.....	M cu. ft.	2,498,003		4,248,453	
Propane gas.....	M cu. ft.	8,691		50,090	
<b>Total Gas Made.....</b>	<b>M cu. ft.</b>	<b>57,728,803</b>		<b>68,830,292</b>	
<b>GAS SOLD OR USED—</b>					
Gas sold.....	M cu. ft.	16,031,434	15,888,723	18,013,230	17,316,135
Gas used in own coke or gas plants.....	M cu. ft.	23,489,119	3,052,823	25,212,211	3,405,110
Gas used in associated metallurgical works.....	M cu. ft.	13,352,389	1,636,603	21,540,825	1,837,253
Gas otherwise accounted for but not sold.....	M cu. ft.	2,335,672	122,761	340,132	81,409
Gas not accounted for.....	M cu. ft.	1,368,490	856,218	1,449,551	826,134
<b>Total Gas Sold or Used.....</b>	<b>M cu. ft.</b>	<b>57,477,104</b>	<b>21,557,128</b>	<b>67,755,949</b>	<b>23,466,041</b>
<b>COKE MADE—</b>					
Coke from by-product or bee-hive ovens.....	ton	2,680,771	21,808,129	2,795,658	24,284,665
Coke from gas retorts.....	ton	280,728	2,362,880	284,314	2,068,673
Coke breeze from by-product ovens.....	ton	196,853	676,466	171,325	719,400
Coke breeze from gas retorts.....	ton	17,363	40,548	14,252	38,935
<b>Total Coke.....</b>	<b>ton</b>	<b>3,145,715</b>	<b>24,888,023</b>	<b>3,265,549</b>	<b>27,711,673</b>
<b>OTHER PRODUCTS—</b>					
Tar.....	Imp. gal.	33,375,297	1,902,394	34,286,913	1,994,224
Ammonia liquor.....	NH <sub>3</sub>	1,922,682	19,210	1,713,085	18,079
Ammonium sulphate.....	pound	70,786,432	1,036,095	72,398,424	1,055,868
Benzol.....	Imp. gal.	4,031,137	723,008	5,999,085	797,257
Toluol, xylol and naphthalene.....	Imp. gal.	1,990,910	686,649	2,004,006	708,949
All other products.....			5,613		36,400
<b>Grand Total.....</b>			<b>50,818,720</b>		<b>55,788,491</b>

## THE NATURAL GAS INDUSTRY

Production of natural gas in Canada during 1942 totalled 45,697,359 thousand cubic feet valued at \$13,301,655 compared with 43,495,353 thousand cubic feet worth \$12,665,116 in 1941; of the 1942 output, New Brunswick contributed 619,380 M cu. ft.; Ontario 10,476,770 M cu. ft.; Saskatchewan 117,124 M cu. ft.; Alberta 34,482,585 M cu. ft., and Northwest Territories 1,500 cu. ft. Production data as thus recorded includes only the natural gas consumed for industrial and domestic purposes and does not take into account the waste gas burned in the Turner Valley field of Alberta.

Natural gas has been found in most of the provinces of Canada. It is produced commercially in abundance in Alberta and Ontario, and in smaller quantities in New Brunswick, Saskatchewan and Quebec. The Bureau of Mines, Ottawa, reviewed the natural gas industry in 1942 as follows:

"In Alberta, most of the production comes from the Turner Valley Field, which supplies fuel for the field itself, and then feeds the pipe line to the cities and districts of Calgary and Lethbridge. It has not been necessary to drill gas wells for some years, and production is now largely derived from the oil wells in which the gas plays a vital role in the production of oil. The gas-oil ratio of many of these, particularly in the southern part of the field, where conservation measures had not been fully developed until after the wells had been some time in production, has risen so that in some cases wells have had to be re-classified as gas wells, thus adding to the reserve of gas. Production of gas is still much in excess of consumption, although the large amount wasted was reduced by nearly one-third in 1942. With further improvements in conservation, particularly should the experiment in re-cycling gas, started in December, prove successful, the waste is likely to continue to decline. Although the use of gas for fuel increased considerably owing to war demand, the more efficient operation of Turner Valley oil wells enabled the average daily production to be reduced.

"The Edmonton area is supplied from the gas field at Viking, about 80 miles south east of the city, supplemented by that at Kinsella farther east. The latter field was discovered in 1929, and was first connected by an extension of the pipe line in the fall of 1940. The duplicate 12½" line from Viking to Edmonton was not completed for lack of pipe. During 1942 three wells were drilled at Kinsella, and at the close of the year six wells were producing and the field thus became the principal producer. Medicine Hat and the adjacent town of Redcliff are supplied from the Medicine Hat field, where one well was drilled. The Vermilion field became an important producer of natural gas in 1942, the quantity produced being about the same as that of the Fabyan field, which supplies Wainwright. The output from the Brooks and Foremost fields was obtained from several small producers.

"In Saskatchewan, the eastern part of the Lloydminster field supplies the town of the same name. In the Kamsack area, two new wells were drilled, one well was deepened to 1,210 feet, and another from 1,575 feet to 1,753 feet. A total of 36 wells have been drilled in this field, mostly to depths around 200 feet, and they yield from 15 M to 250 M cubic feet at a closed-in pressure of 36 pounds. Much geophysical and geological work was done during 1942 and previously, principally in the area running diagonally from the southeast corner of the province in a north-westerly direction to about 50 miles north of Lloydminster, the purpose being the discovery of either gas or oil. Deep tests have, however, so far failed to disclose accumulations of gas in commercial quantities.

"In Ontario, natural gas is produced commercially only in the south-western part of the province, the principal fields being Tilbury, Haldimand, Dawn, De Clute, Brownsville, Dover, Norfolk, Welland, Onondaga, and Malahide.

"In Quebec, natural gas is produced in small quantities at several wells along the St. Lawrence River and is used locally.

"In New Brunswick, the Stoney Creek field supplies Moncton and Hillsborough with natural gas. Two new wells were drilled and five were deepened, one of which was abandoned owing to mechanical difficulties, and another showed no increase. The total new production, measured in terms of initial flush production, amounted to 21,862 M cubic feet. The total production for the year was 619,380 M cubic feet. A geophysical traverse was run across the field from well 47 to well 128, and continued to Albert mine. The results show the desirability of further work of this nature."

Dividends paid in 1942 by Ontario natural gas producing companies totalled \$91,573 and the total dividends paid by these same firms to the end of 1942 aggregated \$5,208,446.

Table 146.—Production of Natural Gas in Canada, by Provinces, 1931-1942

Year	New Brunswick		Ontario		Manitoba		Alberta	
	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value
		\$		\$		\$		\$
1931.....	655,891	323,184	7,419,534	4,635,497	600	180	17,798,698	4,067,893
1932.....	662,452	326,191	7,386,154	4,719,297	600	180	15,370,968	3,853,794
1933.....	618,033	302,706	7,166,659	4,523,085	600	180	15,352,811	3,886,263
1934.....	623,601	304,005	7,682,851	4,741,368	600	180	14,841,491	3,707,276
1935.....	615,454	303,886	8,158,825	4,938,084	600	180	16,000,349	4,113,436
1936.....	606,246	298,819	10,006,743	6,052,294	600	180	17,407,820	4,376,720
1937.....	576,671	283,922	10,746,334	6,588,798	600	180	20,955,508	4,706,437
1938.....	577,492	284,689	10,952,806	6,460,704	600	180	21,822,108	4,807,346
1939.....	606,382	292,403	11,966,581	7,261,928	600	180	22,513,660	4,915,821
1940.....	616,041	300,543	13,053,403	7,745,834	600	180	27,459,808	4,923,469
1941.....	653,542	317,437	11,828,703	7,140,130			30,905,440	5,175,364
1942.....	619,380	299,688	10,476,770	6,809,901			34,482,585	6,140,140

  

Year	Saskatchewan		Northwest Territories		Canada	
	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value
		\$		\$		\$
1931.....					25,874,723	9,026,754
1932.....					23,420,174	8,899,462
1933.....					23,138,103	8,712,234
1934.....	13,781	4,823			23,162,324	8,759,652
1935.....	75,558	7,555			24,910,786	9,363,141
1936.....	90,839	33,985	1,100	245	28,113,318	10,762,213
1937.....	100,380	35,130	1,500	335	32,380,991	11,674,802
1938.....	90,285	34,136	1,500	335	33,411,791	11,587,450
1939.....	96,423	36,640	1,500	335	35,185,146	12,507,307
1940.....	100,773	30,232	1,500	335	41,232,125	13,000,593
1941.....	106,168	31,850	1,500	335	43,495,353	12,665,116
1942.....	117,124	45,585	1,500	335	45,697,359	13,301,655



Table 147.—Production of Natural Gas in Canada, by Months, 1942

	New Brunswick	Ontario	Saskatchewan	Alberta	Canada
	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.	M cu. ft.
January.....	78,394	1,476,794	15,441	3,824,436	5,395,065
February.....	69,596	1,360,428	16,053	3,421,694	4,867,771
March.....	61,534	1,247,777	11,023	3,334,127	4,654,461
April.....	59,847	1,032,425	10,595	2,733,218	3,826,085
May.....	52,204	796,150	5,015	2,349,200	3,202,569
June.....	38,143	588,178	4,807	1,827,174	2,458,302
July.....	30,120	476,156	3,456	1,808,406	(a) 2,318,638
August.....	27,315	510,820	3,644	1,846,965	(a) 2,389,744
September.....	31,205	592,285	6,020	2,370,421	(a) 3,000,451
October.....	42,906	659,643	8,535	2,861,719	3,563,803
November.....	57,631	765,957	13,775	3,805,321	4,612,666
December.....	70,485	979,157	18,778	4,309,904	5,378,324
<b>Total.....</b>	<b>619,380</b>	<b>10,476,770</b>	<b>117,124</b>	<b>34,482,585</b>	<b>45,697,350</b>

(a) Includes production from Fort Norman, Northwest Territories.

Table 148.—Natural Gas Production in Ontario, by Fields, 1941 and 1942

County	Field	1941	1942
		M cu. ft.	M cu. ft.
Essex.....	Kingsville.....	32,418	32,419
	Tilbury.....	2,433,968	2,528,029
Kent.....	Declute.....	1,482,186	824,325
	Dover.....	341,516	310,261
	Chatham.....	165,010	1,127,281
Lambton.....	Dawn.....	1,661,500	1,526,149
	Oil Springs.....	8,249	.....
Middlesex.....	Mosca.....	.....	.....
Orford.....	Brownsville (x).....	220,077	77,905
Elgin.....	Bayham.....	71,602	118,257
Elgin.....	Bayham.....	2,497,447	868,299
	Malahide.....	421,717	431,026
Norfolk.....	Norfolk.....	.....	.....
Lincoln.....	Lincoln.....	1,962,524	2,124,122
Haldimand.....	Haldimand.....	.....	.....
Wentworth.....	Wentworth.....	274,039	288,663
Welland.....	Welland.....	182,360	145,134
Brant.....	Onondaga.....	.....	.....
Prince Edward.....	Hallowell.....	14,000	14,000
Wells in surface drift.....	Harwich and Howard Tps.....	60,000	60,000
Private wells.....	.....	.....	.....
<b>Total produced.....</b>		<b>11,828,703</b>	<b>10,476,770</b>

(x) Dereham Twp..... 178,841 M cu. ft.; Bayham Twp..... 41,236 M cu. ft.—1941

(x) Dereham Twp..... 58,782 M cu. ft.; Bayham Twp..... 19,123 M cu. ft.—1942

Table 149.—Number of Gas Wells in Canada, by Provinces, 1940-1942

	New Brunswick	Ontario	Manitoba	Saskatchewan	Alberta	Canada
Productive wells at beginning of year.....	1940..... 39	3,163	.....	4	95	3,301
	1941..... 42	3,240	.....	3	95	3,380
	1942..... 40	3,277	.....	3	104	3,424
Number of productive wells drilled.....	1940..... 4	151	.....	.....	.....	155
	1941..... 3	173	.....	.....	.....	176
	1942..... 2	148	.....	.....	4	154
Number of dry wells drilled.....	1940..... 1	86	.....	1	.....	88
	1941..... 1	143	.....	.....	.....	143
	1942..... 1	144	.....	.....	.....	144
Number of wells abandoned.....	1940..... 1	91	.....	1	.....	93
	1941..... 5	127	.....	.....	.....	132
	1942..... 1	74	.....	.....	.....	74
Productive wells at end of year.....	1940..... 42	3,240	.....	3	95	3,380
	1941..... 40	3,277	.....	3	104	3,424
	1942..... 42	3,344	.....	4	108	3,498

Table 150.—Natural Gas Wells in Ontario by Townships, 1941 and 1942

Township	1941				1942			
	No. of producing wells in operation Dec. 31, 1940	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year	No. of producing wells in operation Dec. 31, 1941	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Angus			2					
Anderson							1	
Bayham	65	7			59	1	1	
Bertie	138	8	1	11	144	2		8
Binbrook	49				49		3	4
Brantford	2				2		1	
Caistor	65	1	2	2	66	2	1	7
Camden Gore			3	1			6	
Canboro	153	14		5	148	1		2
Cayuga N.	195	7	3	8	198	9	1	2
Cayuga S.	54		1		55	1	2	1
Charlotteville	13		1		13		2	
Chatham	9	1	12	9	19	1	14	1
Colchester			1					
Crowland	28		2		27	1		
Culross			1				1	
Dawn	24	1			21			6
Delaware							1	
Delhi Village					8			
Dereham	52	34	1		8		3	
Dorchester N.			2				2	
Dover West	21		1		21			
Dover East								
Dunn	50				50	1		2
Dunwich	1		2					
Enniskillen			1					
Gainsboro	13			1	15			
Glanford	10				10			
Gosfield S.	21			1	28			1
Hallowell	13							
Harwich							1	
Houghton	4				4			
Humberstone	68	2	4	13	77	3		7
Kincardine	1							
Malahide	46		5	17	63	5	19	6
Malden	1	1	7					
Mersa	3				3		1	
Middleton	51	3	7	1	48	1	1	
Mosa	3	1						
Moulton	110	9		1	102	9		4
Norwich S.	3		3				2	1
Oneida	69	3	8	15	82	4	8	10
Onondaga	37	6			31	1	1	
Orford			3				2	
Oxford N.	1							
Oxford W.			6					
Port Dover Village					3			
Port Rowan					4			
Rainham	326	5	3	3	323	4	1	6
Raleigh	56	2	1	2	53		3	
Romney	180			4	133	2		6
Sarnia					13			
Seneca	152	3	1	9	161	4	2	1
Sherbrooke	15				12	1	2	4
Southwold							1	
Tilbury East	126		1	2	127	7	1	
Townsend	3			1	4		3	8
Tuscarora	72	3	4	7	76	3	3	1
Wainfleet	28	4	2	2	26	1	6	6
Walpole	432	10	27	41	459	9	34	48
Walsingham N.	8		1		8			
Walsingham S.	19				15			
Westminster							1	
Willoughby	53	1	3	1	53		1	
Windham	10		12	11	18		5	3
Woodhouse	73	1	4	5	76		4	3
Yarmouth			2				2	
Private Wells	300				300			
Surface wells	69				69			
<b>Total</b>	<b>3,240</b>	<b>127</b>	<b>143</b>	<b>173</b>	<b>3,277</b>	<b>74</b>	<b>144</b>	<b>148</b>

**Table 151.—Capital Employed in the Natural Gas Industry in Canada, by Provinces, 1941 and 1942**

	1941			1942		
	Ontario	Alberta	Canada*	Ontario	Alberta	Canada*
	\$	\$	\$	\$	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>						
Cost of land, buildings, plant, machinery and tools.....	43,727,294	25,433,809	70,587,671	43,953,488	25,644,329	71,032,694
Cost of supplies and stock on hand.....	875,341	282,838	1,181,581	839,411	342,640	1,202,091
Cash, trading and operating accounts and bills receivable.....	6,926,006	2,449,494	9,511,289	7,447,188	2,926,010	10,533,817
<b>Total.....</b>	<b>51,528,641</b>	<b>28,166,141</b>	<b>81,280,541</b>	<b>52,240,087</b>	<b>28,912,979</b>	<b>82,768,692</b>

\*Includes data for New Brunswick and Saskatchewan.

**Table 152.—Employees, Salaries and Wages in the Natural Gas Industry in Canada, by Provinces, 1941 and 1942**

Province	*Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female					
<b>1941</b>					\$	\$	\$
New Brunswick.....	13	8	91	112	39,603	109,374	148,977
Ontario.....	591	152	786	1,329	1,065,265	864,760	1,930,025
Saskatchewan.....	1	1	7	9	3,000	2,465	5,465
Alberta.....	247	46	218	511	551,691	205,037	757,328
<b>Canada.....</b>	<b>852</b>	<b>207</b>	<b>1,102</b>	<b>2,161</b>	<b>1,659,559</b>	<b>1,182,236</b>	<b>2,811,795</b>
<b>1942</b>							
New Brunswick.....	11	11	71	93	40,610	104,901	145,511
Ontario.....	548	155	626	1,329	1,078,481	727,295	1,805,776
Saskatchewan.....	3	1	4	4	4,500	297,956	4,500
Alberta.....	243	60	211	514	573,068	297,956	871,024
<b>Canada.....</b>	<b>805</b>	<b>227</b>	<b>908</b>	<b>1,940</b>	<b>1,696,659</b>	<b>1,130,152</b>	<b>2,826,811</b>

\* See footnote on page 96, table 20.

**Table 153.—Number of Wage-Earners in the Natural Gas Industry in Canada, by Months, 1942**

Month	1942	
	Male	Female
January.....	872	4
February.....	841	8
March.....	831	5
April.....	860	3
May.....	952	9
June.....	1,013	8
July.....	993	11
August.....	972	10
September.....	908	8
October.....	880	7
November.....	823	6
December.....	763	7
<b>Average.....</b>	<b>901</b>	<b>7</b>

**THE PETROLEUM INDUSTRY IN CANADA**

Including (1) Production of Crude Petroleum; and (2) Petroleum Products

**(1) Production of Crude Petroleum**

Production of crude petroleum and natural gasoline in Canada during 1942 totalled 10,364,796 barrels valued at \$15,968,851 compared with 10,133,838 barrels worth \$14,415,096 in 1941. Comprising the 1942 output were 10,117,073 barrels from Alberta, 143,845 barrels from Ontario, 75,789 barrels from Northwest Territories and 28,089 barrels from New Brunswick. The following is from a review on petroleum in 1942 as prepared by the Bureau of Mines, Ottawa:



"About 97 per cent of the oil produced in Canada in 1942 came from the Turner Valley field of Alberta, where the Madison Limestone is the chief source formation, a very small amount being obtained from sands in the overlying Cretaceous rocks. The oil from the Madison Limestone is obtained from oil and gas wells, and to this is added the natural gasoline recovered in absorption plants from the gas from these wells.

"Until June 1936, except for a few wells yielding a heavier product from near the lower margin of the gas-cap, production from Turner Valley was almost entirely obtained from gas wells in the form of "naphtha", an unstabilized natural gasoline. Since then, development has been almost entirely toward production from the liquid-phase zone of the limestone lying on the western flank of the gas-cap. The oil ranges in gravity from 38° just above the still deeper-lying water zone to 45° adjacent to the gas-cap.

"Interest in Turner Valley during 1942 was centred chiefly in the north end of the field where an ambitious program of drilling was started towards the end of 1941 to prove its extension northwards as far as the Sarccee Indian Reserve. Twenty-nine wells were brought into steady production in Turner Valley. The distribution of developments along the 20 miles of the field, now proved to be oil-bearing, was somewhat as follows: In Range 2 west of the 5th Meridian, in township 18, one well came into production, one was still drilling and drilling of one was resumed; in township 19, eight wells were brought into production; in Range 3 west of the 5th Meridian, in township 19, three wells entered production and one was still drilling; in township 20, three wells were brought into production, eight were still drilling, and one was abandoned owing to water; in township 21 fourteen wells were brought into production, nine were still drilling, three were suspended and two were abandoned owing to depth; in Range 4 west of the 5th Meridian, in township 21 one well was drilling and two were abandoned; in township 22, one was suspended and seven were abandoned; in township 23, one was suspended and one abandoned. A total of 352,339 feet of drilling was done.

"Thus, much of the drilling to extend the field northwards proved ineffective, the structure being more complex than was expected; and the limestone is deep-seated north of Whiskey Creek along the zone explored. Some narrowing of the productive gap in the centre of the field was achieved by wells in townships 19 and 20 near Sheep River, although in general this part is less productive. In a sense the gap is bridged by the former highly productive pool in the gas cap associated with Royalite 4.

"It is a remarkable fact that of the 214 wells completed since the crude oil development began in 1936, and ignoring those unsuccessfully drilled in the attempt to extend the field northward, only 13 were completed as gas wells or had to be abandoned, and one was abandoned after productive life because of inability to cope with water. Water drive must be too slow in Turner Valley to play an important role in oil production; the recession of the upper limit of the liquid-phase zone consequent on production is noticeable, however, and occasionally as the gas/oil ratio of marginal wells rises above 30,000 such wells pass into the category of gas wells. Eight more wells were ready for reclassification at the end of the year, all in the older, southern area. With the experience gained in that area in conservation, the northern end should be saved from premature decline in oil production, due to condensation in the formation. Thus 192 of the 214 wells are still in production, to which should be added the two Model wells drilled earlier.

"An important investigation was started in December, 1942, in an effort to inject gas into the more depleted part of the Turner Valley field. This took the form of returning gas from the Frontier and Sundance Wells, later to be supplemented by that from the Prairie Well, to Foundation Well. Successful repressuring of the limestone would greatly augment the ultimate recovery of oil per acre.

"During the year, the method of conservation in Turner Valley was changed for one devised by Prof. G. G. Brown of Michigan University under which the allowables of the wells are based on reservoir displacement at the rate of 25 barrels of reservoir fluid per acre per day. With this and earlier efforts, the over-all gas/oil ratio of Turner Valley has steadily declined since July 1941.

"In November, a deep test was started to explore the possibility of the Devonian limestone carrying oil in commercial quantity. It is located in the central part of the field in legal subdivision 2-25-19-3-5, and had reached a depth of 3,576 feet by the end of the year. It is being financed by 14 companies operating in the field. The Devonian limestone is believed to lie about 2,000 feet below the Madison in the more westerly part of the field, having been cut off by the 'sole fault' farther east. Should the Devonian limestone prove productive it will prolong the life of the Turner Valley field considerably.

"Other parts of the Albertan Foothills received much drilling attention. A test outside Jasper Park at Solomon Creek had reached 4,774 feet at the close of the year; another at Jumping Pound, west of Calgary, was at 5,131 feet. Later in the year a well was located on a large structure west of Nanton in Sullivan Creek. Ram River Well No. 2 was completed at 4,340 feet, but had not been tested. The test on Forget-me-not Ridge, legal sub-division 8-17-22-6-5, reached 2,800 feet, and that in the Willow Creek area, legal sub-division 2-17-13-3-5, was at 840 feet.

"Drilling was particularly active in the Plains of Alberta at Vermilion, where fifteen wells were completed and three abandoned. Better facilities were being planned for the dehydration of the oil, which forms an excellent fuel oil for the locomotives of the C.N.R., and the drilling of more wells was planned. Owing to difficulties in the disposal of the oil in the meantime it was not possible to test the production fully, but during the year 63,793 barrels were produced from 18 wells.

"In the southern part of Alberta, a well drilled at Taber into the Madison Limestone and plugged to the overlying Sumburst Sand proved to be the largest producer in Alberta outside Turner Valley, its initial production being 330 barrels per day (18.3° API). In the last quarter of the year it produced 18,854 barrels.

"An 80-barrel well (24° API) was completed at Tilley, southeast of Brooks early in April and produced 5,718 barrels. Other tests in the vicinity proved failures. In general the area in southeastern Alberta stretching from the Bow River northwards to Monitor, which was the scene of much drilling following geophysical and geological surveys, did not meet expectations. Structures were tested near Grantham, Monogram, Rolling Hills, Jenner, Oyen, and more to the west at Eyremore and Castor.

"A new producer was drilled at Wainwright and a test was begun at Del Bonita.

"In the Pouce Coupé district, a hole spudded in May had reached a depth of 2,129 feet. The test at Commotion Creek on the British Columbia side was abandoned at 6,940 feet.

"In Saskatchewan, geophysical and geological exploration continued and deep tests followed. One, 6 miles west of Radville reached 7,958 feet, but was abandoned because of mechanical trouble. Another in southeastern Saskatchewan reached 3,344 feet and one at legal sub-division 2-30-26-2 was abandoned at 1,699 feet owing to drilling difficulties. The hole at legal sub-division 6-21-11-29-3, which had been standing for several years, was deepened from 2,690 to 3,253 feet in an attempt to reach the limestone, and one started near Muddy Lake had reached 400 feet.

"In Ontario, crude oil continues to be produced at Petrolia, Oil Springs, Bothwell, and in the townships of Dawn, Warwick, West Dover, and Mosa in the southwestern part of the Province.

"In Quebec, the deep test in the eastern part of Gaspé peninsula was abandoned at 4,770 feet.

"In New Brunswick, geophysical work was done across the Stoney Creek field and extended to Albert Mines. One new well was drilled, having an initial production of 60 barrels a day; two old wells were shot.

"In the Northwest Territories an important development in 1942 was the exploratory drilling (the Canol Project) undertaken at Norman Wells to meet the expanding requirements of the region.

"The Canol project came about through military necessity. The object was threefold, namely, to drill wells for oil in the Fort Norman and adjoining areas, to transport the oil by pipeline 600 miles from Norman Wells to Whitehorse, and to build a refinery at Whitehorse to make petroleum products. Imperial Oil Company, Limited, was concerned only with the first of these objectives, namely oil production, and, accordingly, an arrangement was entered into between the United States Government and the Imperial Oil Company for the drilling of the wells, and between Imperial Oil Company and the Dominion Government for the securing of mineral rights and other necessary concessions. The pipeline and the Whitehorse refinery is a United States army project.

"Work on the Canol project was started in the early summer of 1942, and in that year sixteen wells were drilled, of which two were dry. Up to November 1, 1943, fourteen more wells were drilled, bringing the total to thirty. Of these, twenty-three found oil in commercial quantity and seven either were dry or obtained only a very small yield. These are in addition to the four producing wells of the Imperial Oil Company drilled prior to 1942".



"Large deposits of oil shale are known to exist in different parts of Canada, the best known occurrences being in Pictou and Antigonish counties, Nova Scotia, and Albert and Westmorland counties, New Brunswick. As shale oil cannot compete with petroleum at present prices, none of these deposits has as yet been actively developed on a commercial scale.

"As a war project, the Mines and Geology Branch, Department of Mines and Resources, Ottawa, on the request of the Oil Controller, drilled some of the oil shale occurrences in New Brunswick with a view to the evaluation of them as a source of oil and lubricants under war conditions. In one of the projects, forty-three holes were drilled in oil shale deposits in the Rosevale area and in the vicinity of Taylor Village, New Brunswick, but the results were disappointing. Thirty-six holes were also drilled in deposits at Albert Mines, New Brunswick, and the results indicate that upwards of 20,000,000 tons of low-grade material is available, the average grade being estimated at 12 to 14 gallons a ton.

"There has been no production reported for a number of years.

"Experimental plants were erected in 1929-30 near Rosevale, New Brunswick, and New Glasgow, Nova Scotia, to treat local shales but they operated only for short periods. Activity has been confined chiefly to field exploration and to laboratory investigation. Laboratory work by the Bureau of Mines of the Department of Mines and Resources at Ottawa has included the determination of the petroleum content of representative samples from various localities; the determination of important factors affecting the recovery of crude petroleum by destructive distillation and of the character of the petroleum recovered; and the investigation of the processes designed for the distillation of oil shale. No oil shale is being imported into Canada.

"For many years the large-scale production of oil shale was confined to Scotland, but deposits in Manchuria and Esthonia were being developed in 1938 on a large scale. The production of these countries in 1938 (1939-42 not available) was: Scotland, 1,551,346 tons; Esthonia, 1,450,885 tons; and Manchuria, approximately 3,000,000 tons. Austria, France, Germany, Italy, Spain, Russia, and South Africa also produce small quantities of oil shale. No recent figures are available for production in Esthonia, Manchuria, France or other European countries and statistics of the Scottish Shale Industry are not being published for the war period.

"A deposit of bituminous sand occurs along Athabaska River between the twenty-third and twenty-sixth base lines. Intermittent exposures may be seen along both sides of the river and also along certain of its tributaries. Investigations by the Federal Bureau of Mines subsequent to 1913 have adduced much information and certain parts of the area appear to be promising from the standpoint of commercial development. It is clear, however, that only after detailed exploration by the use of core drilling equipment, can the true value of individual areas be determined. Meanwhile it is assumed that the area as a whole, represents an important reserve of bituminous material from which various light and heavy petroleum products may be derived.

"In connection with investigations by the Federal Bureau of Mines, some 5,000 tons of bituminous sand was mined and shipped during the period 1926-1930. A part of this material was used as a basis for laboratory studies but the greater part was successfully used in the construction of a variety of types of wearing surfaces.

"During the period 1931-1938, International Bitumen Company processed a limited tonnage of bituminous sand at its plant at Bitumont, Alberta, with production of asphalts for paving and roofing and also 37,000 gallons of fuel oil. This plant has been dormant since 1938.

"In 1941, Abasand Oils, Limited completed its revised separation and refining plant on Horse River near McMurray. The plant was operated from May 19 to November 21 when separation and power units were destroyed by fire. During the above period, production included 41,265 gallons of gasoline, 70,700 gallons of Diesel oil, 137,550 gallons of fuel oil, 375,235 gallons of residuum, and 319 tons of coke. Following reconstruction in 1942, the Abasand plant was operated intermittently from June 10 to November 6. During this period approximately 12,800 tons of sand were mined and approximately 385,000 gallons of crude produced. Refined products made during this period were 12,600 gallons of gasoline, 79,555 gallons of Diesel oil, 27,300 gallons of fuel oil, and 266,139 gallons of residuum. Operations indicated the desirability of further revisions of equipment and flow sheets and plans are now being prepared to carry these revisions into effect.



"In July, 1942, under an agreement with the Dominion Government, Consolidated Mining and Smelting Company undertook to core drill certain of the more promising areas in the McMurray field and drilling was continued until the end of January, 1943. Arrangements have also been made with the Universal Oil Products Corporation and with the Standard Oil Development Company with a view to determining refining procedure and equipment best adapted to the final treatment of separated bitumen and also the type of products and percentages of same which may be most economically produced."

**Table 154.—Production of Crude Petroleum in Canada, by Provinces, 1933-1942**

Year	New Brunswick		Ontario		Alberta		Northwest Territories		Canada	
	Barrels	Value \$	Barrels	Value \$	Barrels	Value \$	Barrels	Value \$	Barrels	Value \$
1933.....	8,835	18,111	136,058	253,486	995,832	2,844,157	4,608	23,037	1,145,333	3,138,791
1934.....	11,106	22,277	141,385	299,874	1,263,966	3,104,823	4,438	22,188	1,110,895	3,419,162
1935.....	12,954	18,230	165,041	346,156	1,263,510	3,102,227	5,115	25,575	1,416,620	3,492,188
1936.....	17,112	24,075	165,495	350,767	1,312,368	3,019,930	5,300	26,995	1,500,471	3,421,767
1937.....	18,089	25,496	165,205	356,000	2,749,085	4,961,002	11,371	56,855	2,913,750	5,399,353
1938.....	19,276	27,246	172,641	359,268	6,751,312	8,775,094	22,855	68,565	6,966,084	9,240,173
1939.....	22,799	32,082	206,379	401,430	7,576,932	9,362,363	20,191	59,477	7,826,300	9,846,352
1940.....	22,187	31,220	187,644	397,078	8,362,200	10,694,394	18,633	37,265	8,590,977	11,160,213
1941.....	31,359	44,102	160,238	337,760	9,018,577	13,985,906	23,664	47,328	10,133,832	14,415,096
1942.....	28,089	39,467	143,845	306,242	10,117,072	15,514,665	75,789	108,477	10,364,790	15,968,851

\*Includes 331 barrels at \$256 in Saskatchewan.

**Table 155.—Production of Crude Petroleum in Canada, by Months, 1942**

(Barrel=35 imperial gallons)

Month	*New Brunswick	Ontario	*Alberta	*Northwest Territories	Canada
	Barrels	Barrels	Barrels	Barrels	Barrels
January.....	1,827	11,528	862,472	.....	875,827
February.....	1,593	10,729	833,607	260	846,189
March.....	1,961	12,550	908,666	.....	924,177
April.....	1,691	12,584	832,458	4	846,737
May.....	2,507	12,777	876,893	30	892,207
June.....	2,980	13,063	821,623	19,246	856,912
July.....	2,646	13,428	837,079	16,048	869,201
August.....	3,022	11,405	837,513	18,335	870,275
September.....	2,774	11,576	803,097	9,578	827,925
October.....	2,679	11,345	842,204	3,832	869,060
November.....	2,002	11,508	822,397	2,604	838,511
December.....	2,407	11,352	839,064	5,852	858,675
<b>Total.....</b>	<b>28,089</b>	<b>143,845</b>	<b>10,117,072</b>	<b>75,789</b>	<b>10,364,796</b>

\* These figures include total output each month.

**Table 156.—Petroleum Wells in Canada, by Provinces, 1940-1942**

		New Brunswick	Ontario	Alberta	Northwest Territories	Canada
Productive wells at beginning of year.....	1940.....	22	2,065	219	2	2,308
	1941.....	20	2,028	235	3	2,286
	1942.....	20	1,956	274	3	2,253
Number of productive wells drilled.....	1940.....		42	35	1	78
	1941.....		35	48		83
	1942.....	1	13	45	17	76
Number of wells abandoned.....	1940.....	2	61	2		65
	1941.....		31	9		40
	1942.....		54	14		68
Number of dry wells drilled.....	1940.....		36	7		43
	1941.....		39	10		49
	1942.....		13	21		34
Number of productive wells in operation at end of year.....	1940.....	20	2,028	235	3	2,286
	1941.....	20	1,956	274	3	2,253
	1942.....	21	1,852	305	20	2,198

Table 157.—Production of Crude Petroleum in Canada, 1941 and 1942

	1941		1942	
	Barrels	Total value	Barrels	Total value
NEW BRUNSWICK.....	31,359	\$ 44,102	28,089	\$ 39,467
ONTARIO—				
Petrolia and Enniskillen.....	55,383	115,473	51,917	109,315
Oil Springs.....	29,783	65,761	27,279	60,804
Moore Township.....	1,333	2,779	728	1,533
Sarna Township.....	213	444	315	663
Plimpton Township.....	93	194	24	50
Bothwell Township and Thamesville.....	33,053	68,916	27,940	58,842
West Dover, Raleigh, and Tilbury East.....	9,819	20,473	8,494	17,885
Onondaga.....	300	625	58	122
Mosa Township.....	19,075	39,771	19,209	40,440
Brooke.....	113	236	77	162
Dunwich.....	420	870	358	754
Romney.....			81	171
Dawn and Euphemie.....	834	1,739	507	1,257
Warwick.....	9,748	20,325	6,524	13,737
Chatham.....	27	56		
Manitoulin Island.....	44	92		
Collingwood.....			35	74
Private sales.....			203	427
Total for Ontario.....	160,236	337,760	143,845	306,242
SASKATCHEWAN.....				
ALBERTA—				
Turner Valley.....	9,870,550	13,947,320	10,080,305	15,482,846
Red Coulee (light crude).....	11,065	10,902	9,546	9,400
Wainwright-Ribstone (heavy crude).....				
Taber-Moose Dome.....	36,962	27,684	27,222	22,419
Total for Alberta.....	9,918,577	13,985,906	10,117,073	15,514,665
NORTHWEST TERRITORIES.....	23,064	47,325	75,789	108,477
Canada.....	10,133,838	14,415,096	10,364,796	15,968,851

Table 158.—Capital Employed in the Petroleum Industry in Canada, by Provinces, 1941 and 1942

	1941			1942		
	Ontario	Alberta	Canada*	Ontario	Alberta	Canada*
Capital employed as represented by:	\$	\$	\$	\$	\$	\$
Cost of land, buildings, plant, machinery and tools.....	957,757	45,439,003	46,676,002	1,057,720	41,932,130	43,583,146
Cost of supplies and stock on hand.....	19,424	2,200,221	2,277,564	15,987	2,539,811	2,678,305
Cash, trading and operating accounts and bills receivable.....	36,828	9,079,038	9,253,416	28,121	7,571,682	8,245,831
Total.....	1,014,009	56,718,262	58,206,984	1,101,828	52,043,824	54,707,282

Data for New Brunswick included with the Natural Gas Industry.

\* Includes data for the Northwest Territories.

Table 159.—Employees, Salaries and Wages in the Petroleum Industry in Canada, by Provinces,\* 1941 and 1942

Province	Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female					
1941					\$	\$	\$
Ontario.....	20	2	157	179	21,587	107,916	139,503
Alberta.....	336	58	1,204	1,637	842,047	2,264,417	3,106,464
Canada†.....	356	60	1,428	1,844	867,638	2,387,179	3,254,817
1942							
Ontario.....	18	3	189	210	21,071	118,840	139,911
Alberta.....	337	106	1,197	1,640	910,688	2,279,270	3,189,958
Canada†.....	371	113	1,498	1,972	997,609	2,651,356	3,648,965

\* Data for New Brunswick is included in the Natural Gas Industry.

† Data for Northwest Territories included with Canada.

Table 160.—Number of Wage-Earners in the Petroleum Industry in Canada, by Months, 1942

Month	1942	
	Male	Female
February.....	1,352	4
February.....	1,280	4
March.....	1,398	4
April.....	1,441	3
May.....	1,450	4
June.....	1,441	5
July.....	1,543	5
August.....	1,566	5
September.....	1,509	4
October.....	1,530	3
November.....	1,514	3
December.....	1,521	3
Average.....	1,483	5

## PETROLEUM PRODUCTS INDUSTRY

Statistics for the Petroleum Products Industry cover all establishments in Canada which were occupied chiefly in (a) the refining of crude oil to produce gasoline, fuel oil, etc., and (b) the blending or compounding of lubricating oils and greases.

Thirty-five refineries and 18 blending plants, or a total of 53 works, reported under this category in 1942 and the aggregate value of production was \$163,716,515, an increase of 4.5 per cent over the 1941 total of \$156,635,495.

Output figures for 1942 included \$162,628,828 for petroleum refineries and \$1,087,687 for concerns engaged in blending oils and greases, against corresponding totals in 1941 of \$155,389,872 and \$1,245,623, respectively. The principal statistics for each of these groups and for the industry as a whole are tabulated below and the detailed figures for each division are recorded separately in the succeeding pages of this report.

Thirty-five petroleum refineries operating in Canada during 1942 were distributed by provinces as follows: 8 in Saskatchewan, 8 in Alberta, 5 in Ontario, 4 in Quebec, 4 in Manitoba, 3 in British Columbia and 1 in each of Nova Scotia, New Brunswick and Northwest Territories. Compared with 1941, there was an increase of 1 refinery in Alberta and a loss of 1 in Saskatchewan. The operating refineries had a capacity of 233,115 barrels of crude oil per day, of which Ontario had 68,000 barrels or 29 per cent; Quebec, 67,000 barrels or 28 per cent; Nova Scotia, 34,000 barrels or 14 per cent; British Columbia, 24,500 barrels or 11 per cent; Saskatchewan, 16,775 barrels or 7 per cent; Alberta, 18,100 barrels or 8 per cent; Manitoba, 3,650 barrels or 2 per cent; the Northwest Territories, 840 barrels or .4 per cent, and New Brunswick, 250 barrels.

During the year, 1,551,617,151 gallons of imported crude oil and 359,535,738 gallons of crude oil and absorption gasoline from Canadian wells, or a total of 1,911,152,889 gallons was put through Canadian refineries, this amounting to about 64 per cent of the rated capacity. Of the total crude input, about 60 per cent was imported from the United States and nearly 21 per cent from other countries, while about 19 per cent came from Canadian wells. The total cost at the refineries of all crude oil and naphtha charged to stills during the year was \$112,453,974. Stocks of crude oil held at the refineries on December 31 amounted to 125,370,278 gallons.

Refinery production of gasoline in 1942 amounted to 749,364,750 gallons, and in addition the refineries used for blending about 25,160,862 gallons of imported casinghead gasoline which is not included in the Canadian production figures. The gallonage of gasoline made in 1942 was 12 per cent under 1941, which, in turn, was 10 per cent over 1940. The refinery selling value of the gasoline made during the year was \$91,958,033. Stocks of gasoline held by the refineries on December 31 included 83,699,915 gallons of straight run or cracked gasoline and 785,832 gallons of imported casinghead gasoline. In 1942 there was an output of 10,392,819 gallons of natural gasoline from absorption plants in Alberta. This was practically all sold to refineries and is included with the gallonage charged to stills, and the refined gasoline made therefrom is included in the refinery output figures.

Imports of gasoline, including casinghead, amounted to 115,995,765 gallons during 1942, which, added to the production of 749,364,750 gallons plus the decline in producers' and consumers' stocks of 40,175,792 gallons and less the exports of 15,897,471 gallons, made an apparent Canadian consumption of 889,638,836 gallons. Actual sales reported to the Provincial Governments under the Gasoline Tax Acts amounted to 897,806,958 gallons.



Production of fuel and gas oils (excluding any made and used for cracking processes) totalled 859,801,397 gallons, of which 793,726,433 gallons were made for sale and 66,074,964 gallons for use as fuel in the producing plant. Imports amounted to 40,480,340 gallons and exports to 50,964,402 gallons. Stocks of fuel oil and distillate at the end of the year stood at 231,800,458 gallons, or about 5,143,240 gallons more than in 1941. Output of tractor and engine distillate was 44,676,079 gallons in 1942, imports amounted to 1,285,939 gallons, and producers' stocks increased 1,845,890 gallons. The apparent consumption of fuel oils and distillate in Canada, as calculated from the above figures, amounted to 890,136,113 gallons.

Capital employed in the petroleum refining industry in 1942 was reported at \$83,556,904, of which \$39,174,376 was the value placed on land, buildings, machinery and equipment, \$40,975,515 represented inventories of finished products and processing materials, and \$4,307,013 were for operating capital, such as cash, bills and accounts receivable. The monthly employment averaged 5,835 persons who received \$11,361,200 in salaries and wages. Expenditures for fuel and electricity amounted to \$7,072,252, and \$121,177,036 were paid out for crude oil and other processing materials.

For more complete information see the Dominion Bureau of Statistics report "The Petroleum Products Industry in Canada 1942".

Table 161.—Materials Used in Petroleum Refineries, 1941 and 1942

Material	Unit of measure	1941		1942	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Crude oil (under 60° A.P.I.) in its natural state, from Canadian wells.....	Imp. gal.	342,774,192	17,627,799	349,255,157	19,047,524
Absorption gasoline, etc., from Canadian wells (run to stills).....	Imp. gal.	10,065,382	643,968	10,280,581	726,000
Crude oil, in its natural state, imported, (run to stills)—					
(a) From United States.....	Imp. gal.	948,975,940	55,377,905	1,140,709,895	69,828,576
(b) From Other Countries.....	Imp. gal.	731,145,673	39,877,817	396,913,456	21,572,639
Crude oil, not in its natural state (run to stills).....	Imp. gal.	936,880	47,765	7,933,800	1,278,035
Benzol for blending.....	Imp. gal.	4,753,808	568,575	3,954,267	531,217
Phenol.....	pound	470,309	69,308	631,331	93,547
Sulphuric acid, 66° Be.....	pound	29,316,857	315,083	34,741,455	396,297
Sulphur.....	pound	102,634	2,649	63,375	1,561
Caustic soda.....	pound	7,170,755	205,336	5,789,123	171,688
Soda ash.....	pound	410,738	8,920	327,366	7,350
Litharge.....	pound	257,296	22,430	195,309	17,245
Fullers' earth and clay.....	pound	30,155,750	571,010	24,162,091	528,350
Compounding materials.....			1,386,825		227,031
Tetraethyl fluid.....	c.c.		3,944,940	1,538,594,864	3,523,276
Aviation blending materials.....			1,458,307		1,758,052
Other materials.....			2,013,091		677,034
Shipping containers.....			1,115,980		789,534
<b>Total.....</b>			<b>125,358,314</b>		<b>121,177,036</b>

Table 162.—Products Made in Petroleum Refineries, 1941 and 1942

Product	Unit of measure	1941		1942	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
<b>MADE FOR SALE—</b>					
Gasoline—Straight run (1).....	Imp. gal.	407,405,924	44,722,348	370,188,943	50,036,253
By cracking process (2).....	Imp. gal.	450,312,427	45,535,487	399,985,362	41,897,722
Stove oil (40°–42.5° A.P.I.).....	Imp. gal.	23,231,604	1,307,618	24,515,578	1,652,595
Gas and light fuel oil (20°–40° A.P.I., except diesel).....	Imp. gal.	135,322,293	7,512,639	141,126,499	8,616,052
Diesel fuel oil (all fuel oil sold under this name).....	Imp. gal.	79,104,809	4,192,138	79,247,928	4,644,937
Residual fuel oil (10°–20° A.P.I.).....	Imp. gal.	534,238,465	23,197,496	548,836,428	24,978,037
Tractor and engine distillate.....	Imp. gal.	40,807,811	3,748,290	44,636,725	4,534,787
V. M. and P. or solvent naphtha.....	Imp. gal.	12,092,093	1,230,697	20,907,259	2,355,333
Kerosene.....	Imp. gal.	26,758,097	2,741,984	24,912,066	2,766,291
Lubricating oil.....	Imp. gal.	36,433,253	7,089,121	38,076,120	7,405,169
Lubricating grease.....	pound	15,562,856	861,004	20,874,531	1,171,490
Asphalt.....	Imp. gal.	72,732,742	6,168,440	55,008,547	4,709,503
Petroleum coke.....	ton	67,702	471,504	64,401	464,326
Other products.....			479,572		1,232,878
<b>Total—Made for Sale.....</b>			<b>149,258,998</b>		<b>155,461,433</b>

Table 162.—Products Made in Petroleum Refineries, 1941 and 1942—Concluded

Product	Unit of measure	1941		1942	
		Quantity	Gross selling value at works	Quantity	Gross selling value at works
			\$		\$
<b>MADE FOR OWN USE—</b>					
Gasoline—Straight run.....	Imp. gal.	192,848	21,650	182,635	22,067
By cracking process.....	Imp. gal.	13,255	1,684	7,870	1,121
Stove oil.....	Imp. gal.	.....	.....	890	79
Gas and light fuel oil (20°-40° A.P.I.).....	Imp. gal.	100,396	4,545	69,101	4,232
Diesel fuel oil.....	Imp. gal.	18,831	1,230	72,646	4,302
Residual fuel oil (10°-20° A.P.I.).....	Imp. gal.	62,832,512	2,727,422	65,932,327	3,068,787
Tractor and engine distillate.....	Imp. gal.	2,315	170	39,354	3,254
Kerosene.....	Imp. gal.	41,741	3,775	45,730	4,814
Lubricating oil.....	Imp. gal.	93,918	17,453	61,516	12,755
Asphalt.....	Imp. gal.	62,003	5,485	57,236	5,324
Petroleum coke.....	ton	3,138	21,774	8,950	63,411
Still gas.....	M cu. ft.	9,971,268	3,109,920	7,621,105	2,734,711
Other products.....			215,766		237,708
<b>Total—Made for Own Use.....</b>			<b>6,139,874</b>		<b>6,163,395</b>
<b>Grand Total.....</b>			<b>155,389,872</b>		<b>162,628,828</b>
Fuel and gas oils and topped crude, for use in cracking process.....	Imp. gal.	765,115,376		522,046,536	

(1) Includes recoveries from Turner Valley naphtha and natural gasoline run to refinery stills but does not include the imported casinghead gasoline which was used for blending at the refineries.

(2) Includes polymer gasoline.

## CHAPTER EIGHT

## THE NON-METALLIC MINING INDUSTRIES IN CANADA. (Other than Fuels)

Including detailed data relating to operations in the following industries:—

Asbestos	Miscellaneous	Magnetitic dolomite
Feldspar, Nepheline	Barite	Magnesium sulphate
Syenite and Quartz	Diatomite	Mineral waters (natural)
Gypsum	Fluorspar	Phosphate
Iron oxides (ochre)	Garnet	Pyrites (sulphur)
Mica	Graphite	Silica brick
Peat fuel	Grindstones, etc.	Sodium carbonate
Peat moss	Lithium minerals	Sodium sulphate
Salt		Strontium minerals
Talc and soapstone		

## THE ASBESTOS MINING INDUSTRY, AND THE ASBESTOS PRODUCTS INDUSTRY

Production (mine sales) of asbestos in Canada during 1942 totalled 439,459 short tons valued at \$22,663,283 compared with 477,846 short tons worth \$21,468,840 in 1941. The mineral as mined in both years was of the chrysotile or serpentine variety and came entirely from properties operated in the province of Quebec. Reserves of milling grade asbestos rock have been reported as sufficient for many years of commercial fibre production. Production of asbestos in Canada from 1880 to 1942, inclusive, totalled 8,194,478 short tons valued at \$314,769,497.

The number of Canadian asbestos companies reported as active in 1942 totalled 8; capital employed in the industry amounted to \$18,741,364; employees numbered 3,749, and salaries and wages distributed aggregated \$5,299,454. A relatively small quantity of asbestos fibre was recovered in 1942 as a by-product in the mining of magnetitic dolomite, at Kilmar, Quebec.

The following abstracts are from a report prepared by the Bureau of Mines, Ottawa:

"Asbestos of commerce consists mostly of the three varieties known as chrysotile, amosite, and crocidolite or blue asbestos, with chrysotile being by far the most important and widely used. Three other varieties that have only a limited field of usefulness are fibrous actinolite, fibrous tremolite, and anthophyllite.

"The asbestos produced in Canada is practically all of the chrysotile variety and comes almost entirely from areas of serpentinized rock in the Eastern Townships, Quebec, where the producing centres are Thetford Mines, Black Lake, East Broughton, Vimy Ridge, Asbestos, and St. Remi de Tingwick. The Canadian deposits are the largest known in the world. Production has been continuous from the Thetford area since 1878 and reserves of asbestos-bearing rock are enormous. Core-drilling to depths greater than 1,700 feet has revealed the presence of fibre comparable in quantity and quality with that in the present workings. Most of the output consists of vein fibre obtained from veins  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in width, though veins exceeding 5 inches in width do occur. The fibres run crosswise of the vein and thus the width of the vein determines the length of fibre. Slip fibre, occurring in fault planes, is obtained largely in the East Broughton area.

"In 1942 there were six producing companies. Asbestos Corporation, Limited, worked two properties at Thetford Mines and one each at Black Lake and Vimy Ridge. Johnson's Company operated at Thetford Mines and at Black Lake. Bell Asbestos Mines, Limited, operated at Thetford Mines; Quebec Asbestos Corporation, Limited, at East Broughton; Canadian Johns-Manville Company, Limited, at Asbestos; and Nicolet Asbestos Mines, Limited, at St. Remi de Tingwick.



"The asbestos-bearing rock is mined in open pits and underground. The method of block-caving instituted at the King mine of Asbestos Corporation in 1934 has resulted in a remarkable reduction in cost of mining and improvement in grade of mill feed. This development, coming at a time when many of the open pits had been worked almost to the economic depth and operators were faced with rising costs and with the prospect of being unable to recover much valuable rock in the walls of the pits, is of the utmost importance to the industry.

"Small deposits of chrysotile asbestos are known in other parts of Quebec and also in Ontario and British Columbia. Several have been worked from time to time. In 1942 trial shipments of chrysotile were made by Canadian Refractories Limited, from its property at Kilmar, Quebec. This asbestos has a very low content of iron and is entirely free from magnetite, and should be suitable for use in making insulation for electrical machinery.

"No amosite or crocidolite has yet been found in Canada, but there are numerous deposits of fibrous tremolite, fibrous actinolite and anthophyllite, which varieties are commercially termed amphibole asbestos. The fibres of these varieties are harsher and weaker than those of chrysotile and there is little demand for them at present. None of these deposits is being worked, although formerly fibrous actinolite was quarried near the village of Actinolite, Hastings county, Ontario, for use in making of roofing materials. Asbestos deposits reported as having been found in recent years in Manitoba and in northern and western Ontario are of the amphibole varieties. The amphibole fibres are too harsh and brittle to be spun, but they have a higher resistance to acids than has chrysotile and it is possible that material from some of the deposits may be suitable for use in acid filters and for other purposes where long harsh fibres are required.

"Few figures on world production in 1942 are available, but it is known that Canada maintained its position as the principal asbestos-producing country. Other countries producing relatively large quantities of asbestos are Russia, Rhodesia, Union of South Africa, Swaziland, the United States, and Cyprus. Small shipments of asbestos are made from Australia (crocidolite), Bolivia (crocidolite), China (chrysotile), India (chrysotile), and Venezuela (chrysotile). The world's largest market for asbestos is in the United States, and Canada's proximity to this market confers very real advantages on the asbestos industry in this country. Another development favouring the Canadian industry is the increasing demand for short grades of fibre for use in newly developed asbestos-cement products, and in moulded plastic articles.

"Most of the Canadian production of asbestos is exported in the unmanufactured state, i.e. either in the crude condition (long-fibred material only), in a partly opened state, or completely fluffed out and ready for manufacture. The great bulk of exports goes to the United States, but substantial quantities are also exported to the United Kingdom and Australia. Since September 20, 1939, the Dominion Government has controlled the export of asbestos. Late in 1942 some minor modifications were made in the classification of standard grades of Canadian asbestos and this revised classification has been adopted by the Quebec Asbestos Producers' Association.

"Asbestos is used for a great variety of purposes, the principal asbestos products being, brake linings, clutch facings, packings, cloth, insulation, mill-board, siding, shingles, roofing, tile, and pipes.

"Current prices f.o.b. Quebec mines, in U.S. funds, tax and bags included are as follows: No. 1 crude, \$650 to \$750 per ton; No. 2 crude, \$165 to \$385; spinning fibre, \$124 to \$233; shingle fibre, \$62.50 to \$85; paper fibre, \$44 to \$49; cement stock, \$28.50 to \$33; floats, \$19.50 to \$21; shorts, \$12 to \$16.50 per ton."

Table 163.—Sales and Shipments\* of Canadian Asbestos, 1941 and 1942

	1941		1942	
	Tons	\$	Tons	\$
Crudes.....	2,846	980,217	2,869	1,233,184
Fibres.....	223,767	14,812,871	199,629	15,339,128
Shorts.....	251,233	5,675,752	236,741	6,090,971
<b>Total.....</b>	<b>477,846</b>	<b>21,468,840</b>	<b>439,459</b>	<b>22,663,283</b>
Sand, gravel, and stone (waste rock only) (a).....	8,454	6,805	8,090	7,925

(\*) All from the province of Quebec.

(a) This production is included under the sand and gravel industry.

Table 164.—Asbestos Rock Mined and Milled, 1941-1942

	1941	1942
	Tons	Tons
Quantity of rock mined.....	7,707,367	8,233,516
Quantity of rock milled.....	6,366,670	6,795,459

Table 165.—Consumption of Asbestos in Specified Canadian Industries, 1940-1942

Industry	1940		1941		1942	
	Quantity	Cost at works	Quantity	Cost at works	Quantity	Cost at works
		\$		\$		\$
Electrical apparatus and supplies—						
Board..... pound	357,372	61,310	(a)	94,358	(a)	97,804
Yarn..... pound	103,932	36,895	131,787	38,712	(a)	13,597
Tape..... pound	29,771	27,708	31,722	29,613	(a)	16,690
Boilers, tanks and engines.....		10,114		24,378	(a)	38,043
Asbestos Products—						
Fibre.....			See Asbestos Products Industry			
Other forms.....			See Asbestos Products Industry			
Roofing paper..... ton	2,545	103,810	1,945	59,880	755	17,493
Cotton goods, n.e.s..... pound	10,395	578	10,887	607	20,515	1,118
Woolen goods, n.e.s..... pound	181,264	51,072	(a)	(a)	(a)	(a)

(a) Not reported.

Table 166.—Capital Employed in the Asbestos Industry in Canada, 1942

	\$
Present cash value of the land (excluding materials).....	2,683,551
Present value of buildings, fixtures, machinery, tools and other equipment.....	7,002,207
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	2,068,038
Inventory value of finished products on hand.....	1,325,050
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	5,661,613
<b>Total.....</b>	<b>18,741,364</b>

Table 167.—Principal Statistics of the Asbestos Mining Industry in Canada, 1940-1942

	1940	1941	1942
Number of firms.....	8	9	8
Capital employed..... \$	10,799,280	21,325,558	18,741,364
Number of employees—On Salaries (c).....	320	314	329
On Wages.....	3,560	3,436	3,420
<b>Total.....</b>	<b>3,886</b>	<b>3,760</b>	<b>3,749</b>
Salaries and wages—Salaries..... \$	641,770	679,394	731,836
Wages..... \$	4,086,932	4,316,707	4,567,619
<b>Total.....</b>	<b>4,728,702</b>	<b>4,996,101</b>	<b>5,299,454</b>
Selling value of products (a)..... \$	15,624,656	21,475,645	22,671,308
Cost of fuel and electricity..... \$	1,520,907	1,524,450	1,646,291
Cost of process supplies (b)..... \$	2,200,061	2,721,796	2,747,682
Net value of sales..... \$	11,903,688	17,229,399	18,277,235

(a) Includes value of sand and gravel.

(b) Explosives, drill steel, etc.

(c) In 1940 includes 40 females; 45 in 1941; and 60 in 1942.

Table 168.—Wage-Earners Employed, by Months, in the Asbestos Mining Industry in Canada, 1939-1942

Month	1939 Total	1940 Total	1941 Total	1942		
				Mine		Mill
				Surface	Underground	
January.....	3,121	3,634	3,072	1,109	819	1,638
February.....	3,227	3,614	3,148	1,084	619	1,640
March.....	3,081	3,465	3,194	1,066	635	1,634
April.....	3,212	3,587	3,138	1,092	620	1,650
May.....	3,272	3,707	3,198	1,117	627	1,636
June.....	3,544	3,804	3,290	1,141	625	1,611
July.....	3,631	3,811	3,554	1,218	621	1,641
August.....	3,697	3,799	3,640	1,215	624	1,644
September.....	3,737	3,723	3,806	1,232	624	1,654
October.....	3,714	3,278	3,821	1,235	632	1,665
November.....	3,826	3,190	3,756	1,194	641	1,697
December.....	3,737	3,180	3,740	1,110	633	1,571

## THE ASBESTOS PRODUCTS INDUSTRY IN CANADA, 1942

Production by the manufacturers of asbestos goods in Canada in 1942 was valued at \$5,101,259, an increase of 17 per cent over the 1941 total of \$4,359,217. Products made included brake linings valued at \$1,955,009, boiler and pipe covering at \$532,574, clutch facings at \$203,071, asbestos packings at \$241,929 and such other lines as asbestos gaskets, cloth, yarn, dryer felts, cement, etc.

Thirteen factories were engaged in this industry, of which 6 were located in Quebec, 6 in Ontario and 1 in Nova Scotia. Fixed and working capital as represented by these works totalled \$3,732,834; the number of employees averaged 870 for each month of the year and payment in salaries and wages for the year amounted to \$1,167,961. Expenditures for fuel and electricity totalled \$179,253 and materials for manufacturing cost \$2,392,492.

Table 169.—Materials Used in the Asbestos Products Industry, 1941 and 1942

Material	Unit of measure	1941		1942	
		Quantity	Cost at Works	Quantity	Cost at works
Asbestos fibre.....	Lb.	25,098,964	446,301	24,214,105	503,340
Asbestos cloth.....	Lb.	123,403	46,782	62,638	21,037
Asbestos paper, corrugated and plain.....	Lb.	779,545	22,037	522,999	25,548
Asbestos sheets and strips.....	Lb.	36,428	19,686	38,042	21,220
Asbestos yarn.....	Lb.	449,523	170,136	543,915	217,946
Cotton cloth and yarn.....	\$		139,256		164,670
Rubber.....	Lb.	186,034	46,026	86,757	18,877
Containers and packing material.....	\$		95,476		70,173
All other materials.....	\$		881,095		1,349,681
<b>Total.....</b>	<b>\$</b>		<b>1,866,795</b>		<b>2,392,492</b>

Table 170.—Products Manufactured in the Asbestos Products Industry, 1941 and 1942

Product	Unit of measure	1941		1942	
		Quantity	Cost at works	Quantity	Cost at works
Asbestos brake linings—Moulded.....	Ft.	4,690,883	\$ 1,172,078	4,590,036	\$ 1,551,105
Other.....	Ft.	1,179,926	199,715	1,492,199	403,904
Asbestos boiler and pipe covering.....	Ft.	4,122,646	611,431	4,446,893	532,574
Asbestos clutch facings.....	No.	716,978	199,846	628,649	203,071
Asbestos gaskets.....	Lb.	55,638	31,618	66,213	38,318
Asbestos packings of all kinds.....	Lb.	519,533	224,870	559,828	241,929
All other products (x).....			1,919,661		2,130,358
<b>Total.....</b>			<b>4,359,217</b>		<b>5,101,259</b>

(x) Includes products made by 1 or 2 firms, such as asbestos dryer felt, hydraulic brake hose, asbestos shingles, asbestos yarn, packings of rubber, duck and flax, asbestos paper, asbestos cloth, etc.

## FELDSPAR AND QUARTZ MINING INDUSTRY

Owing to the very close physical association of these minerals in many Canadian deposits (pegmatites), it has been found difficult for some operators to make a separation of all data pertaining to the mining of each individual mineral and, for this reason, the general statistics relating to capital, employment, fuel and electricity, etc., have been combined in this chapter. Since 1936, corresponding statistics relating to the production of nepheline syenite have been included with those pertaining to the commercial production of feldspar and quartz.

During 1942 the gross value of production by the industry, and comprising the value of feldspar, quartz and nepheline syenite sold, totalled \$1,998,996 compared with corresponding values of \$1,838,054 in 1941 and \$1,508,999 in 1940. In 1942 commercial shipments of feldspar were made only from properties located in Ontario and Quebec; quartz (silica) in various forms was produced in Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia, while production of nepheline syenite was confined to the province of Ontario.

The number of firms reported as active in the industry in 1942 totalled 36; capital employed was recorded at \$2,563,248; employees numbered 533; salaries and wages amounted to \$782,903 and the value of fuel, electricity and process supplies totalled \$412,028. The net value of all products sold in 1942 was estimated at \$1,586,968 compared with \$1,587,071 in 1941.



## FELDSPAR

Production (producers' sales) of feldspar, crude and ground, during 1942 totalled 22,270 net tons valued at \$213,941 compared with 26,040 net tons worth \$244,284 in 1941. Of the 1942 output, 16,802 net tons were shipped from Quebec properties and 5,468 net tons from quarries in Ontario. The following information is from a recent report issued by the Bureau of Mines, Ottawa:

"Most of the Canadian feldspar mined is of high-potash grade, though some operators also produce small amounts of high-soda spar. The latter type is rather uncommon as large deposits, but is sometimes found as zonal bodies in potash-feldspar pegmatites, especially along the walls.

"Most of the recorded production has come from adjacent sections of western Quebec and eastern Ontario, in the general Ottawa region, with a small amount, also, from scattered properties in Ontario as far west as the Parry Sound and Sudbury districts. Manitoba also formerly had a small production from the Winnipeg River district, but operations ceased there about six years ago. Formerly, a considerable part of the supply came from a number of small, scattered, and often intermittent operations, but in recent years most of it has come from a few larger deposits, the production being about equally divided between Ontario and Quebec. In 1942, however, the Ontario output declined to only about 30 per cent of the total.

"All of the feldspar used in industry is crushed or finely ground material, usually prepared either in mills operated by producers of the crude mineral or in merchant mills supplied from independent mines. Some manufacturers of ceramic products mine and grind spar for their own use.

"By far the greater part of the feldspar production is used in the ceramic industries, of which the glass trade is the largest consumer, followed by the pottery, enamel, and sanitary ware industries. In the United States, these industries used 98 per cent of total sales in 1940. Minor amounts are used in the manufacture of soaps and cleansers, abrasive wheels, and artificial teeth. A novel use recently proposed for feldspar is for smothering incendiary bombs, and has been patented by the United States Government. A low-fluxing, soda type of spar is preferred, free of material finer than 200-mesh, and is claimed to have extinguishing properties superior to common sand or any special mixtures recommended for such purpose.

"Domestic feldspar prices in 1942 showed no change from previous years. Quotations for No. 1 grade crude continued at \$5.50 to \$6.00 per ton, f.o.b. rail, for domestic mills and export. Ground spar, 200-mesh, sold at \$16 to \$18, and granular glass spar at \$12, both f.o.b. mill, in carload lots.

"Crude feldspar entering the United States pays a duty of 25 cents per long ton. The duty on ground feldspar is 15 per cent ad valorem."

Table 171.—Feldspar Consumed in Specified Canadian Industries, 1940, 1941 and 1942

Industry	1940		1941		1942	
	Tons	\$	Tons	\$	Tons	\$
Abrasive products.....	68	2,056	84	3,127	119	4,113
Imported clay products.....	3,305	70,788	3,333	74,247	2,799	62,525
Soaps and cleaning preparations.....	1,085	11,427	3,593	34,411	4,249	43,904
Iron and steel products.....	542	9,774	(x)	15,683	.....	.....
Glass.....	350	5,744	909	16,656	2,874	45,231
Enamelling materials.....	400	6,000	523	7,845	331	4,965

(x) Quantity statistics not available.

## NEPHELINE SYENITE

Producers' sales of nepheline syenite were valued at \$246,893 in 1942 compared with \$227,583 in 1941. Commercial production of nepheline syenite in Canada is confined to Eastern Ontario. Shipments during the year under review were made by the American Nepheline Corporation Limited and the Canadian Flint & Spar Company Limited. The first-named company operated its quarry located on Lot 14, Concession 9 of Methuen township, Peterborough county, throughout the year, milling operations were steady and the company marketed its products in both the crude and refined state. Canadian Flint & Spar Company Limited carried on quarrying operations at its property located near Bancroft from May to November; the output from this quarry was shipped in the crude state to the United States.

The following information was abstracted from a report prepared by the Bureau of Mines, Ottawa:

"Nepheline syenite is a quartz-free crystalline rock consisting essentially of the mineral nephelite, a silicate of alumina, potash, and soda, with albite and microcline feldspar. It often contains varying amounts of iron-bearing minerals in the form chiefly of black mica and magnetite, together with such accessory minerals as zircon, corundum, calcite, scapolite, etc. It has no free silica, and is high in alumina (20 to 30 per cent in average commercial rock) as compared with straight feldspar (17 to 20 per cent), and it has thus found favour with the ceramic industries, particularly in the glass trade. For ceramic use the crude rock must be freed of its iron-bearing constituents, removal of which can often be readily effected by a relatively cheap process of magnetic separation at about 20-mesh size.

"Nepheline syenite continues to be used chiefly in the glass trade where it is preferred to straight feldspar because of its higher content of alumina. Most Canadian glass plants now use the material and it also employed by a number of American plants. Some American feldspar grinding establishments use the syenite for blending with their granular glass spar. It is claimed that 1,500 pounds of syenite will replace 2,000 pounds of spar in the glass batch on the basis of relative alumina content and the higher content of alkalis reduces the temperature of melting, with resultant saving of fuel and longer tank life. Research has been proceeding steadily on applications for nepheline syenite in other branches of ceramics and it has been found of advantage owing to its higher fluxing action as a body ingredient in a variety of products, including pottery, semivitreous ware, sanitary and electrical porcelain, floor and wall tile, and structural clay products, as well as enamels. Increased vitrification, translucency, and mechanical strength, improved glaze fit, and reduced absorption, warpage, thermal expansion, and crazing, are among the desirable properties claimed for the various types of ware made from it.

"Interest has been shown in the possibility of employing nepheline syenite as a source of alumina for the aluminium industry to replace bauxite, all of which is imported. Frobisher Exploration Company, Limited (Ventures) conducted an intensive geological and diamond drilling program in 1941 on the nepheline syenite occurrences of the Bancroft area, Ontario and test work has been proceeding in the laboratories of the Bureau of Mines, Ottawa, on methods of treating the rock for recovery of the contained alumina, potash, and soda. Large deposits of nepheline syenite are also known to exist on the north shore of Lake Superior.

"The fine dust product resulting from the processing of Lakefield syenite is used as a substitute for pumice, for grinding and polishing, and in the cleanser, enamelware, and heavy clay industries.

"Glass-grade nepheline syenite for sale in Canada remained at the 1941 price of \$11.75 per ton, bulk, in carload lots, f.o.b. Lakefield, with ground, 200-mesh, ceramic grade quoted at \$16.50. Grade B (dust) sold for \$13.00 l.c.l. American prices also remained unchanged, at \$12.00 for glass grade, and \$15.50 for ceramic grade, all bulk, in carload lots, f.o.b. Rochester, New York."

Nepheline syenite used in Canada in the manufacture of glass totalled 3,472 tons valued at \$58,629 in 1939, 4,233 tons at \$69,619 in 1940, 5,834 tons worth \$94,091 in 1941 and 6,144 tons worth \$100,417 in 1942.

### QUARTZ (SILICA)

The production of natural silica or quartz in Canada during 1942 totalled 1,738,174 short tons valued at \$1,538,162 compared with 2,052,878 tons at \$1,366,187 in 1941. Output of primary silica products by the Canadian quartz mining industry includes crude and crushed dyke quartz, quartzite, sandstone and natural silica sands and gravels. The mineral in one or more of the forms thus defined was produced during 1942 in Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia. Shipments of silica in Nova Scotia were made to steel plants largely for the making of silica brick. In Quebec, high-grade silica sands were produced for the manufacture of glass and chemicals while a considerable tonnage of these same sands was sold for sand-blasting and various other purposes; in the same province relatively large quantities of crushed quartzite were mined and milled for the manufacture of silicon carbide and other products. The greater part of the tonnage of silica shipped in Ontario during 1942 represented material intended for use in the production of silica brick and ferro-silicon and for the fluxing of nickel-copper ores. Quartz production as recorded for Saskatchewan represented low-grade natural silica sands or gravels shipped as flux to the Flin Flon smelter of the Hudson Bay Mining and Smelting Co. Ltd. Production in British Columbia in 1942 consisted of quartz shipped to the Trail smelter from the Gypo and Ballarat deposits located near Penticton.



The price per ton of the several grades of silica varies greatly depending on its purity and on the purpose for which it is to be used. Silica generally is a low-priced commodity, and therefore the situation of a deposit with respect to markets is of great importance. The largest markets for silica are in the provinces of Quebec and Ontario, and new deposits to be of interest to these markets should be within economic reach of either Toronto or Montreal. In Western Canada the main markets are in Alberta and Manitoba.

Quotations as given by "Canadian Chemistry and Process Industries" are: silica sand, various grades, in car lots \$9 to \$9.50 a ton; silica, quartz, 99 per cent, 110-220 grade, in car lots, \$14 to \$20 per ton.

Table 172.—Production in Canada of Quartz, 1941 and 1942

	1941		1942	
	Short tons	Value	Short tons	Value
		\$		\$
<b>PRODUCTION (x) (SHIPMENTS)—</b>				
Nova Scotia.....	11,477	24,100	10,708	23,557
Quebec.....	147,318	388,948	203,210	543,817
Ontario.....	1,745,244	899,687	1,367,733	914,256
Saskatchewan.....	148,208	51,873	155,099	54,495
British Columbia.....	631	1,579	815	2,037
<b>Canada.....</b>	<b>2,052,878</b>	<b>1,366,187</b>	<b>1,738,174</b>	<b>1,538,162</b>

(x) Includes both crude and crushed quartz, crushed sandstone and quartzite, and natural silica sands.

Table 173.—Production\* (Use) of Natural Low-Grade Silica Sand and Silica Gravel as Non-Ferrous Smelter Flux 1940-1942

	1940		1941		1942	
	Tons	\$	Tons	\$	Tons	\$
Ontario.....	1,403,268	491,144	1,533,392	530,087	644,520	225,595
Saskatchewan.....	159,090	55,681	148,208	51,873	155,609	54,495
<b>Canada.....</b>	<b>1,562,358</b>	<b>546,825</b>	<b>1,681,600</b>	<b>588,560</b>	<b>800,228</b>	<b>280,090</b>

\* Included in totals shown in Table 174 also, complete data for production of this material in Ontario previous to 1930 are not available.

**Prices—UNITED STATES** (May, 1941 to April, 1943)—Silica, per ton, water ground and floated, in bags, f.o.b. Illinois: 325 mesh, \$21 to \$40 for 92 to 99½ per cent grades. Dry ground, air floated, 325 mesh, 92 to 99½ per cent silica, \$18 to \$30. Glass sand, f.o.b. producing plant, \$1.25 to \$5 per ton; moulding sand, 50 cents to \$3.50; blast sand, \$1.75 to \$6. California: \$5 for quartz and \$2.50 for sand. Quartz rock crystals for fusing, all sizes, \$100 to \$150 per ton; prisms for piezoelectrical and optical use command premium. (Engineering and Mining Journal's "Metal and Mineral Markets"—New York).

Table 174.—Consumption of Quartz, Silica Sand, etc., in Canada, by Industries, According to Census of Industry Reports, 1941 and 1942\*

	1941		1942	
	Quantity	Cost at works	Quantity	Cost at works
		\$		\$
<b>Silica sand and silica (including ground quartz or quartzite)—</b>				
Soaps and cleaning preparations.....	4,347	92,870	2,462	54,017
Acids and salts.....	24,327	109,402	30,356	124,598
Paints.....	1,019	39,365	1,310	45,440
Refractories.....	578	7,252	1,072	10,680
Roofing paper.....	2,641	15,135	2,879	16,834
Abrasives (silica sand).....	57,362	269,605	76,943	416,806
Abrasives (quartz).....	174	6,624	230	7,640
Glass.....	114,761	713,677	145,005	928,587
Enamelling materials.....	595	8,925	331	4,965
Products from imported clays.....	4,055	63,116	3,753	63,259
Foundry facings and supplies.....	99	1,242	76	884
Non-ferrous smelters†.....	1,682,231	590,139	1,298,803	582,247
Steel industry (silica sand).....	82,701	573,305	112,878	811,659
Ferro-alloys (quartzite).....	164,390	390,619	176,444	475,444
<b>Total Accounted for.....</b>	<b>2,139,280</b>	<b>2,881,276</b>	<b>1,852,644</b>	<b>3,573,060</b>

NOTE:—Consumption values are costs at works.

†The quantities reported under this industry usually contain low-grade natural silicious sands used for fluxing purposes.

\*In addition to the quantities shown, a relatively large quantity of quartz and quartzite is consumed in the manufacture of silica brick.



Table 175.—Principal Statistics of the Feldspar and Quartz Mining Industry, 1941 and 1942

	Ontario (*) (b)		Quebec	
	1941	1942	1941	1942
Number of firms (a).....	18	17	20	19
Capital employed..... \$	650,405	1,452,823	1,064,177	1,110,425
Number of employees—On salary.....	17	24	15	22
On wages.....	207	234	267	253
Total.....	224	258	282	275
Salaries and wages—Salaries..... \$	25,210	39,186	26,927	52,081
Wages..... \$	233,443	333,791	304,909	357,845
Total..... \$	278,653	372,977	331,836	409,926
Selling value of products (gross)..... \$	1,311,946	1,290,591	526,108	708,405
Cost of fuel and purchased electricity..... \$	42,709	53,261	48,456	70,839
Cost of process supplies..... \$	97,954	204,167	61,864	83,761
Net value of sales..... \$	1,171,283	1,033,163	415,788	553,805

(\*) In 1941 and 1942 includes 1 firm in Nova Scotia, 1 in British Columbia and 1 in Saskatchewan.

(a) Small shippers from whom reports were unobtainable and whose production is recorded from consumers' returns are sometimes not included in the total.

(b) Includes data relating to production of nepheline-syenite.

Table 176.—Capital Employed in the Feldspar and Quartz Mining Industry, in Canada, 1942

	Quebec	Ontario
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Present cash value of the land (excluding minerals).....	122,885	80,452
Present value of buildings, fixtures, machinery, tools and other equipment.....	825,963	1,127,146
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand..	73,421	223,433
Inventory value of finished products on hand.....	12,070	5,741
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	76,080	16,051
Total.....	1,110,425	1,452,823

Table 177.—Number of Wage-Earners on Pay Roll, by Months, 1941 and 1942

Month	1941	1942					
		Quebec			Ontario		
		Surface	Under-ground	Mill	Surface	Under-ground	Mill
January.....	290	155	55	64	126	24	16
February.....	297	166	46	65	127	24	18
March.....	336	142	32	65	128	23	59
April.....	432	130	27	66	151	15	58
May.....	533	181	27	80	159	20	62
June.....	579	161	30	81	172	24	58
July.....	587	167	17	80	178	19	65
August.....	604	144	10	85	176	29	66
September.....	551	159	13	83	178	12	62
October.....	537	152	12	91	162	12	63
November.....	549	151	4	82	149	11	61
December.....	477	128	4	68	119	.....	28

\*Includes a few employees in some months in Nova Scotia. Complete data relating to quartz production in British Columbia in 1941 and 1942 are not available.

## QUARTZ CRYSTAL

(United States Bureau of Mines)

"Modern mechanized warfare depends upon instantaneous two-way radio communication, which to be effective must rely upon accurately ground wafers of crystal, two in each circuit; dozens are needed for a single tank or airplane. Brazil remains the only known commercial source of quartz suitable for radio-frequency control, and radio quartz crystal has been classified as a strategic mineral by the Army and Navy Munitions Board.

"Quartz crystals of commercial size, found near Hot Springs, Ark., almost without exception show twinning, and crystal plates made from them do not have piezoelectric properties unless the twinned portion is cut away—a costly process. Cracks and inclusions of other minerals and of air render most domestic crystals and fragments subject to rejection, even before examination for piezoelectric properties.

"In Brazil, the annual production of quartz crystal jumped to over 1,000 short tons in 1940 from about 250 tons in 1937. One-fourth of the output is consumed as piezoelectric (radio) quartz, and the remainder is used as optical, instrument, or fusing quartz. Before 1941 Japan's purchases were the backbone of the Brazilian crystal industry. The United States had comparatively small peacetime requirements and bought only high-grade material.

"In 1941 the Governments of the United States and Great Britain agreed to buy all stocks of Brazilian quartz crystals remaining after their nationals had made purchases for private industry. The Brazilian Department of Mineral Production, Ministry of Agriculture, introduced export control through licences and levied a 10 per cent tax based upon export prices. Exports may clear only through the ports of Rio de Janeiro and Salvador.

"A schedule of prices for the various grades of crystal as of April 1941 has been reported. For example, "A" (piezoelectric)-grade crystals weighing 1.5 to 2.0 kilograms with growth faces were quoted at 250,000 milreis a kilogram (about \$6, United States currency, a pound). Owing to tremendous increases in demand and slight revision in specifications for oscillator plates, many of the manufacturers began to use smaller crystals down to 200 grams each. Prices of larger crystals advanced as much as threefold during the year, but even at the peak these represented only a minor factor in the cost of the final product."

No commercial production of quartz crystals has ever been officially reported in Canada. Imported crystals, however, are now being cut and dressed in the Dominion.

According to a report issued by the Engineering and Mining Journal, New York, April, 1943, an inspection laboratory has been established in Rio de Janeiro, Brazil, by the United States Signal Corps for the selection of suitable quartz crystals. Deposits of quartz crystals have been worked in four regions in Brazil, including the poorly accessible Tocantins River district. Veins are located by independent pick-and-shovel prospectors who mine the crystals by crude hand methods. Quartz rock crystals for fusing, all sizes, were quoted in the United States, April, 1943—\$100 to \$150 per ton. Prisms for piezoelectrical and optical use command a substantial premium.

In 1943 it was reported that the Rare Minerals Prospecting Syndicate was developing a quartz crystal property located in Leeds county, Ontario.

## THE GYPSUM INDUSTRY

### (1) Primary Production—The Gypsum Mining and Quarrying Industry

Production (producers' sales and consumption) of gypsum in Canada during 1942 totalled 566,166 short tons valued at \$1,254,182 compared with 1,593,406 short tons at \$2,248,428 in 1941. The tonnage in both years represents various grades of crude gypsum and anhydrite shipped from quarries or mines together with the tonnage of calcined gypsum used in or shipped from quarries or "primary" plants. The quantity of the mineral produced in 1942 was 64.5 per cent less than in the preceding year, due chiefly to a shortage of shipping on the Atlantic coast.

Of the 1942 output, Nova Scotia properties contributed 394,216 tons valued at \$512,762; Ontario, 82,796 tons at \$304,170; New Brunswick, 36,623 tons at \$111,316; Manitoba, 29,218 tons at \$179,780, and British Columbia, 23,313 tons worth \$146,154.

The quantity of crude gypsum mined in 1942 totalled 794,886 tons while the tonnage of anhydrite mined (all in Nova Scotia) amounted to 2,240 tons. Crude gypsum calcined in primary or quarry plants totalled 183,296 tons.

The following are the average prices per short ton for mine shipments made during 1942: Crude lump, \$1.69; crushed crude, \$1.30; ground crude, \$7.52, and calcined, \$13.95.

In 1942 the number of firms reporting production was 7 and the gypsum quarries and mines in operation totalled 13. Some of the Canadian gypsum mining companies confine their operations in the Dominion to the production and sale of crude gypsum, or anhydrite, while others, in addition to marketing various grades of crude gypsum, produce a calcine for sale or for consumption in their own gypsum products plants. Gypsum is exported from Canada almost entirely in the crude form.

Capital employed by Canadian gypsum mining companies totalled \$4,386,531 in 1942; employees aggregated 510; salaries and wages paid amounted to \$657,620 and the total value of fuel, purchased electricity and process supplies used was computed at \$244,139.

Gypsum mining operations in Nova Scotia during 1942 are summarized as follows: Victoria Gypsum Company Limited operated its property at Little Narrows, Victoria County, from May 4 until October 31; shipments were confined to the mineral in the crude lump form. No mining operations were conducted in Nova Scotia during 1942 by Gypsum, Lime & Alabastine, Canada, Limited. At Windsor, the manufacturing plant of the Windsor Plaster Company Limited was in continuous operation throughout the year; gypsum for this plant came from the Mosher quarry which was active for nine months in the year. Both the quarry and mill of the Canadian Gypsum Company Limited, located at Wentworth, were operated during the entire year. Production at this property included both anhydrite and gypsum and the minerals were shipped in the crushed state. The National Gypsum (Canada) Ltd. made shipments in 1942 from quarries located at Walton and Dingwall, but only milling operations were conducted at its Belle Marche property in Inverness County. Shipments of crude lump gypsum, for export, were made by the Connecticut Plaster Company; the quarry of this company is located at Cheverie.

Gypsum production in New Brunswick in 1942 came entirely from Hillsborough where the quarry and manufacturing plant of the Canadian Gypsum Company were in steady production throughout the year. Both surface and underground mining operations are carried on at this property and various gypsum products are manufactured by the company.

In Ontario, gypsum mining during 1942 was confined to Haldimand county. Two companies operated in this area, Gypsum, Lime & Alabastine, Canada, Limited, at Caledonia, and the Canadian Gypsum Company Limited at Hagersville. These companies, in addition to conducting both surface and underground mining, produced an extensive variety of gypsum products. Operations by these firms were continuous throughout the year.

Gypsum was mined in Manitoba during 1942 at Gypsumville by Gypsum, Lime & Alabastine, Canada, Limited, and at Amaranth by Western Gypsum Products Limited. These companies also operated manufacturing plants in the city of Winnipeg.

The production of gypsum in British Columbia in 1942 came entirely from the Falkland deposits where the property of Gypsum, Lime & Alabastine, Canada, Limited was operated from January to December. The manufacturing plant of the company, located at New Westminster, was in steady production during the year under review.

The following information is from a report on gypsum prepared by the Bureau of Mines, Ottawa:

"Gypsum is marketed in the crude lump form, ground as 'land plaster' and 'Terra alba', or ground and calcined, as plaster of Paris or wall plaster. Each year an increasing portion of the calcined material enters into the manufacture of wallboard, gypsum blocks, insulating material, acoustic plaster, etc. Anhydrite is used mainly as a fertilizer for the peanut crop in the Atlantic seaboard states of the southern United States.



"The use of anhydrite for the manufacture of sulphuric acid, ammonium sulphate, cement and special plasters is increasing, and, normally, there is a good opportunity for the Canadian material in this market. Canada has extensive deposits, favourably situated for commercial development, the material from which has been proved by tests carried out by the Department of Mines and Resources to be of excellent grade. Prior to 1937 the small Canadian production was exported principally for use as a fertilizer for the peanut crop, but it is possible that an industry will eventually be started in this country in which the anhydrite may be used for the manufacture of sulphur or sulphur compounds and of special plasters, similar to those being marketed in England.

"The use of gypsum products in the building trades has made rapid progress because of their lightness, durability, fire-resisting, insulating, and acoustic properties; and tiles, wallboards, blocks, and special insulating and acoustic plasters have been developed. It is probable that production of gypsum for domestic use will continue to decline during the war. As most of the crude gypsum is shipped to the United States for the manufacture of gypsum products, industrial conditions in that country will continue to have an important bearing on the industry.

"Crude gypsum is a low-priced commodity, and its selling price f.o.b. quarry is dependent largely upon the quantity produced and the production facilities available. For export, contracts are generally made with the producer for the year's requirements of the purchaser and these contracts are generally made early in each year. The price of crude gypsum as quoted by the Canadian Chemistry and Process Industries remained at \$2.50 to \$3.50 per ton f.o.b. mine throughout 1942.

"A large tonnage of by-product gypsum is obtained from the production of phosphate fertilizers at the plant of Consolidated Mining & Smelting Company, at Tadanac, British Columbia, and efforts to find an outlet for this material are being continued."

Table 178.—Production in Canada, of Gypsum, 1941 and 1942

	1941		1942	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
<b>SHIPMENTS BY GRADES—</b>				
Crude (1)—Lump or mine run.....	39,776	52,158	13,176	22,240
Crushed.....	1,396,364	1,641,431	402,578	523,093
Fine ground.....	277	2,061	246	1,849
Calcined gypsum, sold and used (2).....	156,989	652,780	150,166	707,000
<b>Total.....</b>	<b>1,593,406</b>	<b>2,248,428</b>	<b>566,166</b>	<b>1,254,182</b>
<b>SHIPMENTS BY PROVINCES—</b>				
Nova Scotia.....	1,395,172	1,517,297	394,216	512,762
New Brunswick.....	69,172	150,630	36,623	111,316
Ontario.....	90,599	276,459	82,796	304,170
Manitoba.....	27,601	162,822	29,218	179,780
British Columbia.....	23,862	141,320	23,313	140,154
<b>Total.....</b>	<b>1,593,406</b>	<b>2,248,428</b>	<b>566,166</b>	<b>1,254,182</b>
Total gypsum mined and quarried (1).....	1,560,440		797,126	
Total gypsum calcined (2).....	197,413		183,296	

(1) Includes some anhydrite quarried in Nova Scotia.

(2) Does not include gypsum calcined in manufacturing plants located in Montreal and Calgary, but includes calcine used in manufacturing plants operated in direct conjunction with the mines—the value of calcine used is its value as a process material.

Table 179.—Consumption of Gypsum in Canadian Cement Industry, 1933-1942

Year	Tons	Year	Tons
1933.....	13,319	1938.....	51,975
1934.....	19,172	1939.....	31,492
1935.....	21,611	1940.....	38,903
1936.....	25,447	1941.....	49,031
1937.....	33,691	1942.....	49,816

Table 180.—Principal Statistics of the Gypsum Mining Industry in Canada, 1939-1942

	Nova Scotia	New Brunswick, Ontario, Manitoba, British Columbia	Total Canada
Number of firms—1939.....	7	3(a)	10
1940.....	6	3(a)	9
1941.....	6	2(a)	8
1942.....	5	2(b)	7
Capital employed—1939.....	\$ 4,370,893	2,436,014	6,806,907
1940.....	\$ 2,406,561	2,242,101	4,648,662
1941.....	\$ 2,812,465	2,363,356	5,175,821
1942.....	\$ 1,913,131	2,473,400	4,386,531
Number of employees—On salary—			
1939.....	29	37	66
1940.....	33	24	57
1941.....	34	14	48
1942.....	28	27	55
On wages—			
1939.....	440	208	648
1940.....	389	245	637
1941.....	328	272	600
1942.....	201	254	455
Salaries and wages—Salaries—			
1939.....	\$ 53,680	59,235	112,915
1940.....	\$ 60,374	51,048	111,422
1941.....	\$ 62,083	28,852	90,935
1942.....	\$ 53,314	53,163	106,477
Wages—			
1939.....	\$ 402,134	177,109	579,243
1940.....	\$ 369,090	237,154	606,244
1941.....	\$ 338,356	315,717	654,073
1942.....	\$ 231,431	319,712	551,143
Fuel and electricity—Cost—			
1939.....	\$ 90,394	103,094	193,488
1940.....	\$ 76,224	118,740	194,964
1941.....	\$ 73,784	148,780	222,564
1942.....	\$ 36,831	141,851	178,682
Value of process supplies used—			
1939.....	\$ 85,166	20,665	105,831
1940.....	\$ 194,005	29,370	223,375
1941.....	\$ 199,875	29,869	229,744
1942.....	\$ 34,784	30,673	65,457
Selling value of products (gross)—			
1939.....	\$ 1,340,830	594,297	1,935,127
1940.....	\$ 1,302,347	763,686	2,066,033
1941.....	\$ 1,517,297	731,131	2,248,428
1942.....	\$ 512,702	741,420	1,254,122

(a) Includes 2 companies also operating in Nova Scotia.

(b) Includes 1 company also operating in Nova Scotia.

Table 181.—Capital Employed in the Gypsum Industry in Canada, by Provinces, 1942

	Nova Scotia	New Brunswick, Ontario, Manitoba and British Columbia	Canada
Capital employed as represented by—	\$	\$	\$
Present cash value of the land (excluding minerals).....	26,005	195,844	221,849
Present value of buildings, fixtures, machinery, tools and other equipment.....	399,074	854,978	1,254,052
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	107,576	145,382	252,958
Inventory value of finished products on hand.....	464,909	57,841	512,750
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)...	925,477	1,210,355	2,144,832
Total.....	1,913,131	2,473,400	4,386,531

Table 182.—Number of Wage-Earners on Payroll or Time Record of the Last Day of Each Month or Nearest Work Day, 1941-1942

Month	1941		1942			
	Mine	Mill	Mine		Mill	
			Surface	Under-ground*	Male	Female
January.....	210	128	117	77	171	2
February.....	205	128	131	79	182	2
March.....	232	142	183	83	199	2
April.....	413	210	187	83	213	2
May.....	481	197	234	82	220	4
June.....	528	224	250	75	236	4
July.....	566	215	263	82	222	4
August.....	483	236	259	79	223	4
September.....	505	228	195	73	181	3
October.....	445	229	115	73	165	4
November.....	423	229	108	83	163	3
December.....	368	170	70	87	138	3

\*Underground work confined to New Brunswick, Ontario and Manitoba.

## (2) The Gypsum Products Industry

Nine Canadian factories, operated by four companies, manufactured gypsum products having a factory selling value of \$4,829,962 during 1942. This output was 4.9 per cent over the 1941 total of \$4,601,093 and 17.4 per cent over the 1940 value of \$4,110,795. The main products were gypsum wallboard, gypsum hardwall plaster, gypsum tile and gypsum blocks.

Capital employed in these nine manufacturing plants amounted to \$3,414,258 in 1942, including \$1,578,655 as the value of buildings and equipment, \$614,502 as the value of inventories at the year-end, and \$1,221,101 as cash, bills receivable, etc. The average number of employees in 1942 was 412, to whom \$554,665 was paid in salaries and wages. Expenditures for fuel and electricity amounted to \$217,007 while materials used in manufacturing processes cost \$2,251,434.

Table 183.—Materials Used in the Gypsum Products Industry, 1941 and 1942

Material	Unit of measure	1941		1942	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Gypsum, crude.....	ton	30,978	112,158	20,742	78,460
Gypsum, calcined (plaster of Paris).....	ton	157,488	628,325	149,885	705,541
Paper.....	ton	13,106	718,914	14,240	868,437
Starch or paste.....	ton	487	42,310	499	31,488
Hair.....	ton	122	23,293	75	18,036
Retarder.....	ton	286	23,330	203	18,045
Sawdust or shavings.....	ton	751	5,481	165	2,259
Containers, etc.....			124,060		108,587
All other materials.....			262,581		420,501
<b>Total.....</b>			<b>1,941,032</b>		<b>2,251,434</b>

Table 184.—Output of the Gypsum Products Industry, 1941 and 1942

Product	Unit of measure	1941		1942	
		Quantity	Selling value at works	Quantity	Selling value at works
			\$		\$
Gypsum wallboard.....	sq. ft.	154,760,145	3,255,618	164,410,695	3,849,253
Gypsum hard wall plasters.....	ton	80,216	1,043,864	51,475	682,528
All other products (*).....			301,611		298,181
<b>Total.....</b>			<b>4,601,093</b>		<b>4,829,962</b>

(\*) Includes gypsum tile and blocks, etc.



## IRON OXIDES (OCHRE) MINING INDUSTRY

Production (producers' sales) in Canada of iron oxides and ochres, crude and refined, during 1942 totalled 9,304 short tons valued at \$151,653 compared with 10,045 short tons worth \$142,069 in 1941. Of the 1942 output, 8,866 short tons valued at \$147,049 came from properties in the province of Quebec and the balance of 438 tons at \$4,604 represented crude material shipped from deposits located in British Columbia.

Production during 1942 in the province of Quebec was reported by the Sherwin-Williams Co. Ltd., operating deposits at Red Mill, Champlain County; Chas. D. Girardin at Alnaville, Lavolette County and Les Forges, St. Maurice County; Thos. H. Argall at Pointe du Lac, St. Maurice County, and Mauricy Oxide Co. at Ste. Adelphe, Champlain County. Refined or calcined products were manufactured and shipped by the Sherwin-Williams Co. Ltd., whereas the other operators shipped the mineral in the crude state. In British Columbia, shipments of crude oxides were made by J. G. Davidson from deposits located at Alta Lake.

The industry provided employment for 47 employees and distributed \$44,288 in salaries and wages. Most of the deposits were operated from June to September with the exception of one which was worked from April 6 to December 29.

The Bureau of Mines, Ottawa, reports that other deposits in Quebec and Ontario could be worked if the demand warranted their development. In Nova Scotia, beds of ochre and umber were operated to a small extent in the past. In Alberta and Saskatchewan, several deposits of ochre are known, some having commercial possibilities, but, as they are difficult of access and as the market is limited, they have had little development. Large deposits near Grand Rapids and Cedar Lake in northern Manitoba remain undeveloped for similar reasons.

Ochreous iron oxide, which is sold uncalcined and used chiefly in the purification of illuminating gas, comprises the bulk of the minerals produced in Canada under this category. The calcined form of ochreous iron oxide is used in the manufacture of paints. A smaller quantity of natural iron oxides associated with clay-like materials in the form of umbers and siennas is produced in the raw and in the calcined state for use as pigments in paints.

The price in New York of iron oxide, standard No. 1 quality, Spanish red, remained normally at 3 to 5 cents per pound throughout 1941. The average Canadian price of red iron oxide in 1942, as given by Canadian Chemistry and Process Industries, was 2 to 7 cents a pound.

Table 185.—Production (Sales) in Canada of Iron Oxides, 1941 and 1942

	1941		1942	
	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$
Quebec*	9,770	139,185	8,866	147,049
British Columbia	275	2,864	438	4,604
<b>Total</b>	<b>10,045</b>	<b>142,069</b>	<b>9,304</b>	<b>151,653</b>

\* Includes crude and refined grades.

Table 186.—Consumption of Iron Oxides in Specified Canadian Industries, 1932-1942

Year	Coke and gas		Paints, pigments and varnishes		Paints, pigments and varnishes	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons (a)	\$	Tons (b)	\$	Tons (c)	\$
1932	3,736	35,284	701	52,323	512	48,047
1933	2,734	29,076	504	43,826	491	43,071
1934	3,757	47,010	580	53,539	544	53,236
1935	3,701	46,204	990	77,758	564	56,219
1936	(d)	41,291	733	67,850	634	65,819
1937	(d)	40,414	890	81,709	566	49,082
1938	(d)	41,013	822	70,736	487	41,062
1939	(d)	35,417	882	80,274	523	40,134
1940	5,417	42,491	1,146	112,826	575	62,636
1941	5,133	36,480	1,602	187,836	463	58,385
1942	4,600	33,790	2,334	253,383	412	52,165

(a) Oxide and purifying materials.

(b) Iron oxide pigments.

(c) Ochres, siennas and umbers.

(d) Data not available.

Table 187.—Principal Statistics of the Natural Iron Oxides Industry in Canada, 1940-1942

	1940	1941	1942
Number of firms.....	(b)7	(a)4	(d)5
Capital employed..... \$	106,263	189,877	104,541
Number of employees—On salaries.....	(c)5	(c)6	(e)6
On wages.....	41	37	41
Total.....	46	43	47
Salaries and wages—Salaries..... \$	7,896	8,571	9,174
Wages..... \$	30,946	33,581	35,114
Total..... \$	38,842	42,152	44,288
Selling value of products (gross)..... \$	111,874	142,000	151,653
Cost of fuel and purchased electricity..... \$	17,598	15,697	20,835
Cost of process supplies..... \$	435	5,697	5,780
Selling value of products (net)..... \$	93,841	120,675	125,038

(a) Three producing in Quebec and one in British Columbia.

(b) Five producing in Quebec and two in British Columbia.

(c) One female.

(d) Four producing in Quebec and one in British Columbia.

(e) Two females.

Table 188.—Capital Employed in the Iron Oxides Industry in Canada, 1942

	\$*
CAPITAL EMPLOYED AS REPRESENTED BY—	
Present cash value of land (excluding minerals).....	35,776
Present value of buildings, fixtures, machinery, tools and other equipment.....	107,078
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	31,720
Inventory value of finished products on hand.....	14,967
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	5,000
<b>Total</b> .....	<b>194,541</b>

\* Quebec only; data for 1 property in British Columbia not available.

Table 189.—Wage-Earners (\*) Employed, by Months, 1941 and 1942

Month	Number				Month	Number			
	1941		1942			1941		1942	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
January.....		25	2	24	July.....	31	18	30	28
February.....		26		29	August.....	31	20	25	28
March.....		25		33	September.....	28	20	23	28
April.....		25	6	28	October.....	15	22	14	24
May.....	8	28	8	27	November.....	17	20	10	27
June.....	34	17	31	25	December.....	8	22	10	26

\* No underground work and no female wage-earners.

## THE MICA MINING INDUSTRY

Canadian production (mine and mill operators' shipments) of mica in 1942 totalled 6,019,671 pounds valued at \$383,567 compared with 3,487,891 pounds worth \$335,288 in 1941. Shipments during both years were made only from properties located in the provinces of Quebec, Ontario and British Columbia. Of the total output in 1942, mines in the province of Quebec contributed 2,657,044 pounds valued at \$285,263; Ontario mines, 2,800,627 pounds worth \$89,243, and British Columbia, 562,000 pounds appraised at \$9,061. The total for all grades of mica produced in Quebec and Ontario during the year under review included 5,412,834 pounds of amber or phlogopite and 44,837 pounds of muscovite. In the above referred to production totals are shipments of all grades of the mineral produced, including hand cobbled, thumb trimmed, splittings, knife trimmed, scrap and ground; production in British Columbia represents ground muscovite schist.

The number of Canadian mica operators reporting commercial shipments in 1942 totalled 96; capital employed by the industry amounted to \$1,460,769, and \$258,605 were distributed as salaries and wages to employees. The total net value of shipments was estimated at \$346,254.

Table 190.—Production of Mica in Canada, by Grades, 1941 and 1942

	1941			1942		
	Quantity	Value, f.o.b. shipping point	Price per pound	Quantity	Value, f.o.b. shipping point	Price per pound
	Pounds	\$	\$	Pounds	\$	\$
Rough cobbled.....	169,315	25,977	0-15	362,600	40,055	0-11
Knife-trimmed.....	264,409	144,356	0-55	264,858	177,628	0-67
Thumb-trimmed.....	139,577	19,738	0-14	67,292	19,334	0-29
Splittings.....	184,830	121,879	0-66	165,610	102,666	0-62
Scrap (*).....	2,729,760	23,338	0-009	5,159,311	43,884	0-0085
<b>Total.....</b>	<b>3,487,891</b>	<b>335,288</b>		<b>6,019,671</b>	<b>383,567</b>	

(\*) Includes ground mica.

Table 191.—Production (Sales) of Mica in Canada, by Provinces and Kinds, 1941 and 1942

	1941		1942			
	Pounds	Value	Muscovite		Phlogopite	
			Pounds	Value	Pounds	Value
		\$		\$		\$
Quebec.....	1,603,575	284,563	9,008	445	2,648,036	284,818
Ontario.....	1,587,316	47,047	35,829	31,698	2,764,798	57,545
British Columbia (*).....	297,000	3,678	562,000	9,061		
<b>Total.....</b>	<b>3,487,891</b>	<b>335,288</b>	<b>606,837</b>	<b>41,204</b>	<b>5,412,834</b>	<b>342,363</b>

(\*) Ground mica schist.

The following information has been abstracted from a report on mica prepared by the Bureau of Mines, Ottawa:

"Canada is one of the two main world sources of phlogopite, or amber mica, the other being the island of Madagascar. Muscovite, or white mica, is of fairly common occurrence in Canada, but in general, deposits of this type have proved of small economic importance, owing either to the poor grade of material or to the small amount of mica present, and, until recently, production of muscovite was negligible. The discovery of an important muscovite-bearing field near Mat-tawa, Ontario, in 1941-42 has materially altered this situation and active development is proceeding. Substantial quantities of high-quality mica, much of it recovered in sheets of phenomenal dimensions, were taken out in this area in 1942 and the district shows promise of becoming an important producer. Muscovite of "ruby" quality was recently found in Bergeronnes township, Saguenay county, Quebec, from where there was a small production in 1942.

"Most of the production of phlogopite has been derived from a comparatively restricted area in adjacent parts of Ontario and Quebec, in the general Ottawa region, and extending roughly from Kingston, northeastward into Gatineau and Papineau counties, Quebec. In Quebec, the mica-bearing series extends for some distance west and east of the main productive district into Pontiac and Argenteuil counties respectively and there are also several scattered occurrences as far east as Quebec City. In Ontario, similar outlying deposits extend westwardly into Hastings and Haliburton counties. In recent years most of the productive activity has been centred on deposits in Quebec.

"Muscovite and phlogopite sheet mica are used almost entirely for electrical insulation. They are cut or punched into a great variety of shapes and sizes and in the form of splittings are bonded and pressed into large sheets that can be sawn, bored, and machined into any desired article. Some clear mica, mostly muscovite, is used as stove windows and in lighting equipment and there is a limited demand for special large-sized, flawless sheet for use in marine compass dials, boiler gauges, and in the iconoscopes of television transmitters. Muscovite and phlogopite are essential in the manufacture of aviation sparkplugs, the latter for the nose-washers at the base of the plug, which are required to possess high heat-resistance, and the former, in the shape of washers, for the barrel, and as thin sheets (so-called "cigarette mica") for the spindle-wrapping and radio shield. Large quantities of muscovite are used in the form of thin sheets for radio condenser films. For all such uses muscovite must be of the best quality, free from spotting or heavy staining. Spotted and stained muscovite ("electric" mica) is used mainly in domestic heater appliances, such as toasters, and flat-irons, and inferior, ribbed material is punched into washers and discs for various insulating purposes. Because of the restrictions on the manufacture of a wide range of electrical equipment an abundant supply of low-grade muscovite is available and such material is difficult to market.



"Fine flake or powdered mica made mainly from muscovite, and also from phlogopite and even biotite, has become an important industrial product, particularly in the United States, where a number of plants are engaged in its manufacture by wet and dry systems of grinding. The raw material is variously mine and shop waste or scrap, small sheets and flakes recovered from clay-washing plants, and schist rock mined for the purpose.

"Mica prices in general are difficult to determine owing to the lack of reliable market quotations and to the prevailing system of trade discounts. Quality has such a bearing on value that the only satisfactory method of getting information is to submit samples to an accredited dealer for a quotation. The mica market is subject to pronounced periodic fluctuations in demand owing to prevailing trade conditions and to the practice by consumers of laying in stocks well ahead of current requirements.

"Both phlogopite and muscovite are regarded as 'strategic' war minerals, and have been included among the minerals dealt with in the 'Prospectors' Guide', issued by the Mines and Geology Branch, Department of Mines and Resources, Ottawa, in 1942. Copies of this publication may be obtained by applying to the Director of the Branch."

**Table 192.—Consumption of Mica in Canada, by Industries, as Reported to the Annual Census of Industry, 1941 and 1942**

	1941		1942	
	Quantity	Cost at works	Quantity	Cost at works
	Tons	\$	Tons	\$
In Electrical Apparatus Industry.....	113	168,769	102	180,740
In Rubber Industry.....	155	15,565	112	10,960
In Roofing (a).....	448	25,975	436	25,340
In Mica Manufacturing Industry.....	134	28,845	196	35,151
<b>Total accounted for.....</b>		<b>239,154</b>		<b>252,191</b>

(a) Includes mica used in manufacture of wall paper.

**Vermiculite:**—Vermiculite, an altered variety of phlogopite or biotite mica, which swells enormously when heated, yielding an exceedingly light-weight and bulky, cork-like material, is now widely utilized in the heat-treated, expanded form as a valuable heat and acoustical insulation product. Most of the world production comes from the United States, and large quantities of the crude mineral are imported into Canada for processing. No authenticated occurrences are known in Canada, though there have been unconfirmed reports of deposits in the Albreda district, British Columbia. The crude material sold in 1941 at \$9.50 to \$12 per ton f.o.b. mines in North Carolina and Montana, respectively, while the expanded product retailed at around \$1 per 24-pound bag of 4 cubic feet at Eastern Canadian points.

**Table 193.—Principal Statistics of the Mica Mining Industry in Canada, 1941 and 1942**

	1941	1942		
	Canada (*)	Quebec	Ontario	Canada (*)
Number of firms or operators.....	81	84	20	106
Capital employed.....	\$ 1,189,097	1,113,707	347,062	\$ 1,460,769
Number of employees—On salary.....	16	22	13	35
On wages.....	239	243	83	326
<b>Total.....</b>	<b>246</b>	<b>265</b>	<b>93</b>	<b>361</b>
Salaries and wages—Salaries.....	\$ 23,193	29,823	15,322	\$ 45,145
Wages.....	\$ 158,607	147,602	65,508	\$ 213,460
<b>Total.....</b>	<b>\$ 181,800</b>	<b>177,685</b>	<b>80,920</b>	<b>\$ 258,605</b>
Selling value of products (gross).....	\$ 335,288	285,263	89,243	\$ 383,567
Cost of fuel and electricity.....	\$ 17,765	13,945	4,207	\$ 18,152
Cost of process supplies used.....	\$ 21,824	16,553	2,608	\$ 19,161
<b>Selling value of products (net).....</b>	<b>\$ 295,759</b>	<b>254,765</b>	<b>82,428</b>	<b>\$ 346,254</b>

(\*) Does not include general statistics for one operating mill and one mine in British Columbia for which data are not available.

Table 194.—Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month or Nearest Work Day, 1941 and 1942

Month	1941			1942			
	Mine	Shop (a)		Mine		Shop (a)	
		Male	Female	Surface	Under-ground	Male	Female
January.....	94	61	7	67	52	85	69
February.....	81	67	6	63	50	89	51
March.....	73	62	24	66	43	87	51
April.....	80	64	22	78	41	81	43
May.....	100	74	38	99	42	78	45
June.....	132	75	50	102	45	80	51
July.....	135	74	50	120	52	95	52
August.....	123	68	45	133	46	100	77
September.....	124	71	38	127	41	94	73
October.....	110	70	33	130	61	74	75
November.....	129	69	29	133	54	74	133
December.....	116	79	35	100	40	71	139

(a) Includes some outside workers.

Table 195.—Capital Employed in the Mica Mining Industry in Canada, by Provinces, 1942

	Quebec	Ontario	Canada†
CAPITAL EMPLOYED AS REPRESENTED BY—			
Present cash value of the land (excluding minerals).....	846,925	196,409	1,043,334
Present value of buildings, fixtures, machinery, tools and other equipment.....	85,490	41,290	126,780
Inventory value of minerals on hand, ore in process, fuel and miscellaneous supplies on hand.....	67,854	13,793	81,647
Inventory value of finished products on hand.....	10,280	57,981	68,261
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)....	103,158	37,589	140,747
<b>Total.....</b>	<b>1,113,707</b>	<b>347,062</b>	<b>1,460,769</b>

† Does not include data for 1 property in British Columbia.

## PEAT INDUSTRY

The Canadian peat industry comprises both firms producing peat as a fuel and peat moss and humus for various other purposes. During 1942 only 172 short tons of peat fuel valued at \$1,204 were commercially produced in Canada. This output came from a bog located in Ellice township, Perth county, Ontario. At Terence Bay, Nova Scotia, a few tons of peat were cut in 1942 for experimental purposes by one of the parish priests. No other reports of the mining of peat for use as a fuel were received during the year under review.

The production of peat moss in the Dominion during 1942 showed a remarkable increase over that of the previous year. Commercial shipments totalled 53,506 short tons with a value (less cost of containers) of \$1,069,372 compared with 27,803 short tons worth \$644,253 in 1941. Production of moss in 1942 was reported from bogs located in New Brunswick, Quebec, Ontario, Manitoba, Alberta and British Columbia. Of the total tonnage shipped, 53 per cent originated in British Columbia, 24 per cent in Quebec and 18 per cent in Ontario. Shipments according to use were as follows: 12,071 tons for horticultural purposes; 113 tons as insulation; 17,344 tons as poultry and stable litter; 23,927 tons for metallurgical purposes and 51 tons for other uses. Included in the tonnage of moss sold for horticultural use were 324 tons of humus. Products were marketed in the form of bales, bags, pads and insulation manufactures. The cost of packing material and containers totalled \$237,721. Canadian moss sold for metallurgical purposes was for consumption in the United States in the production of magnesium metal.

The number of firms reported as active in the production of peat moss or the development of peat moss bogs totalled 35 in 1942. Capital was reported at \$3,212,921 and \$1,380,142 were distributed as salaries and wages to 1,316 employees. The net value of production in 1942 was estimated at \$1,031,211.

Table 196.—Principal Statistics of the Peat Industry in Canada, 1941 and 1942

	1941	1942
Number of firms.....	(a)22	(b)35
Number of plants or bogs.....	22	35
Capital employed.....	\$ 825,154	3,212,921
Number of employees—On salary.....	37	69
On wages.....	630	1,247
<b>Total.....</b>	<b>667</b>	<b>1,316</b>
Salaries and wages—Salaries.....	\$ 65,988	113,781
Wages.....	420,128	1,266,361
<b>Total.....</b>	<b>\$ 486,116</b>	<b>1,380,142</b>
Selling value of products (gross).....	\$ 646,408	1,308,297
Cost of fuel and electricity.....	\$ 17,327	25,866
Process supplies used.....	\$ 145	13,499
Cost of containers or packing material.....	\$ .....	237,721
Selling value of products (net).....	\$ 628,936	1,031,211

(a) Includes two producing fuel. (b) Includes one producing fuel.

Table 197.—Capital Employed in the Peat Industry in Canada, by Provinces, 1942

Province	Capital employed as represented by:					Total
	Present cash value of land	Present value of buildings, fixtures, machinery, tools and other equipment	Inventory value of materials on hand, fuel and miscellaneous supplies on hand	Inventory value of finished products on hand	Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)	
	\$	\$	\$	\$	\$	\$
Quebec.....	76,200	211,320	78,287	27,654	25,731	419,192
Ontario.....	32,900	110,145	59,305	4,500	10,120	222,979
Manitoba (*).....	5,000	63,047	50,557	4,404	5,100	128,108
British Columbia.....	74,000	550,642	643,135	14,402	1,160,397	2,442,643
<b>Canada.....</b>	<b>188,166</b>	<b>935,154</b>	<b>831,284</b>	<b>50,960</b>	<b>1,207,357</b>	<b>3,212,921</b>

\* Includes data for one firm in New Brunswick and one in Alberta.

Table 198.—Wage-Earners, by Months, 1942

Month	Bog		Dressing plant	
	Male	Female	Male	Female
January.....	571	1	189	.....
February.....	607	1	184	.....
March.....	747	1	102	.....
April.....	758	10	113	.....
May.....	846	43	143	6
June.....	1,169	80	146	10
July.....	2,069	554	147	6
August.....	1,744	415	132	6
September.....	937	68	184	23
October.....	817	39	229	25
November.....	645	11	273	21
December.....	498	3	252	31

Table 199.—Peat Fuel Produced in Canada, 1928-1942 (tons of 2,000 pounds)

Year	Tons	\$
1928.....	1,497	5,845
1929.....	2,607	13,339
1930.....	2,847	10,932
1931.....	1,674	7,033
1932.....	3,248	7,503
1933.....	1,131	3,449
1934.....	1,878	7,343
1935.....	1,340	5,701
1936.....	1,341	7,376
1937.....	478	2,676
1938.....	620	3,500
1939.....	445	2,445
1940.....	30	75
1941.....	355	2,155
1942.....	172	1,204

NOTE:—For information of a technical nature, please refer to report No. 614 "Facts About Peat" issued by the Bureau of Mines, Ottawa.



Table 200.—Production (Shipments) of Peat Fuel and Peat Moss in Canada, by Uses and by Provinces, 1942

Province	Fuel		Moss											
	Tons	\$	Horticulture		Insulation		Poultry and stable litter		Metallurgy		Other uses		TOTAL Moss	
			Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$(*)
Quebec.....			4,410	74,332	81	2,104	8,491	121,124					12,982	197,560
Ontario.....	172	1,204	5,832	89,058	1	46	3,594	58,625					9,427	147,720
Manitoba, New Brunswick and Alberta.....			541	8,358	31	542	2,005	56,412					2,577	65,312
British Columbia.....			1,288	28,318			3,254	77,302	23,927	549,774	51	3,377	28,520	658,771
<b>Total.....</b>	<b>172</b>	<b>1,204</b>	<b>12,071</b>	<b>200,066</b>	<b>113</b>	<b>2,692</b>	<b>17,344</b>	<b>313,463</b>	<b>23,927</b>	<b>549,774</b>	<b>51</b>	<b>3,377</b>	<b>53,506</b>	<b>1,069,372</b>

(\*) Less cost of containers.

The following abstracts are from a report prepared by H. A. Leverin of the Bureau of Mines, Ottawa—Memorandum series 83—February, 1943:

"Peat occurs in nature in two distinct forms, unhumified and humified, differing markedly in physical properties and chemical composition. Unhumified peat is the dead moss of sphagnum mosses, only slightly humified; it is fibrous, elastic, of light greyish green, yellowish to light brown colour, becoming, on drying, somewhat darker. It has an absorptive value of 10 to 26 times its own weight, is light in weight and is porous. Humified peat in its natural state is dark brown to black, colloidal, plastic, homogeneous and somewhat elastic. It dries into a hard solid mass of a specific gravity higher than water. It has almost no absorptive value. Unhumified peat left in its natural state will humify in course of time and all fibrous matter eventually disappears. Humified peat in the trade is usually named 'fuel peat' and unhumified or slightly humified peat 'peat moss'. The latter nomenclature may be considered correct in regard to unhumified Canadian peat products, because most of them are derived from sphagnum mosses, but there are many large deposits in Canada and in the United States that originated from *carex* (consists mainly of the residues of straws, leaves and roots of the tall-stemmed sedges of the *carex* group) and other sedges, reed, hypnum and a mixture of aquatic plants and these should not be sold under the name of peat moss; these are of much lower quality than the sphagnum mosses. The name peat moss, however, has become the established trade name for unhumified and slightly humified peats. Sphagnum moss, sometimes termed 'white moss' or genuine peat moss is by far the best raw material and yields the best grade of commercial peat moss.

"Sphagnum peat moss seldom occurs in deposits in a pure state but is generally intermixed with the residues of *Eriophorum* (cotton grass), sedges, hypnum mosses, *Andromeda Glaucophylla* (bog rosemary), *Ledun decumbens* (labrador tea), *Vaccinium oxycoccus* (cranberry), *Empetrum nigrum* (crowberry), *Sarracenia purpurea* (pitcher plant), etc., etc.

"Canada possesses an abundance of sphagnum moss in every province and as it fetches the best price and costs no more to produce than the inferior grades of unhumified peat it should be possible to maintain the high quality of Canadian peat moss on the export market.

"In the peat moss trade some confusion exists in regard to the quality of the products, no standard having been so far generally adopted in regard to the name of the products, the physical and chemical standards of the peat, and the size and weight of the packages. In Canada and the United States the word peat moss is generally used, whether the product is derived from moss, sedge, reed or other aquatic plants. Bales and packages are of many sizes, in Europe ranging from 130 to 220 pounds and in Canada they range from 75 to 130 pounds, and many other sizes of smaller packages are in use according to the requirements of the trade.

"Of great importance to the peat moss industry is the fact that the United States Treasury Department, through its Procurement Division, Washington, D.C., has adopted standards for the distinct grades of peat recognized commercially, and has issued specifications to cover their purchases by the Federal Government. Peat should be furnished in the following types and classes, as specified in the invitation bids:

Type I. Moss peat (\*).

Class A.—Horticultural grades (fine shreds).

Class B.—Poultry litter (medium shreds).

Class C.—Stable bedding (coarse shreds).

Type II. Reed or sedge muck.

Type III. Reed peat or sedge peat.

Class A.—Acid grade.

Class B.—Nearly neutral grade.

(\*) Moss peat shall be the poorly decomposed (fibrous or cellular) stems and leaves of any of the several species of sphagnum mosses. The PH value shall be not less than 3.5 and not greater than 5.5. Peat shall be furnished in air-dry condition and shall contain not more than 35 per cent moisture by weight. Water holding capacity shall be not less than 1100 per cent by weight, on an oven-dry basis.

## THE SALT INDUSTRY

Production of common salt or sodium chloride in Canada during 1942 totalled 653,672 net tons valued at \$3,844,187, compared with 560,845 net tons worth \$3,196,165 in 1941. The quantity and value of the output during the year under review were the highest ever realized by the Canadian salt industry. The mineral in 1942 was produced in Nova Scotia, Ontario, Manitoba and Alberta, and of the total production, Ontario contributed 558,407 net tons or 85.4 per cent. Statistics of production represent the recovery of salt from brine wells with the exception of Nova Scotia, where the output comes entirely from the underground mining of rock salt deposits.

Of the total salt produced in 1942, there were 327,548 net tons or 50.1 per cent consumed by the producers themselves in the manufacture of caustic soda and other chemicals. Producers' sales of salt in 1942 included 87,743 net tons of table and dairy grades; 150,008 net tons of common fine, and 35,271 net tons of common coarse. The balance of Canadian shipments in 1942 consisted of various other varieties, including salt for agriculture and for highway maintenance. A report issued by the Bureau of Mines, Ottawa, states that definite zones in which indications of potash salts occur have been correlated from the second to the twenty-sixth level of the Mulagash mine in Nova Scotia, and there appears to be an increase in the potash content in depth. The study of these zones is being continued. Detailed studies have also been started with a view to improving the grade of fishing salt obtained from this deposit, and encouraging results are being obtained. No salt deposits in the United States are known to be nearer than about 200 miles from the Atlantic coast, and some industries along the coast, such as fish curing, have usually found it easier to use salt imported chiefly from the West Indies. The submarine menace during the early part of the present war made it increasingly difficult to obtain salt from this source and these consumers were largely obliged to obtain their supplies from within the United States and Canada.

The number of Canadian firms reporting primary salt production in 1942 totalled 9; capital employed by the industry amounted to \$5,687,511, of which \$3,500,950 represented the value of buildings, machinery, etc., and \$278,495 the value of land. Employees numbered 675, including 80 females. Salaries and wages totalled \$1,114,574; \$536,649 were expended for fuel and electricity and \$133,783 for chemicals and other process supplies.

The "apparent" consumption of salt in Canada in 1942 is estimated at 718,470 net tons valued at \$4,151,247 compared with 629,754 net tons worth \$3,524,285 in 1941.

Statistics relating to Canadian salt production are available only since 1886 and salt output in the Dominion since that year to the end of 1942 totalled 10,093,218 net tons valued at \$57,914,461. Statistics relating to world production of salt have not been available since 1938.

Caustic soda, chlorine and hydrochloric acid are now manufactured by Canadian Industries Limited from salt obtained from the Company's wells located at Sandwich. This Company operates chemical plants at Windsor, Cornwall, Shawinigan Falls and Quebec.

The Brunner, Mond Canada, Limited, located at Amherstburg, Ontario, manufactures soda ash from natural brine; calcium chloride is also recovered as a by-product by this company.



Table 201.—Production of Salt in Canada, by Grades, 1941 and 1942

	1941			1942		
	Manu- factured	Sold	Value of salt sold (Not including containers)	Manu- factured	Sold	Value of salt sold (Not including containers)
	tons	tons	\$	tons	tons	\$
Table, dairy and pressed blocks.....	79,683	78,901	1,372,409	89,588	87,743	1,098,210
Common, fine.....	133,103	131,001	733,072	147,168	150,008	890,906
Common, coarse.....	36,807	35,838	360,772	33,794	35,271	330,322
Highway salt.....	7,069	7,069	36,986	996	996	5,438
Land salt.....	626	641	4,254	514	509	3,493
Other grades.....	47,208	48,684	258,019	52,239	51,597	335,037
Brine for chemical works (salt equivalent sold or used).....	258,711	258,711	430,653	327,548	327,548	580,781
Total.....	563,207	560,845	3,196,165	651,847	653,672	3,844,187
Value of containers.....			656,334			748,816
<b>Grand Total.....</b>	<b>563,207</b>	<b>560,845</b>	<b>3,852,499</b>			<b>4,593,003</b>

Table 202.—Salt Produced for Chemical Purposes\*, 1928-1942

Year	Quantity Tons (2,000 lb.)	Per cent of total salt output	Year	Quantity Tons (2,000 lb.)	Per cent of total salt output
1928.....	135,138	45	1936.....	165,882	42
1929.....	168,327	51	1937.....	205,149	45
1930.....	114,737	42	1938.....	170,938	39
1931.....	97,958	38	1939.....	187,958	44
1932.....	96,242	37	1940.....	224,009	48
1933.....	104,740	37	1941.....	258,711	46
1934.....	124,132	39	1942.....	327,548	50
1935.....	145,433	40			

(\*) Used in the manufacture of chemicals by producers of salt.

Table 203.—Available Statistics on Consumption of Salt, in Specified Canadian Industries, 1941 and 1942\*

Industry	1941		1942	
	Quantity used	Cost at works	Quantity used	Cost at works
	Pounds	\$	Pounds	\$
Fish canning and curing (factories only.).....	44,229,400	363,201	44,918,800	460,162
Slaughtering and meat packing.....	102,888,000	702,348	112,575,017	775,059
Acids, alkalies and salts—Brine (salt content) and dry salt.....	495,346,445	708,321	613,076,907	886,119
Soaps and cleaning preparations.....	5,823,762	24,311	4,363,370	22,822
Dyeing, cleaning and laundry work.....	5,018,198	49,389	6,286,284	56,970
Dyeing and finishing of textiles.....	3,379,482	19,898	5,564,143	25,709
Artificial ice.....	428,411	3,550	474,440	3,720
Abrasives—artificial.....	826,000	4,280	784,000	4,172
Waterworks.....	1,000,000	(†)	3,596,200	(†)
Leather tanneries.....	16,212,371	84,365	16,412,227	85,305
Pulp and paper mills.....	28,772,000	118,015	28,600,000	132,161
Stock and poultry foods.....	6,258,000	46,353	8,158,000	63,376
Bread and other bakery products.....	14,444,719	170,892	15,481,319	183,393
Fruit and vegetable preparations.....	14,476,063	102,009	13,212,011	98,254
Biscuits, confectionery, etc.....	1,609,456	17,685	1,894,910	18,615
Foods, breakfast.....	1,290,819	10,211	1,386,367	10,976
Sausage and sausage casings.....	706,466	7,996	637,966	7,054
Ice cream industry.....	414,880	2,749	458,925	2,203
Breweries.....	721,984	7,530	1,055,986	8,977
Malt and malt products.....	222,150	1,236	220,500	1,278
Macaroni, vermicelli, etc.....	74,259	817	115,602	1,213
Ice cream cones.....	6,006	195	6,394	66
Foods, miscellaneous, including coffee, tea, etc.....	2,603,422	26,014	2,693,050	27,063
Butter and cheese.....		214,650		240,607
Starch and glucose.....	492,467	2,302	623,360	2,625
Animal oils and fats.....	270,000	1,200	304,000	1,850
Condensed milk.....		512		409
Cheese, processed.....	148,534	2,283	239,263	4,573

(\*) In addition, large quantities of salt are used on highways.

(†) Value not compiled.

Table 204.—Principal Statistics of the Salt Industry in Canada, 1940-1942

	1940	1941	1942
Number of firms (*).....	9	9	9
Capital employed..... \$	4,993,914	5,559,307	5,687,511
Number of employees—On salary.....	120	148	134
On wages.....	466	520	541
Total.....	586	668	675
Salaries and wages—Salaries..... \$	299,521	361,661	337,050
Wages..... \$	530,985	656,991	777,524
Total..... \$	836,506	1,018,652	1,114,574
Selling value of products (gross)..... \$	3,322,250	3,852,499	4,593,003
Cost of purchased process materials..... \$	40,198	69,341	133,783
Cost of fuel and electricity..... \$	321,589	450,291	536,649
Value of containers..... \$	498,981	656,334	748,816
Net value of sales..... \$	2,461,482	2,676,533	3,173,755

(\*) 6 in Ontario; 1 in Nova Scotia; 1 in Manitoba; 1 in Alberta.

Table 205.—Capital Employed in the Salt Industry in Canada, 1942

	\$
CAPITAL EMPLOYED AS REPRESENTED BY—	
Present cash value of the land (excluding minerals).....	278,495
Present value of buildings, fixtures, machinery, tools and other equipment.....	3,500,950
Inventory value of materials on hand, salt in process, fuel and miscellaneous supplies on hand.....	501,470
Inventory value of finished products on hand.....	102,082
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	1,304,514
Total.....	5,687,511

Table 206.—Wage-Earners, by Months, 1939-1942 (On last day of each month or nearest work day)

Month	1939	1940	1941	1942		
				Male		Female
				Surface	Under-ground	Surface
January.....	440	431	428	447	43	25
February.....	426	430	435	449	50	27
March.....	407	442	449	442	46	28
April.....	424	463	484	448	48	26
May.....	439	490	516	462	49	28
June.....	459	477	543	473	57	30
July.....	400	403	558	482	52	31
August.....	416	503	564	464	52	32
September.....	431	490	565	458	53	37
October.....	458	483	574	454	52	36
November.....	440	492	563	472	52	45
December.....	408	396	556	456	50	39
Average.....	434	466	529	459	50	32

## POTASH

Natural potash salts are not yet mined or recovered on a commercial scale in Canada. Potash occurs in small quantities in rock salt strata at Malagash, Cumberland County, Nova Scotia, and at Gautreau, Westmorland County, New Brunswick. Potassium chloride occurs at Malagash in a number of definite bands in the salt mass in the form of crystalline beds of pink and yellowish green sylvite in the matrix of halite.

Complete statistics relating to world production of potash are not available for 1941 or 1942 as publication of potash statistics by European governments virtually ceased in the summer of 1939, and no adequate data are available since.

Table 207.—Potash Salts Used in the Manufacture of Canadian Mixed Fertilizers, 1941 and 1942

	1941		1942	
	Tons	Cost at works	Tons	Cost at works
		\$		\$
Nitrate of potash.....	4	560	90	876
Kainite and potash manure salts.....	3,280	59,232	30,182	587,489
Muriate of potash.....	42,815	1,540,783	41,848	1,686,724
Sulphate of potash.....	2,088	134,839	4,525	196,754

Table 208.—Sales of Potash Salts for Fertilizer Purposes, other than for the Manufacture of Mixed Fertilizers, Years Ended June 30, 1941 and 1942

	1941	1942
	(short tons)	
Muriate of potash.....	7,425	5,419
Sulphate of potash.....	132	122

## TALC AND SOAPSTONE INDUSTRY

The value of crude and refined talc and soapstone sold by Canadian producers of these minerals in 1942 totalled \$310,824 compared with a corresponding value of \$360,809 in 1941. Mine shipments of soapstone in 1942 totalling 14,369 tons and valued at \$136,529 came entirely from the Eastern Townships in the province of Quebec. Production of high grade talc is confined chiefly to the province of Ontario, and in 1942 shipments totalling 15,499 net tons valued at \$174,295 were made from properties located near Madoc, Hastings county, and from a deposit situated in Canonto township in Frontenac county. In British Columbia, crude talc imported from the United States was treated in a mill operated by Geo. W. Richmond & Company of Vancouver.

During 1942 there were 10 firms reported as active in the industry, 7 in the province of Quebec and 3 in Ontario; all of these made commercial mine shipments. Capital employed in the industry totalled \$567,665; employees numbered 115 and \$113,601 were distributed as salaries and wages. Fuel and purchased electricity consumed were appraised at \$25,905 and the cost of explosives and other process supplies used was reported at \$33,208. The net value of sales in 1942 was estimated at \$251,711 compared with \$305,603 in 1941.

The following information is from a report prepared by the Bureau of Mines, Ottawa:

"The entire talc and soapstone production of Canada has for some years past come from Ontario and Quebec. More than 90 per cent of the total output of talc to the end of 1942, however, came from the Madoc area, Hastings county, Ontario, which supplies ground talc of good white colour, while Quebec produces mainly a grey, off-colour grade. Quebec is the only producer of cut soapstone blocks and bricks, and of sawed crayons.

"Development of the Madoc deposits commenced about 1900 and total output to date is estimated to have been about 400,000 tons. Since 1937, Canada Talc Limited, operating the Conley mine, has furnished most of the supply, having taken over the mine and mill of the G. H. Gillespie Company, the pioneer operator, in that year. Production is at the rate of about 15,000 tons a year. There have been various other small, intermittent operations in the area but these have accounted for only a small tonnage. In 1941, Trent Mining Syndicate commenced development on a property adjoining the Conley mine and erected a small mill, but was inactive during most of 1942. W. C. Spry (Victory Talc) continued to grind a small tonnage of off-colour talc in the mill of Canada Slate Products about a mile north of Madoc, the crude rock being obtained from a deposit near Ompah, Frontenac county, 65 miles distant. The Ompah talc is finely schistose, cream-coloured, and quite distinct in character from that of the Madoc district.



"Quebec has been producing cut soapstone since 1922, mainly in the form of blocks and bricks for the alkali recovery furnaces of domestic kraft mills. The sawing of crayons was commenced a few years ago. The industry is centred in the Thetford Mines district, Eastern Townships, where Broughton Soapstone and Quarry Company is the principal operator. This company operates two soapstone quarries near Leeds station in Broughton township and in addition to turning out cut stone and crayons produces most of the ground tale made in the province. Other smaller operators in the same district are Charles Fortin, of Robertson, and L. C. Pharo, of Thetford Mines, working in Thetford and Leeds townships, respectively. Some of the sawing dust from these operations is sold to domestic roofing firms and a considerable tonnage of quarry and sawing waste is shipped to the grinding plant of Pulverized Products, Limited, 4820 Fourt Avenue, Rosemount, Montreal. Total sales of cut stone from the district in 1942 were about 3,000 tons and of ground tale about 8,500 tons. Baker Mining and Milling Company, 4010 St. Catherine Street West, Montreal, the only other operator in Quebec, has a mine and mill near Highwater in Brome county, close to the Vermont boundary. The company began to produce in 1938 and in 1941 reported sales of about 1,500 tons of ground tale of various grades. Total production of ground tale in the Province in 1942 was nearly 14,000 tons.

"In British Columbia the deposits near McGillivray, on the Pacific Great Eastern railway and at Kapoor near Victoria have been idle since 1935.

"Many grades of ground tale are marketed and the price range is wide. Value is dependent upon purity (governing freedom from lime and gritty or iron-bearing substances, slip, and colour), particle shape, and fineness of grinding, the specifications for which vary in the different consuming industries. Roofing and foundry tales are the cheapest grades, these trades being satisfied with coarser grey or off-colour material, often soapstone powder or sawing dust, which sells at about \$5 to \$7 a ton f.o.b. rail. Domestic grey tale, suitable for rubber and paper use, sold in 1942 for an average of \$7 to \$8 per ton. White, Madoc tale was quoted at \$7 to \$10 for the coarser grades, \$11 to \$28 for finer mesh sizes, and \$44 for minus 400-mesh material.

"**Pyrophyllite.**—Pyrophyllite (hydrous silicate of alumina) closely resembles tale in appearance and physical characteristics. It is difficult to distinguish from tale even by microscopic means and often requires chemical analysis for its identification. In the ground state it can be employed for many of the industrial uses of tale. Commercial deposits are relatively scarce. Most of the recorded world production comes from North Carolina where the industry has expanded rapidly in recent years. A large part of the American output goes to the ceramic trade, the remainder being sold for fillers in various products. When fired, pyrophyllite does not flux, as does tale, and it is of value in a wide range of high-grade ceramic products, including refractories.

"Important deposits are known in Newfoundland, from which some shipments were made a few years ago to the grinding mill of Clinchfield Sand and Feldspar Corporation, Baltimore, Maryland. The occurrences are at present owned and operated by Industrial Minerals Company of Newfoundland Limited, Box 435, St. John's, which in 1942 installed a grinding plant with a capacity of 25 tons a day and shipped about 500 tons of ground material to Great Britain. In Canada, some rather low-grade, sericitic pyrophyllite occurs at Kyuquot Sound on the west coast of Vancouver Island. A small quantity was shipped from these deposits about 30 years ago for use in refractories and cleanser products. None of the reported occurrences of pyrophyllite in Quebec have been developed and little is known of their extent or economic possibilities. One such deposit in Stanstead township, near Lake Memphremagog, was investigated in 1941 by the Bureau of Mines, but the material proved to be sericite.

"In 1942, pyrophyllite was quoted at \$8 to \$13 a ton, f.o.b. North Carolina mills, for 200-mesh and 325-mesh material, respectively."

Table 209.—Production (Sales) in Canada of Talc and Soapstone, 1940-1942

	1940		1941		1942	
	Quantity	Value	Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$	Tons	\$
Soapstone (Quebec) (*).....	8,625	74,905	10,461	155,925	14,360	136,529
Talc—Ontario.....	15,166	154,734	18,171	204,884	15,499	174,295
<b>Total Canada.....</b>	<b>23,791</b>	<b>229,639</b>	<b>28,632</b>	<b>360,809</b>	<b>29,859</b>	<b>310,824</b>

(\*) Shipments by some firms usually include a considerable quantity of material classified as talc.

**Table 210.—Consumption of Talc in Canada, by Industries, as Reported in the Annual Census of Manufactures, 1942 and 1941**

Industry	1941		1942	
	Short tons	Cost at works \$	Short tons	Cost at works \$
Rubber industry.....	1,093	21,194	1,409	27,450
Electrical apparatus.....	438	10,906	354	9,770
Paints.....	3,789	130,215	5,428	154,814
Soaps and cleansing preparations.....	793	21,244	602	13,640
Toilet preparations.....	562	27,377	513	22,015
Polishes.....	19	478	18	397
Products from imported clays.....	762	11,542	565	7,774
Prepared roofing.....	4,740	49,750	4,166	47,928
Pulp and paper (talc and agalite).....	1,169	19,023	1,812	31,378

**Table 211.—Principal Statistics of the Talc and Soapstone Industry in Canada, 1940-1942**

	1940	1941	1942
Number of firms.....	8(b)	8(c)	10(a)
Capital employed..... \$	319,398	695,581	567,665
Number of employees—On salary.....	7	8	8
On wages.....	87	140	107
<b>Total.....</b>	<b>94</b>	<b>148</b>	<b>115</b>
Salaries and wages—Salaries..... \$	19,563	21,564	22,729
Wages..... \$	61,316	107,256	90,872
<b>Total..... \$</b>	<b>80,879</b>	<b>128,820</b>	<b>113,601</b>
Selling value of products (Gross)..... \$	229,639	360,809	310,824
Cost of fuel and purchased electricity..... \$	15,480	20,882	25,905
Cost of explosives and other process supplies..... \$	21,650	28,324	33,208
Selling value of products (net)..... \$	192,509	305,603	251,711

(a) 7 firms in Quebec and 3 in Ontario; data for 1 firm in Quebec, other than sales, not available.

(b) 6 firms in Quebec and 2 in Ontario.

(c) 5 firms in Quebec and 3 in Ontario.

**Table 212.—Capital Employed, by Classes\*, 1940-1942**

	1940	1941	1942
	\$	\$	\$
Present value of land, buildings, fixtures, machinery, tools and other equipment.....	284,993	590,303	458,036
Inventory value of materials on hand, stocks in process, fuel and miscellaneous supplies on hand.....	5,184	18,343	9,465
Inventory value of finished products on hand.....	6,518	8,915	21,385
Operating capital.....	22,703	78,020	78,779
<b>Total.....</b>	<b>319,398</b>	<b>695,581</b>	<b>567,665</b>

(\*) By active firms.

**Table 213.—Wage-Earners, by Months, 1941 and 1942**

Month	Total 1941	1942		
		Surface	Under-ground	Mine
January.....	99	55	57	29
February.....	108	63	56	29
March.....	100	46	58	25
April.....	121	43	49	25
May.....	131	43	45	22
June.....	150	46	45	20
July.....	149	53	34	23
August.....	161	47	25	21
September.....	153	35	27	23
October.....	173	33	25	24
November.....	169	34	25	22
December.....	167	41	18	20

## MISCELLANEOUS INDUSTRIAL OR NON-METAL MINING INDUSTRIES

Included in this section are the following non-metallic minerals and mineral products:--

<b>Barite</b>	<b>Graphite</b>	<b>Phosphate</b>
<b>Brucite</b>	<b>Grindstones</b>	<b>Silica Brick</b>
<b>Corundum</b>	<b>Kyanite</b>	<b>Sodium Carbonate</b>
<b>Diamonds</b>	<b>Lithium Minerals</b>	<b>Sodium Sulphate</b>
<b>Diatomite</b>	<b>Magnesitic Dolomite</b>	<b>Strontium Minerals</b>
<b>Fluorspar</b>	<b>Magnesium Sulphate</b>	<b>Sulphur (Pyrites)</b>
<b>Garnet</b>	<b>Natural Mineral Waters</b>	

Canadian operators producing certain industrial minerals, and who are usually relatively few in number, have been segregated for statistical purposes into a single group designated as the Miscellaneous Non-Metal Mining Industry. Minerals or primary mineral products produced (or deposits developed) by this industry during 1942 included: barite, brucite, diatomite, fluorspar, graphite, grindstones, lithium minerals, magnesitic dolomite (crude and refined), mineral waters, phosphate, silica brick, sodium carbonate and sodium sulphate. For convenience, the sulphur content of pyrites shipped and sulphur recovered from smelter gas, are recorded with the various miscellaneous minerals listed above; the value of sulphur production, however, is not included in the total for the miscellaneous non-metallic or industrial minerals as the value of this element is credited to the copper-gold-silver mining and non-ferrous smelting industries.

The number of firms reported as active in the industry during 1942 was 61; capital employed totalled \$4,919,871; employees numbered 811 and salaries and wages paid amounted to \$1,142,072. The cost of fuel, purchased electricity and process supplies used during the year was reported at \$952,860 and the gross value of production totalled \$3,006,167 compared with \$3,089,156 in 1941.

## BARITE

Production (mine shipments) of barite in Canada during 1942 totalled 19,667 short tons valued at \$188,144 compared with 6,890 short tons worth \$74,416 in 1941. Production in 1942 represented shipments made by Canadian Industrial Minerals Limited from deposits located near Walton, Hants county, Nova Scotia, and by the Summit Lime Works Limited from deposits situated near Parson in the Golden mining division of British Columbia. In the province of Quebec, some development work was conducted in 1942 on a barite deposit by Mr. A. Lambert of Lac aux Sables, Portneuf county; no commercial shipments were reported. Included in the shipments made in 1942 by the Summit Lime Works Limited was a relatively small tonnage of high-grade barite obtained from a deposit 30 miles south of Elko on the Crow's Nest branch of the Canadian Pacific Railway.

"Barite in 1942", issued by the Bureau of Mines, Ottawa, states:

"Canada's largest known reserves of barite are situated in Nova Scotia, which has produced most of the recorded output. Total production of the Dominion from 1885 to the end of 1942 amounted to 68,245 tons valued at \$571,628.

"In addition to the Nova Scotia occurrences, deposits are known in Ontario, Quebec, and British Columbia. Various attempts have been made over a period of years to develop a barite industry in Ontario, but with little success. Prior to 1941, little attention had been paid to occurrences in British Columbia, but a small tonnage was produced in that year and shipments increased considerably in 1942.



"The most important development in the history of the industry was the discovery in 1940 of a very large deposit near Walton, Hants county, Nova Scotia. Drilling has indicated reserves of 1½ million tons of ore to a depth of 200 feet. The occurrence is being actively developed by Canadian Industrial Minerals Limited, a subsidiary of Springer-Sturgeon Gold Mines Limited, 57 Yonge Street, Toronto, which has installed a mill at tide-water, 2½ miles distant and is turning out a 325-mesh product designed primarily for use in oil drilling for which a ready market exists in Trinidad and South America. Shipments of crude are also being made both for United States and domestic use in the manufacture of lithopone and barium chemicals. The Walton barite is mostly off-colour material, of a strong reddish shade and thus is not suitable for the general pigment and filler trade without bleaching. It is, however, high in barium sulphate, with a specific gravity of 4.25 or over, and is well adapted to oil drilling use. Shipments from this source totalled nearly 7,000 tons in 1941 and in 1942 rose to over 17,000 tons.

"No critical situation in respect to barite has developed as a result of war needs and ample reserves are available for Allied use. The United States has stepped up production to care for increased demands for defence purposes, mainly to replace imports for the manufacture of barium chemicals and for use in rubber and camouflage paints. Certain barium salts, chiefly the nitrate and peroxide, are used extensively in military pyrotechnics, and in the primer mixtures of incendiary bombs.

"Canadian consumption of barite, estimated from import figures and sales of domestic material, is under 5,000 tons a year.

"Barite is a relatively low-priced commodity. Canadian quotations have been \$7 to \$10 per ton for good white crude, f.o.b. mines, depending on rail-haul; \$40 to \$44 for domestic ground material; and \$50 for prime white imported ground.

"Barite enters Canada free under the British preferential tariff; imports from other countries pay 25 per cent ad valorem. The United States imposes a duty of \$4 per ton on crude barite and \$7.50 per ton on ground or otherwise manufactured material.

"Prior to the war, world production of barite approximated one million tons a year, with Germany furnishing 50 per cent and the United States 30 per cent of the total. The remainder was obtained mainly from the United Kingdom, Italy, Greece, France and India, Cuba has recently become a potentially important source of the mineral."

Table 214.—Barite and Blanc Fixe Used by the Canadian Paints, Pigments and Varnishes Industry in Canada, 1938-1942

Year	Barite		Blanc Fixe (*)	
	Pounds	\$	Pounds	\$
1938.....	2,729,212	46,288	116,545	3,287
1939.....	2,884,985	49,659	139,408	4,455
1940.....	3,281,747	71,402	99,422	3,873
1941.....	4,996,829	112,760	160,583	8,010
1942.....	6,833,584	150,927	104,948	5,328

(\*) Artificial barium sulphate.

## CORUNDUM

Corundum is found in an area embracing several townships in Renfrew and Hastings counties in the province of Ontario. Corundum mining as an industry made its appearance there in 1900 and production reached a maximum in 1906. Shipments of the mineral in Canada during the period 1900-1921 totalled 19,524 short tons valued at \$2,104,251. No commercial shipments have been reported since 1921; however, a relatively few tons of old corundum-bearing tailings from the Craigmont area in Renfrew county, Ontario, were shipped in 1942 to the Bureau of Mines, Ottawa, for experimental purposes. Official United States quotations for corundum were not available for 1942. Emery was quoted June, 1943, per ton f.o.b. New York, domestic crude ore, first grade, \$10; other American ore, delivered to grinders, per ton, \$16 Pennsylvania, in 350 pound kegs.

In April, 1943 the United States War Production Board reported that there was an insufficient supply of corundum in the United States.

## DIAMONDS

Diamonds are not mined in Canada and Canadian consumption is derived entirely from imports. The Mining Journal, London, reviewed the diamond industry in 1942 as follows:

"During 1942 the diamond trade enjoyed marked prosperity. This was, in part, due to the demand for industrial diamonds required for war consumption needs, but, quite apart from this, substantial sales of gem diamonds have been made. While the demand for industrial diamonds at the moment is primarily concerned with war needs, there has been a noticeable increase in the variety of usages to which the diamond is now being adapted in the industrial field, and it is confidently anticipated that, after the war, the industrial diamond will maintain its place in engineering. In 1941 sales of the Diamond Trading Company, which handles the bulk of the world's diamond trade, totalled £7,500,000 of which industrial diamonds accounted for approximately £2,000,000. The relative figures for 1942 are £6,250,000 and £4,250,000. The diamond mines in the Union of South Africa were closed in 1942, their plant, etc., having been made available for war purposes".

World production of diamonds in 1938 totalled 11,455,000 metric carats valued at £7,680,000; of these totals, the Union of South Africa produced 1,238,608 metric carats valued at £3,496,243 and the Belgian Congo 7,205,921 carats worth £860,000. Other important diamond producing countries are the Gold Coast, Sierra Leone, Angola, Brazil and South West Africa.

Diamonds purchased in 1942 by Canadian contract diamond drillers, and including ready and castset bits, totalled \$634,233.

## DIATOMITE

Production of diatomite in Canada during 1942 totalled 365 short tons valued at \$9,088 compared with 344 short tons worth \$9,935 in 1941.

A report on diatomite in 1942, prepared by the Bureau of Mines, Ottawa, states:

"Diatomite consists of the microscopically small remains of siliceous shells of diatoms, a form of algae that at one time lived under water. The material of Recent fresh water origin, which is the most common in Canada, usually occurs as a grey or brown mud or peat, whereas the Tertiary diatomite is in more or less dry and compact beds, very light in weight and white to cream in colour.

"For many years International Diatomite Limited, Tatamagouche, Nova Scotia, has been the principal producer, but operations in the ponds near New Annan ceased in the fall of 1940. The principal producers in 1942 were G. Wightman, from a deposit on Digby Neck, Nova Scotia; and to a lesser extent R. L. Marsh for L. T. Fairey of Vancouver, from lot 1122 on west bank of Fraser River north of Quesnel in the Cariboo district of British Columbia.

"Northern Diatomite Company of Toronto started the erection of a treatment plant on its deposit south of Gravenhurst in the Muskoka district and production is expected by the summer of 1943. A little prospecting was done on a few other deposits, but production from any of them is doubtful.

"Normally 75 to 80 per cent of the diatomite consumed in Canada is in the form of filter-aids used mainly in the refining of cane sugar, but in 1942 only about 65 per cent was so used; 22 per cent was used for insulation; and the remainder, principally as a filler, and to a small extent in chemicals, silver polish bases, and as an admixture in concrete.

"Deposits containing medium quality diatomite are very common in some parts of Canada. Owing, however, to United States competition and to the present comparatively small Canadian demand, only properly prepared diatomite of the highest quality can be successfully marketed on a scale sufficiently large to warrant the operation of a property and the erection of a plant.

"Prior to the war diatomite was produced by about thirty countries, but outside the North American continent statistics for the past four years are not available. The United States is by far the world's largest producer and is followed in order by Denmark, Germany, Japan, Algeria, and Northern Ireland. The United States output, which is of very high quality, was about 145,000 short tons in 1942.

"The present price of Canadian diatomite for insulation varies from \$17 to \$30 and imported from \$25 to \$75 per ton for insulation, and filtration; up to \$200 in small lots for material suitable for polishes; imported insulation bricks vary from \$85 to \$140 per 1,000, according to grade and density."

**Table 215.—Consumption of Infusorial Earth by the Canadian Sugar Refining Industry, 1933-1942**

Year	Pounds	Value	Year	Pounds	Value
		\$			\$
1933.....	2,567,469	70,191	1938.....	4,908,597	101,473
1934.....	2,562,532	69,116	1939.....	4,819,811	105,711
1935.....	4,307,142	96,580	1940.....	4,984,362	112,369
1936.....	4,375,999	98,954	1941.....	5,343,131	138,973
1937.....	4,586,786	95,532	1942.....	3,007,180	75,295

**FLUORSPAR**

Canadian production (mine shipments) of fluorspar during 1942 totalled 6,199 short tons valued at \$146,039 compared with 5,534 short tons worth \$97,767 in 1941. Of the 1942 output, 300 tons came from deposits located at Trout River, Inverness county, Nova Scotia; 4,322 tons from the Madoc area, Hastings county, Ontario; 18 tons from Cardiff township, Haliburton county, Ontario, and the balance from the stock pile of the Rock Candy mine near Grand Forks, British Columbia. The Rock Candy mine is owned by the Consolidated Mining and Smelting Company of Canada Limited but was not operated in 1942.

"Operations were started by Moira Fluorspar Mining Syndicate on the Noyes property, Hastings county, Ontario, in 1939 and a mill was built to beneficiate the ore, which, as in most of the other Madoc deposits, contains considerable calcite and varite. Some fluorspar was produced, but the venture was not a success and in 1940 the company transferred its operations to the nearby Perry mine. Work was suspended, however, before the mine came into production. In 1941, work was resumed on the Noyes mine by Gilman Exploration, Ltd., of Montreal, which continued operations through 1942 and produced most of the spar shipped from the district. In 1940, the Wallbridge mine was taken over by Dominion Fluorspar Company (Halliwell Gold Mines Limited), of Montreal, which built a plant, did some diamond-drilling, and by the end of 1941, when operations were suspended, had shipped several thousand tons. In 1940, Reliance Fluorspar Mining Syndicate, of Toronto, commenced operations on the Howard, or Hill, property, adjoining the Noyes mine and continued work until September 1941 when it transferred its plant to the Perry mine, which it continued to operate through 1942. Charles Stoklosar of Madoc, who prior to the war had produced most of the small tonnage shipped from the district, re-opened the old Blakely mine in 1942 and shipped a few hundred tons. Late in the year plans were announced for re-opening the old Keene mine. Most of the above developments in 1942 were undertaken with financial and other assistance by the Dominion Government, which has also set prices for the various grades produced.

"The ores of the Madoc district, Ontario, and of the Lake Ainslie area, Nova Scotia, are intimate mixtures of fluorspar, calcite, and barite, and have proved difficult to concentrate without excessive loss of fluorspar in the middlings and tailings. In practice, run-of-mine Madoc ore is screened to remove fines, which constitute the bulk of the shipping product and these are sweetened with clean lump spar recovered by passing the coarse material over picking belts. Grade of product does not average much above 60 to 65 per cent  $\text{CaF}_2$ . Although this is considerably below the standard trade specification of 85 per cent for metallurgical fluorspar it is accepted by the steel trade under price penalty, provided the barite content does not exceed 12 per cent. Barite is objectionable on account of its sulphur content.

"Deposits of fluorspar also occur in Ontario in Cardiff township, Haliburton county, where a few tons of high-grade picked spar was produced at the Clark property in 1942.

"The Rock Candy fluorspar mine in British Columbia was operated by Consolidated Mining and Smelting Company between 1919 and 1929 but has since been idle.

"World production of fluorspar has averaged about half a million short tons annually in recent years, the United States and Germany supplying about 75 per cent of the total. The remainder has come mainly from Russia, the United Kingdom, Newfoundland, France, Korea, Italy, and the Union of South Africa. The United States produced a record total of 320,000 short tons in 1941, an increase of 37 per cent over 1940. The Newfoundland production has been increasing steadily and now supplies a large part of the Canadian demand. Canada in peacetime used from 12,000 to 15,000 tons of fluorspar a year, about half of it in the steel trade. The expansion in the production of aluminium will materially step up the demand for acid-grade spar.



"Standard fluxing gravel, or lump grade, fluorspar for metallurgical use is usually sold on a specification of 85 per cent  $\text{CaF}_2$ , with not over 5 per cent silica. It should not contain more than 15 per cent of fines. Domestic production has been considerably under 85 per cent  $\text{CaF}_2$ , with shipments lower even than 60 per cent, but marketing of such grades is subject to individual purchase agreement. The price of domestic metallurgical grade fluorspar for Canadian consumption was set in 1942 by the Metals Controller on the following basis: \$24 in U.S. funds, per short ton, f.o.b. Kentucky-Illinois mines, plus 11 per cent exchange, plus 10 per cent war exchange tax, plus freight from above field to Canadian consuming point, less freight from Canadian mine to same point, less 25 cents for each per cent  $\text{CaF}_2$  below 85 per cent. As an example, this would work out at \$36.36 per short ton for standard 85 per cent grade, f.o.b. Madoc, for shipment to Sault Ste. Marie, Ontario, or \$32.38 for shipment to Hamilton, Ontario.

"Glass and enamel grades call for not less than 95 per cent  $\text{CaF}_2$ , with a maximum of 2½-3 per cent silica and 0.12 per cent iron ( $\text{Fe}_2\text{O}_3$ ). The material must be in ground form in various mesh sizes from coarse to extra fine. American quotations for this grade throughout 1942 were \$34 per ton, in bulk, f.o.b. Illinois mines. Acid-grade spar, lump, gravel, and ground, has the strictest specification, minimum 98 per cent  $\text{CaF}_2$ , and not over one per cent silica. It sold in January, 1942, at \$32, f.o.b. mines, rising to \$35 in June-December. There is little or no production of such grades in Canada so that no price stabilization has been placed in effect regarding them." (Bureau of Mines, Ottawa.)

**Table 216.—Consumption of Fluorspar in Canada, by Uses, as Reported to the Annual Census of Industry, 1941 and 1942**

Industry	1941		1942	
	Quantity	Cost at works	Quantity	Cost at works
	Tons	\$	Tons	\$
Steel furnaces.....	17,054	366,701	20,133	562,480
Chemicals (acids, alkalis and salts).....	12,360	394,833	21,689	684,194
Glass.....	185	7,984	231	10,273
Ferro-alloys.....	539	14,659	853	21,203
Enamelling and glazing.....	153	6,120	103	4,120
<b>Total accounted for.....</b>	<b>30,291</b>	<b>790,297</b>	<b>43,009</b>	<b>1,282,270</b>

### GARNET

Canadian production (mine shipments) of garnet in 1942 totalled 17 short tons valued at \$176, compared with 16 short tons worth \$160 in 1941. Production during both years came from a deposit located near River Valley in Ontario. The mineral was exported in the form of garnet schist to the United States.

The following information is from a report prepared by the Bureau of Mines, Ottawa:

Commercial garnet belongs to a group of complex silicate minerals of which almandite, the brownish-red iron-aluminium silicate is generally considered the hardest and the best as an abrasive. Garnet is a rather common mineral constituent of certain rocks distributed throughout the Dominion and it usually occurs as a garnetiferous-gneiss, large areas of which are known in parts of Ontario and Quebec. At present, however, the amount of garnet produced in the Dominion is negligible.

Operations in 1942 were carried out intermittently by the Canada Garnet Company near Labelle, Quebec and by a producer near River Valley, north of North Bay, Ontario.

Attempts in the past to produce commercial garnet in Canada have failed owing to the small extent to which it is used; to the competition from high-quality United States material; and to the fact that garnet possessing abrasive efficiency equal to that obtained in the United States has not as yet been found in sufficient quantities. Consumption in Canada has never been more than 225 tons of graded grain a year, all of which is supplied by the United States.

"The specifications for garnet for use in the making of high-quality abrasives are somewhat exacting. The individual crystals should be clear and free from embedded impurities and from minute fractures. They should be of a deep wine-red colour, and not smaller than pea size, walnut size or larger being preferable. The garnet should be tough, but should yield sharp and angular grains when crushed. The deposits should be extensive and the garnet content should not be less than 25 per cent. It should also be close to rail transportation and industrial centres. Few, if any, of the hundred or more garnet deposits so far examined in Canada fulfill all of these requirements. Minor uses for garnet or garnet rock, are for sand-blasting and to a very small extent in the surfacing of plate glass.

"Canadian consumption of prepared garnet grain suitable for 'sand paper' manufacture has decreased and is now less than 200 tons annually. Competition from United States producers and the high quality of their garnet have prevented exports of Canadian garnet to that country.

"The price in the United States of the best quality concentrate from which grain is prepared for abrasive papers and cloths ranges from \$65 to \$80 a ton f.o.b. mines and of graded grain, \$90 a ton. Some sales of garnet fines for use in the surfacing of plate glass were made at about \$26 a ton delivered, and garnet for use in sand-blasting sold at \$20 to \$30 a ton. Canadian prices of crushed garnet rock for sand-blasting were about \$7 a ton.

"Crude garnet ore or ungraded mixed concentrate enters the United States duty free, the duty on grain graded into separate sizes and specially prepared garnet being one cent a pound."

## GRAPHITE

Canadian production (mine shipments) of graphite in 1942 was valued at \$117,004, compared with \$132,924 in 1941. The output during both years came from the retreatment of old tailings accumulated at the Black Donald mine in Renfrew county, Ontario. The mineral was marketed in three grades, amorphous, flake and dust. The only other official return relating to graphite properties received by the Dominion Bureau of Statistics in 1942 reported only prospecting of deposits in Hincks township, Quebec.

The following information was taken from a report prepared by the Bureau of Mines, Ottawa:

"Graphite is widely distributed in the Archean rocks of western Quebec and eastern Ontario, in which regions there was formerly a somewhat extensive graphite industry. With the exception of the Black Donald Mine in Ontario these operations have long been idle and the plants for the most part have been dismantled. The Canadian deposits include bands or lenses of graphitic gneiss; belts of crystalline Grenville limestone carrying disseminated flake; and smaller, but often rich, pockety bodies or veins of coarsely crystalline graphite of plumbago character, usually also in limestone. Near Saint John, in New Brunswick, bodies of amorphous graphite were worked many years ago on a small scale.

"Black Donald Graphite Company, with mine and mill at Whitefish Lake, 13 miles west of Calabogie, Renfrew county, Ontario, was again the only producer. The company has been in continuous operation for more than 30 years, mining a deposit of exceptional size and richness. The size of flake produced is too small for crucible use, but is well adapted for foundry facings and lubricants, for which purpose most of the output is sold. Most of the material treated in recent years has been rich mill tailing from early operations which was discharged into Whitefish Lake from where it is recovered by pumping. Mining on the property was suspended several years ago, the main orebody being considered worked out. In 1942 a geological investigation of the deposit, together with a diamond-drilling program, was undertaken by Frobisher Exploration Company, (Ventures Limited), and a substantial tonnage of new ore was proved. Black Donald Graphite Company continued in operation until the end of the year when it was taken over by Ventures which intends to proceed with new underground development under the name of Black Donald Graphite Limited. Most of the production in the past consisted of various grades and mesh sizes of milled products and went to the American and domestic foundry trade. Since the outbreak of war much of it has been reserved for the greatly increased domestic demand.

"During 1942, as the result of a threatened shortage of crucible flake graphite, the United States Government became interested in the possibility of a supply of such material from Canada. Prospecting for new deposits was encouraged, and a number of new occurrences were brought to governmental attention, on some of which surface stripping was done by established mining companies with a view to possible development. Various properties including old, defunct mines, were examined by the Bureau of Mines and the Metals Controller's Office, Ottawa, in company with representatives of the U.S. War Production Board, and several sample shipments were tested in the Bureau of Mines laboratories. The threatened emergency was averted by the British occupation of Madagascar and it was not found necessary to take further steps to encourage interest in the development of a Canadian supply. Ore reserves at many of the old properties are believed to be considerable and could probably be used in an emergency, though this would entail the erection of new mills, or possibly of a central custom mill, to treat the ore.

"World production of natural graphite of all grades and including flake, crystalline (plumbago) and amorphous, averaged about 140,000 short tons a year prior to the war. Madagascar, Germany, Austria, and Czechoslovakia were then the principal producers of flake graphite; Ceylon of crystalline; and Mexico and Korea of the amorphous variety. Substantial reserves exist in the United States, but proved uneconomical to work in peacetime. Development was undertaken in 1942, under Government auspices, of deposits in Pennsylvania, Alabama, and Texas, to provide a domestic supply of crucible flake.

"Canadian graphite requirements are principally for the foundry, dry battery, and paint trades. Foundry needs are met in part by domestic (Black Donald) production, and in part by imported Ceylon plumbago. The battery trade uses mainly Mexican amorphous; and paint requirements are filled largely by low-grade amorphous and flake. Owing to the fine grinding required to free the graphite, the ores of many of the earlier-worked Canadian deposits yielded a relatively small proportion of high-value coarse crucible flake. In the interval, also, crucible graphite specifications have become much stricter and in addition to size of flake and carbon content, have stipulations regarding fusibility of ash, break-down, and volume. In general a No. 1 crucible flake should be coarser than 50-mesh, with about 40 per cent standing on a 35-mesh screen and 40 per cent on a 28-mesh screen. Carbon content should be 85 per cent or better.

"Despite feared shortages American graphite prices have remained substantially at pre-war levels. No. 1 crucible flake was set, under agreement during 1942, at 13 cents per pound, and No. 2 crucible flake (minus 50 plus 70-mesh) at 11 cents. Ceylon crucible lump sold at 10 to 11 cents; carbon lump, 9 to 10 cents; chip, 7 to 8 cents; dust, 4 to 5 cents; all prices ex dock New York, duty paid. Mexican amorphous was quoted at \$14 to \$25 a ton, according to grade, f.o.b. New York.

"Artificial graphite is made in Canada by Electro-Metallurgical Company of Canada, at Welland, Ontario and by the Exolon Company at Thorold, Ontario. These companies supply the United States with part of its requirements."

**Table 217.—Consumption of Graphite or Plumbago in Canada, by Industries, as Reported to the Census of Industry, 1941 and 1942**

Industry	1941		1942	
	Quantity	Cost at works	Quantity	Cost at works
	Short tons	\$	Short tons	\$
Paints and varnishes.....	85	9,418	103	11,555
Polishes.....	40	4,466	39	5,020
Foundries.....	367	53,400	410	59,874
Acids and salts.....	74	32,345	114	34,582
Prepared foundry facings.....	583	41,516	316	19,108
<b>Total Accounted for.....</b>	<b>1,149</b>	<b>141,149</b>	<b>982</b>	<b>139,439</b>

#### GRINDSTONES AND PULPSTONES

"Material suitable for these stones occurs in certain sandstone beds in Nova Scotia, New Brunswick, and on the British Columbia Coast. Many years ago the output was considerable, but most of the known beds have been depleted and the demand for natural stones has fallen off.

"The Read Stone Company, Sackville, New Brunswick, was the only producer of grindstones in Canada and shipped from quarries near Stonchaven, on the Bay of Chaleur, New Brunswick. The total grindstone sales amounted to 200 tons valued at \$8,000 in 1942.



"The large-size Canadian grindstones are used mainly for sharpening pulp-mill and tobacco knives; and in the United States in the file, machine-knife, granite tool, and shear manufacturing industries. The small stones are used for scythe and axe grinding. Because of the competition from the artificial grinding wheel and from foreign natural stones, production of grindstones from quarries continues to decline.

"There has been no output of pulpstones since the J. A. and C. H. McDonald Company ceased production five years ago from the sandstone beds on the northwest end of Gabriola Island, near Nanaimo, Vancouver Island, British Columbia.

"Good pulpstones are in demand, particularly for use in the large magazine grinders, but as known Canadian deposits containing thick beds of sandstone of the proper quality appear to have been worked out, production for the present has ceased. There is also an increasing competition from Canadian-made artificial segmental pulpstones mainly of silicon carbide grit and at present about 560 of these stones are in use in the various Canadian pulp mills. The imported natural pulpstones come mainly from West Virginia, United States.

"Over 35,000 small hand-operated scythestones, with a total weight of 16 tons and valued at \$2,000, were sold in 1942 by the Read Stone Company. These stones have for many years been obtained from the same quarry from which the company's grindstones are produced, but from finer textured beds of the sandstone.

"The production of all grades of stone in 1942 was 216 tons valued at \$10,000. (Bureau of Mines—Ottawa).

Table 218.—Production of Grindstones, Pulpstones and Scythestones in Canada, 1933-1942

Year	Tons	\$
1933.....	498	21,919
1934.....	987	49,478
1935.....	708	34,010
1936.....	569	24,724
1937.....	412	21,429
1938.....	306	16,198
1939.....	304	15,278
1940.....	341	14,543
1941.....	188	11,500
1942.....	216	10,000

Table 219.—Production of Natural Abrasive Stones, by Kinds, 1942

	Pulpstones		Sharpening stones		Grindstones	
	Tons	\$	Tons	\$	Tons	\$
Nova Scotia.....						
New Brunswick.....			16	2,000	200	8,000
<b>Canada</b> .....			<b>16</b>	<b>2,000</b>	<b>200</b>	<b>8,000</b>

Table 220.—Consumption of Pulpstones by the Canadian Pulp and Paper Industry, 1933-1942

	Number for 2 ft. wood	Value	Number for 2.5 ft. wood	Value	Number for 4 ft. wood	Value
		\$		\$		\$
1933.....	321	98,475	95	31,945	199	223,635
1934.....	378	103,811	84	29,680	268	292,359
1935.....	417	116,501	82	20,297	237	243,805
1936.....	463	120,227	61	19,478	253	281,265
1937.....	392	123,598	84	21,700	280	382,094
1938.....	306	92,822	37	13,351	186	239,488
1939.....	242	60,622	60	22,443	203	238,620
1940.....	311	96,957	110	40,899	163	257,628
1941.....	206	127,349	77	35,843	97	215,913
1942.....	237	100,466	53	23,898	94	208,986

### THE ARTIFICIAL ABRASIVES INDUSTRY

The factory selling value of all products made during 1942 by the manufacturers in Canada of artificial abrasives and artificial abrasive products amounted to \$33,631,201. This value represented a gain of 32 per cent over the total of \$25,556,330 for 1941.

There were 15 firms engaged in manufacturing artificial abrasives and their products during the year, and of these, 13 were located in Ontario and 2 in Quebec.

The average number of employees in the industry was 2,866, and payments in salaries and wages totalled \$5,106,652. Expenditures for manufacturing materials amounted to \$10,245,679, and \$2,469,824 was paid out for fuel and electricity. Capital investment in the industry totalled \$11,842,400, of which \$4,693,377 was the value placed on land, buildings and equipment.

Artificial abrasives were made by 4 plants in Ontario and 2 in Quebec. The output of these 6 works was valued at \$28,400,025 and included 160,935 tons of crude fused alumina at \$17,750,623; 44,410 tons of crude silicon carbide at \$5,494,257, and other products and by-products, such as ferrosilicon, firesand, refractory brick, refractory cements, calcium boride, boron carbide and abrasive wheels. An average of 2,277 people were employed and salaries and wages totalled \$3,914,643.

Nine other plants were occupied chiefly in making abrasive products, such as wheels, paper, pulpstones and sharpening stones; 7 made abrasive wheels and segments, 4 made sharpening stones and files, and 2 made abrasive cloth and paper. The value of all products made in these establishments was \$5,231,176. The number of employees was 589 and payments for salaries and wages amounted to \$1,192,009.

Table 221.—Materials Used in Manufacturing, 1941 and 1942

Material	Unit of measure	1941		1942	
		Quantity	Cost at works	Quantity	Cost at works
Bauxite and pure alumina.....	ton	151,815	\$ 4,010,127	197,377	\$ 5,427,524
Coal (not for fuel)—					
For fused alumina.....	ton	345	2,182	662	4,243
For silicon carbide.....	ton	8,345	60,258	7,379	60,434
Coke (not for fuel)—					
For fused alumina.....	ton	8,859	55,065	11,950	75,950
For silicon carbide.....	ton	32,759	413,275	48,024	664,699
Electrodes.....	ton	2,335	286,685	3,617	437,663
Feldspar.....	ton	84	3,127	119	6,113
Iron borings.....	ton	13,550	172,713	20,830	261,304
Salt.....	ton	413	4,280	392	4,172
Sawdust.....	ton	9,129	28,113	10,820	36,243
Silica sand.....	ton	57,362	269,605	76,943	416,806
Artificial abrasive grains—					
Fused alumina.....	ton	5,524	736,569	5,106	904,578
Silicon carbide.....	ton	1,429	263,571	1,849	318,198
Natural abrasive grains—					
Garnet.....	lb.	392,846	38,074	350,314	33,982
Emery.....	lb.	233,765	20,325	321,853	22,614
Quartz or flint.....	lb.	348,167	6,024	459,991	7,640
Other.....	lb.	93,598	9,378	72,575	7,415
Bonding and bushing materials—					
Clay bonds.....	lb.	907,697	40,479	988,632	38,869
Silicate (quantity in equivalent solid form).....	lb.	14,374	623	15,930	881
Elastic mixture.....	lb.	30,928	6,489	48,528	12,729
Bakelite and synthetic resins.....	lb.	215,784	76,936	409,614	140,954
Lead for bushings.....	lb.	113,203	6,307	111,130	5,870
Cotton cloth.....			172,727		97,310
Kraft paper.....			82,767		23,250
Containers and packing material.....			71,364		102,788
All other materials.....			812,750		1,133,450
<b>Total.....</b>			<b>7,650,413</b>		<b>10,245,679</b>

Table 222.—Products Manufactured, 1941 and 1942

Product	1941		1942	
	Short tons	Selling value at works	Short tons	Selling value at works
Crude silicon carbide.....	32,258	\$ 3,661,888	44,410	\$ 5,494,257
Crude fused alumina.....	130,881	13,665,811	160,935	17,750,623
Silicon carbide firesand, etc.....	1,096	30,889	268	17,062
Abrasive wheels and segments.....		3,713,303		5,075,258
Sharpening stones and files.....		191,757		251,320
Ferrosilicon.....	10,489	124,383	12,875	187,664
Other products (*).....		4,168,319		4,855,017
<b>Total.....</b>		<b>25,556,330</b>		<b>33,631,201</b>

(\*) Includes abrasive cloth, abrasive paper, tiles, artificial pulpstones, artificial graphite, boron carbide, boron carbide shapes, calcium boride, fused magnesia, refractory cements, firebrick, etc., each of which was reported by one or two companies.

## KYANITE

The following information is from a recent bulletin of the "Imperial Institute", London, (Vol. XXXVI—No. 4). Kyanite, a natural silicate of alumina ( $\text{Al}_2\text{SiO}_5$  or  $\text{Al}_2\text{O}_3 \cdot \text{SiO}_2$ ) is finding a steadily growing market for the preparation of refractories. It is not used in the raw state, but is first fired at  $1,450^\circ$  to  $1,500^\circ\text{C}$ , and then ground ready to mix with the bond. The product of calcination, however, is known in the trade as "Sillimanite", a misnomer which often leads to confusion. Sillimanite and andalusite are other natural minerals of exactly the same chemical composition as Kyanite (but different in physical properties), and both are likewise converted on heating into mullite and silica. The conversion of andalusite into mullite is not accompanied by any change in volume and this mineral can therefore be used in the raw state as a refractory. Mullite made from Kyanite is used in the construction of numerous types of furnaces, including electric furnaces and those for the enamelling and glass industries. When added to ceramic compositions containing clay and kaolin, it is claimed to reduce shrinkage, lower the coefficient of expansion, increase breaking strength, resistance to abrasion and electrical resistance, and extend the sintering range. It is also a constituent of certain spark-plug porcelains.

Kyanite is usually a rock-forming mineral, and only rarely does it occur in large monomineralic masses as segregations in quartz-kyanite gneiss or schist. Indian kyanite is the most popular at the present time; the production in India commenced in 1924 and amounted to 24,787 tons in 1936. The mineral also occurs in Nyasaland, British East Africa and Western Australia.

The leading andalusite mine in the world is operated by Champion Sillimanite, Inc., in the White Mountains, California; this Company is a subsidiary of the Champion Spark Plug Co., Detroit, Mich.

None of the minerals, kyanite, sillimanite or andalusite are commercially mined in Canada at the present time and any imports of these minerals into Canada are not shown separately in the Canadian Customs classification. "Metal and Mineral Markets"—New York—June, 1943 quoted kyanite—per ton f.o.b. North Carolina and Georgia \$22.00 to \$32.00.

## LITHIUM MINERALS

Commercial mine shipments of Canadian lithium minerals were only recorded in 1937. These were made by the Lithium Corporation of Canada, Limited, from deposits located at Bernie Lake, near Pointe de Bois, Eastern Manitoba. For further details refer to chapter 5.

## MAGNESITIC DOLOMITE AND BRUCITE

Canadian production of magnesitic dolomite, including brucite, was valued at \$1,059,374 in 1942. This represents the total value of magnesitic dolomite sold and used direct as crude unburnt material plus the process value of dead-burned used and the market value of calcined and dead-burned sold as such; also included for the first time in 1942 is the value of brucite concentrates shipped by the Aluminum Company of Canada Limited from its new plant located at Wakefield, Quebec. Magnesitic dolomite production in Canada is confined entirely to the province of Quebec. Brucite was produced commercially in Canada for the first time in 1942 and the value of magnesitic dolomite only, produced in the Dominion in 1941, totalled \$831,041. The following was abstracted from a report prepared by the Bureau of Mines, Ottawa:

"Magnesitic dolomite consisting of an intimate mixture of magnesite and dolomite is quarried at Kilmar and at Harrington East, in Argenteuil county, Quebec, and is processed for use as refractory materials. Products at present marketed include caustic-calcined magnesitic dolomite, dead-burned or grain material, bricks and shapes (both burned and unburned), finely ground refractory cements, and, in combination with chrome, the dead-burned material is used as an ingredient in certain other types of refractory. Magnesia products made in Canada from imported magnesite and magnesia include fused magnesia (artificial periclase), optical periclase, and "85 per cent magnesia" pipe covering.



"Large deposits of magnesite containing considerable silica and alumina occur in British Columbia near Marysville, between Cranbrook and Kimberley. They are owned by Consolidated Mining and Smelting Company of Canada, Limited, and experimental work to remove the silica and alumina by flotation has been done, but there has been no commercial production to date. A number of other deposits of magnesite are known in British Columbia and Yukon, but either because of their limited extent or remoteness from transportation they are not of commercial importance at present.

"Deposits of earthy hydromagnesite occur in British Columbia near Atlin and Clinton, and at various times some have been worked on a small scale, but there has been no production in recent years.

"Brucite (magnesium hydroxide) in the form of granules thickly disseminated through a matrix of crystalline limestone occurs in large deposits at Rutherglen, Ontario, and at Bryson and Wakefield in the province of Quebec. By a process developed in the Bureau of Mines laboratories, Ottawa, it is possible to recover these brucite granules in the form of magnesia of a high degree of purity and to have hydrated lime as a co-product. A plant using this process is now in operation near Wakefield, Quebec. The granular magnesia produced is at present used mostly for making basic refractories, and for making a special grade of paper.

"Magnesite is available in many countries. Russia is probably the world's greatest producer of magnesite, but almost all is for domestic use.

"Magnesite is usually calcined before shipment and the resultant magnesia is used for the making of refractory products to withstand extremely high temperatures, for making oxychloride cement, and for magnesium metal. It is also the basis of a number of magnesium salts and has many minor uses. The world-wide demand for magnesium metal has greatly stimulated interest in deposits of magnesite. Although until three years ago almost all the world's magnesium was made from magnesium chloride brine and from waste water used in treating potash minerals, magnesite is now an important source of this light metal in Europe, England, and the United States.

"Brucite is much less common than magnesite. The only deposits being worked commercially are in Canada and the United States. The magnesia obtained by calcining brucite may be used for the same purposes as that obtained from magnesite and also has some special applications of its own.

"Competing with magnesite and brucite as sources of magnesia products are dolomite and sea-water. Dolomite, in addition to its use as a refractory material has long been the principal source of basic magnesium carbonate and pure magnesium oxide, and processes have been worked out for the production of magnesium metal from it. The extraction of magnesia from sea-water is being done on a very large scale in England and the United States, the material so obtained being used for making magnesium metal as well as for various industrial and pharmaceutical purposes.

"Prices of calcined magnesite in 1941 f.o.b. Montreal or Toronto as quoted by Canadian Chemistry and Process Industries were \$70 to \$90 per ton. This price has continued since November, 1939, when the price rose from the \$48 to \$60 range that had prevailed for more than a year previously."

Table 223.—Magnesite and Dolomite Used in the Canadian Primary Iron and Steel Industry, 1931-1942

	Calcined dolomite (b)		Dolomite, crude		Magnesite	
	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$
1931.....			15,773	76,317	(a)	(a)
1932.....			8,725	32,523	420	14,500
1933.....			6,874	30,557	399	14,798
1934.....			14,748	69,104	2,733	105,072
1935.....			18,394	79,914	3,891	149,987
1936.....			43,562	145,502	6,432	230,656
1937.....			53,066	181,146	8,994	326,091
1938.....			40,540	137,127	9,210	336,811
1939.....	14,858	99,838	40,592	78,904	11,401	351,580
1940.....	21,949	136,360	59,284	123,429	13,673	506,032
1941.....	21,608	160,602	71,087	159,037	18,127	682,742
1942.....	22,550	170,427	79,091	225,393	20,665	786,321

(a) Information not available.

(b) Included with crude dolomite prior to 1939.

Relatively large quantities of magnesite or magnesium refractories are also used in the smelting of non-ferrous ores but complete data relating to this consumption are not yet available.

**Table 224.—Calcined Magnesite Used by the Artificial Abrasive and Abrasive Products Industry in Canada, 1933-1942**

Year	Tons	Value	Year	Tons	Value
		\$			\$
1933.....	(a)	16,430	1938.....	121	7,735
1934.....	104	6,370	1939.....	302	19,331
1935.....	40	2,448	1940.....	809	77,508
1936.....	418	25,256	1941.....	398	58,648
1937.....	484	29,242	1942.....		

(a) Information not available.

### MAGNESIUM SULPHATE (EPSOM SALTS)—NATURAL

"Natural hydrous magnesium sulphate (Epsom Salts or Epsomite) occurs in deposits in lake bottoms or in solution in brine lakes in British Columbia. In Saskatchewan, it is found associated with sodium sulphate. Attempts have been made to produce refined salts, and a number of years ago there was a considerable production from several of the 'lakes' in British Columbia, and experimental shipments have been made from one of the lakes in Saskatchewan.

"The largest production has come from the deposits in Basque, British Columbia, the material from which is refined at Ashcroft, 15 miles south of the deposit. The refinery, now owned by Ashcroft Salts Company, Limited, has a capacity of 10 tons of salt a day. The material produced is of high grade. Operations ceased in the fall of 1942. There are a number of other occurrences in British Columbia, near Clinton, north of Kamloops, and in Kruger's Pass, south of Penticton.

"In Saskatchewan, two lakes south of Wiseton contain brines high in magnesium sulphate, and Muskiki Lake, just north of Dana, contains brine high in magnesium and sodium sulphate, which at certain times of the year, crystallizes into a bedded deposit with layers of both salts." (Bureau of Mines—Ottawa.)

The Canadian production of magnesium sulphate in 1942 was 1,140 tons valued at \$38,760, compared with 265 tons valued at \$7,343 in 1941.

In the chemical industries, Epsom salt finds many applications. It is employed for tanning and in dyeing, and for textile and medicinal use. Magnesium sulphate is used in the paper industry for weighting paper. In the sole leather industry it is used to obtain a clean shiny cut, and it also helps to retain moisture in the leather and increases its weight. Magnesium salt is used in the dyeing industry only to a small extent. In some cases it is used in the after treatment of leather to increase the fastness of the colour in washing. Magnesium sulphate is used extensively and in large quantities in medicine. It is used for various purposes in the manufacture of textiles. In bleaching wool magnesium sulphate is added to destroy the corrosive effect of sodium peroxide. It is also used for weighting textile fabric, especially silk. Mixed with gypsum and ammonium sulphate, it is used in the manufacture of non-inflammable fabrics.

Prices for Epsom salts remained steady, due to the discontinuance of supplies from European countries, hitherto the main sources of supply. Quotations for the technical grade, as given by Canadian Chemistry and Process Industries for Toronto or Montreal delivery, ranged from \$65.00 to \$70.00 per short ton in bags.

**Table 225.—Magnesium Sulphate Used in Canadian Pharmaceutical Preparations and in Tanning, 1935-1942**

Year	Pharmaceutical preparations		Tanning	
	Pounds	Value	Pounds	Value
		\$		\$
1935.....	826,082	22,647	759,744	12,254
1936.....	878,120	23,162	1,115,965	18,120
1937.....	919,825	23,881	992,203	16,165
1938.....	855,547	23,687	1,272,549	14,153
1939.....	830,927	24,001	1,139,670	17,808
1940.....	925,948	31,554	1,646,217	34,242
1941.....	1,043,110	35,380	1,508,824	43,400
1942.....	1,077,601	38,352	1,782,479	45,956

## MINERAL WATERS

Shipments of natural mineral waters from Canadian springs totalled 157,085 imperial gallons valued at \$74,505 in 1942 compared with 181,064 imperial gallons worth \$72,531 in the preceding year. Production during both years originated in Ontario and Quebec. Some of the more prominent Canadian mineral waters possessing special therapeutic or hygienic properties include the following: in Quebec, the Abenakis springs on the St. François river in Yamaska county; Potton Springs in Brome county and at Coulombia spring at L'Épiphanie. In Ontario, saline, sulphur and gas springs occur at Caledonia Springs and at Carlsbad Springs, near Ottawa; the waters range from alkaline to strongly saline. St. Catharines, near Niagara, is one of the oldest Canadian mineral water resorts and sulphur waters are found at the Preston mineral springs in Waterloo county. The most famous of all Canadian springs is undoubtedly the group of hot sulphur springs at Banff, Alberta. In British Columbia the Harrison Hot Springs in the Fraser Valley and the Halcyon Hot Springs on Arrow Lake are noted for their curative properties.

The total number of firms reporting production of natural mineral waters in the Dominion was 19 in 1942, of which 14 were located in the province of Quebec and 5 in Ontario.

Table 226.—Sales of Natural Mineral Waters (\*) by the Canadian Aerated Waters Industry, 1930-1942

Year	\$	Year	\$
1930.....	178,348	1937.....	102,048
1931.....	140,730	1938.....	105,872
1932.....	92,066	1939.....	95,531
1933.....	77,125	1940.....	89,013
1934.....	52,113	1941.....	104,364
1935.....	45,100	1942.....	125,157
1936.....	63,687		

(\*) Whether fortified or not.

## PHOSPHATE

Canadian production (mine shipments) of phosphate (apatite) during 1942 totalled 1,264 short tons valued at \$17,431; of this production, 930 short tons came from properties in the province of Quebec and 334 short tons from Ontario. The total output of the mineral in the Dominion in 1941 amounted to 2,487 short tons worth \$33,376.

The following information is from a report prepared by the Bureau of Mines, Ottawa:

"Phosphate occurs in Canada (1) as apatite, found associated with phlogopite mica in irregular pockety bodies in Precambrian crystalline pyroxenite rock of adjacent sections of south-western Quebec and eastern Ontario, and (2) as bedded, sedimentary phosphate rock of carboniferous and Permo-Jurassic age that extends along the Rocky Mountains divide, or Alberta-British Columbia boundary, from the Crow's Nest area in the south as far north as Jasper.

"The western sedimentary phosphate is rather low-grade and is not considered to be of economic interest under present conditions. Operations by Consolidated Mining and Smelting Company about ten years ago in the Crow's Nest-Michel area resulted in the shipment of 5,000 tons of the rock to Trail, British Columbia, for the manufacture of fertilizer, but attempts to concentrate it proved unsuccessful and the company has since drawn its supplies from Garrison, Montana. Eastern Canadian plants requiring phosphate for fertilizer or for other purposes use mainly Florida rock.

"Mining of apatite has for many years been on a comparatively insignificant scale, the 1941 production of about 2,500 tons being the largest recorded since the closing down of most of the larger mines at the beginning of the century. Since then most of the small output has been mainly by-product material recovered during mica-mining operations, with occasional small tonnages produced by intermittent operators. Chief purchaser has been the Electric Reduction Company, Buckingham, Quebec, for use in the production of elemental phosphorous and various phosphorus compounds. More recently, Canadian Refractories Limited, Kilmar, Quebec, have reported being in the market for small tonnages.



"As offered for sale, the apatite usually consists of cobbled, picked lump, the grade of which may run from 65 to 80 per cent tricalcic phosphate. A slight revival of interest in the possibilities of straight apatite mining was evidenced in 1941-42, and several of the old and larger mines in the Lièvre River section, Papineau county, Quebec, north of Buckingham, were re-opened and yielded most of the material sold. Small plants were installed at some of these properties and a shipping product was made that consisted of a composite of screened fines and cobbled lump of around 60 to 70 per cent grade. Chief operators in Quebec in 1942 were Barry Lake Mining Company, 11 Rue des Ramparts, Quebec, working the High Rock mine; Commercial Mineral Products Company, 680 Sherbrooke Street West, Montreal, working the Old Union and Little Union properties, all the above in West Portland township; and Robert Bigelow, of Buckingham, who re-opened the old Brazeau mine in Bowman township near Val des Bois, with shipments totalling 500 tons, the largest unit production. In Ontario, Canadian Phosphate Mining Company Limited, 125 Holland Avenue, Ottawa, took over the old McLaren Mine in Bedford township near Westport and did considerable work, including diamond-drilling, with shipments of about 200 tons.

"Canadian apatite deposits, though doubtless still containing considerable reserves, tend to be erratic and pockety, and are incapable of supplying more than a small fraction of domestic requirements for phosphate rock, which are of the order of a quarter of a million tons annually. Total production since the inception of mining around 1870 to the end of 1942 was 346,451 short tons valued at \$4,712,894. All of the output in 1942 was used in Canada, mainly for the manufacture of phosphorus. Grade ranged from 60 to 80 per cent. Purchase price basis was \$16 per short ton for 80 per cent material, with a penalty or premium of 20 cents per unit below or above that figure. The average price of imported Florida phosphate, laid down, during the year was \$18 per long ton for 75 per cent grade.

"World production of phosphate is about 11 million long tons annually. By far the greater part of it consists of sedimentary rock, but the Russian output of apatite, produced as concentrate from nepheline-apatite rock, amounts to about 1,000,000 tons a year.

"The United States is the leading producer of sedimentary phosphate, its output in 1941 being more than 4½ million tons. Shipments from Tunisia and Morocco in 1939 totalled over 3,000,000 tons; from Egypt and Algeria, about 500,000 tons each; and from the Pacific islands of Nauru, Ocean, and Christmas, a total of close to 1,500,000 tons. Except for Russia, European countries are deficient in phosphate deposits."

Table 227.—Phosphate Rock and Superphosphate Used in the Manufacture of Canadian Fertilizers, 1931-1942

Year	Superphosphate		Phosphate rock	
	Short tons	\$	Short tons	\$
1931.....	51,639	595,789	48,373	395,547
1932.....	36,005	366,462	41,114	310,518
1933.....	59,443	657,123	21,961	164,614
1934.....	73,182	830,980	48,067	396,133
1935.....	86,701	986,674	74,507	610,118
1936.....	97,515	1,103,222	60,924	438,848
1937.....	137,801	1,661,243	101,704	726,572
1938.....	180,243	2,193,099	102,125	765,816
1939.....	174,989	2,026,293	96,310	711,508
1940.....	175,045	2,175,615	143,667	1,262,847
1941.....	143,420	1,719,674	186,038	1,573,165
1942.....	177,421	2,748,290	207,842	2,253,617

## PYRITES (Sulphur)

Canadian sulphur production is computed as the sulphur in iron pyrites shipped plus the sulphur recovered from non-ferrous smelter gases. Production in 1942 totalled 303,714 tons valued at \$1,994,891.

No iron pyrites deposits, known as such, have been mined in Canada for some years and statistics published regarding recent pyrites production refer to by-product iron pyrites recovered in the mining and concentrating of copper-gold-silver ores.

Sulphur employed in the manufacture of sulphuric acid during 1942 was recovered from salvaged smelter gas in Ontario and British Columbia. In Ontario, Canadian Industries Limited continued the operation of its acid plant at Copper Cliff, using sulphur dioxide obtained from the smelter of the International Nickel Company, while in British Columbia the Consolidated Mining and Smelting Company of Canada, Limited, manufactured sulphuric acid and other chemical products at Trail, using the by-product gases of its metallurgical plants. The Consolidated Mining and Smelting Company reported in 1939 that the percentage of sulphur dioxide removed from the flue gases from metallurgical operations and utilized mainly in the production of sulphuric acid and fertilizers, increased to 70.3 per cent compared with 53.3 per cent in 1937.

The Bureau of Mines, Ottawa, reviews pyrites for 1942 as follows:

"Pyrites is produced in Canada as a by-product in the treatment of copper-pyrites ores at the Aldermac and Noranda mines in Quebec, and at the Britannia mine in British Columbia. No lump pyrites has been produced in Canada for several years.

"In Quebec, Aldermac Copper Corporation's mine and concentrator, twelve miles west of Noranda, were in continuous operation in 1942. The copper concentrate is shipped for treatment to the Noranda smelter, while the high-grade iron pyrites concentrate is shipped partly to chemical plants in the United States and partly to Three Rivers, Quebec, for use by St. Lawrence Paper Mills Company. At the Noranda mine, Noranda, Quebec, pyrites concentrate, a by-product of the milling of copper-gold ores, was marketed for the manufacture of acid. At Three Rivers, all of the pyrites used in the Freeman flash-roasting plant in the mill of St. Lawrence Paper Mills Company is being obtained from the Aldermac mine. The Freeman plant supplies all of the sulphur dioxide and part of the steam required for the operation of the company's sulphite plant.

"In British Columbia, part of the large output of pyrites from the Britannia mine at Britannia Beach was consigned to the acid plant of Nichols Chemical Company at Barnet, British Columbia, and part was exported to plants in the United States. A considerable tonnage of pyrites from previous years' operations has accumulated at Britannia Beach and is awaiting more favourable market conditions.

"Northern Pyrites, Limited completed in 1940 a program of development work that was in progress for four years on its Eestall pyrites property, located on Eestall River about sixty miles south of Prince Rupert. A large plant as well as a railway to tide-water is required before active production can commence, but in the meantime, the company is awaiting more favourable market conditions. The Granby Company did considerable exploratory diamond-drilling on the Eestall property several years ago. According to reports, the orebodies contain 5,000,000 tons of ore averaging 49 per cent sulphur, 42 per cent iron, 2.3 per cent zinc, less than one per cent copper, and about \$1.00 a ton in gold and silver. No work was done in 1942.

"Although the Freeman process of flash roasting, designed for by-product flotation fines that are obtained from the treatment of copper ore, has opened a prospective market for this class of ore, it is not to be assumed that the mining of pyrites will be stimulated. Ample supplies of pyrites fines are already available at strategic points to meet any Canadian demand.

"There is apparently no standard price in Canada for sulphur in pyrites. Most contracts are believed to be based on a price of 5 cents or better per unit (22.4 pounds) of sulphur per long ton, f.o.b. cars at point of production."

Table 228.—Production in Canada of Pyrites with Sulphur Content, Including Sulphur Contained in Sulphuric Acid, etc., Made from Smelter Gases, 1941 and 1942

	Pyrites (*)			Smelter gas		Total sulphur	
	Sales	Sulphur content		Sulphur content		Tons	Value
	Tons	Tons	Value	Tons	Value		
			\$		\$		\$
1941							
Quebec.....	298,761	146,826	575,422	10,057	100,570	146,826	575,422
Ontario.....				(†)100,837	1,008,370	10,057	100,570
British Columbia.....	4,509	2,303	18,424			103,140	1,026,794
<b>Canada.....</b>	<b>303,269</b>	<b>149,129</b>	<b>593,846</b>	<b>110,894</b>	<b>1,108,940</b>	<b>260,023</b>	<b>1,702,786</b>
1942							
Quebec.....	351,570	168,832	673,965			168,832	673,965
Ontario.....				18,634	186,340	18,634	186,340
British Columbia.....	27,923	13,047	111,576	102,301	1,023,010	116,248	1,134,586
<b>Canada.....</b>	<b>379,493</b>	<b>182,779</b>	<b>785,541</b>	<b>120,935</b>	<b>1,209,350</b>	<b>303,714</b>	<b>1,994,891</b>

(\*) Recovered from copper ore deposits.

(†) Includes elemental sulphur and sulphur in sulphuric acid and direct ammonium sulphate.

The production of sulphuric acid in Canada totalled 578,474 tons (66° Be') in 1942 compared with 468,712 tons in 1941.

Table 229.—Consumption of Sulphur by Specified Canadian Industries, 1940-1942

Industry	1940		1941		1942	
	Tons	\$	Tons	\$	Tons	\$
Wood-pulp.....	182,357	4,157,629	201,575	5,062,266	211,466	5,687,331
Petroleum refining.....	61	3,110	51	2,649	31	1,561
Acids, alkalies and salts.....	22,595	479,875	44,784	1,091,913	65,066	1,694,232
Matches.....	67	3,116	65	3,393	80	4,119
Explosives.....	1,850	35,390	2,934	58,486	2,057	57,631
Insecticides.....	1,108	41,080	962	35,722	1,293	50,310
Adhesives.....	71	2,429	82	3,031	89	3,087
Chemicals, miscellaneous.....	2	121	4	40	4	27
Rubber.....	1,492	75,219	2,067	100,411	1,728	93,042
Sugar.....	167	8,494	147	6,877	142	7,411
Fruit and vegetable preparations.....	58	3,668	59	5,206	130	10,685
Other industries (*).....	200	10,107	278	11,603	287	12,248

(\*) Starch and glucose, dyeing and finishing of textiles.

## SILICA BRICK

The production of silica brick in Canada during 1942 totalled 4,273 M valued at \$263,006 compared with 4,111 M worth \$238,433 in 1941. The manufacture of these refractories was confined, in both years, to the plants of the Dominion Steel and Coal Company, Ltd., at Sydney, Nova Scotia, and the Algoma Steel Corporation, Ltd., Sault Ste. Marie, Ontario. The brick manufactured by both of these companies are processed from crushed silica rock and are utilized in furnace construction and repairs.

## SODIUM CARBONATE (NATURAL)

Production of natural sodium carbonate in Canada during 1942 totalled 256 short tons valued at \$2,018 compared with 186 tons at \$1,488 in 1941. Deposits of this material in the form of "natron" (sodium carbonate with 10 molecules of water) and also as brine, occur in a number of "lakes" throughout the central part of the province of British Columbia, chiefly in the Clinton mining division, around 70 Mile House, and in the neighbourhood of Kamloops. Production in Canada during recent years has come entirely from deposits in British Columbia and in 1942 all commercial shipments of primary or mine material were made from Chasm on the line of the Pacific Great Eastern Railway. The first commercial shipments of natural sodium carbonate from Canadian deposits were recorded for 1921 in which year 197 short tons valued at \$14,775 were reported as sold. The total Canadian production of the material to the end of 1942 amounted to 9,121 short tons valued at \$105,166.



Sodium carbonate, or "soda ash", has many industrial uses, such as in the manufacture of glass and soap, in the purification of oils and of bauxite for the production of aluminium, and in the flotation of minerals. Owing to technical advances, the use of soda ash in the glass industry continued to grow. The next largest use of sodium carbonate is in the production of sodium hydroxide or caustic soda. An interesting new use for sodium carbonate is in the manufacture of "synthetic salt cake" (anhydrous sodium sulphate). Considerable quantities of soda ash are also consumed in the smelting of iron ores.

As the present known Canadian deposits are far from the main markets, the output is restricted to the requirements of consumers within economic rail haul from the deposits. Eastern consumers of soda ash obtain their supplies from the chemically prepared material made from salt by the Solvay or ammonia process in Ontario and in the United States.

The price of "soda ash" in 1942 as given by the Canadian Chemistry and Process Industries remained at \$2.00 per bag of 100 lb. throughout the year.

**Table 230.—Consumption of Soda Ash (Sodium Carbonate) in Specified Canadian Industries, 1941 and 1942**

Industry	Unit of measure	1941		1942	
			\$		\$
Chemicals and allied products (a).....	pound	58,278,976	838,851	60,781,598	900,378
Manufactures of non-metallic minerals (b).....	pound	88,314,000	1,084,869	109,077,366	1,471,513
Pulp and paper.....	ton	3,311	105,855	3,476	120,465
Textiles (dyeing and finishing).....	pound	479,806	8,992	573,909	11,027
Sugar refineries.....	pound	225,721	4,924	378,112	8,762
Dyeing, cleaning and laundry work.....	pound	1,145,101	31,017	1,075,469	28,724

(a) Includes acids, salts, explosives, soap, etc.

(b) Includes coke and gas, glass and petroleum refining.

### SODIUM SULPHATE

(Glauber's Salt and Salt Cake)

Production (mine shipments) of natural sodium sulphate in 1942 totalled 131,258 short tons valued at \$1,079,692 compared with 115,608 short tons worth \$931,554 in 1941. Commercial shipments in both years were made almost entirely from properties located in Saskatchewan. A relatively small quantity was produced annually in Alberta during the years immediately preceding 1942.

During the year under review, Midwest Chemicals Limited operated continuously at White-shore Lake, Saskatchewan; at Sybouts Lake, 9 miles south of Gladmar, Saskatchewan. Sybouts Sodium Sulphate Company Limited was in steady production throughout the year; at Ormiston, Saskatchewan, the Horseshoe Lake Mining Company Limited was active during the entire year and in the same province commercial shipments were made by Natural Sodium Products Limited from both Frederick Lake, near Bishopric, and from the company's new property at Alsask Lake. Two small producers reported shipments of small quantities of sodium sulphate for local consumption.

The Bureau of Mines, Ottawa, describes sodium sulphate as occurring as crystals or in the form of highly concentrated brines in many lakes throughout Western Canada. The material produced in Canada is both hydrated sodium sulphate known as Glauber's Salt and hydrous sodium sulphate, known to the trade as "Salt Cake". The operating plants in Western Canada are capable of producing over 900 tons of dried salts a day, and if necessary the tonnage could be greatly increased. Complete figures for world production of salt cake are not available, and it is difficult to compare the returns from different countries as the production comes from chemical plants and from natural deposits. In the chemical industries, Glauber's Salt is used widely and the demand is increasing. Sodium sulphate is used extensively in the pulp and paper, glass, dye, and textile industries, and to a lesser extent for medicinal and tanning purposes. It is also used extensively in the nickel-copper smelting industry for the separation of the two metals. The price for natural anhydrous sodium sulphate from deposits in Western Canada ranged from \$8.00 to \$8.50 per short ton, f.o.b. plant.

Table 231.—Salt Cake used in the Manufacture of Canadian Wood Pulp, 1932-1942

Year	Tons	\$	Year	Tons	\$
1932.....	24,301	489,343	1938.....	33,213	588,217
1933.....	29,503	580,251	1939.....	40,685	722,178
1934.....	34,559	655,905	1940.....	53,540	994,875
1935.....	35,350	642,801	1941.....	61,079	1,133,623
1936.....	41,524	711,635	1942.....	70,078	1,303,451
1937.....	50,684	884,437			

Table 232.—Sodium Sulphate used in the Canadian Acids, Alkalies and Salts, and Medicinal and Pharmaceutical Industries, 1932-1942

Year	Textile Industry (a)		Acids, Alkalies and Salts Industry		Medicinal and Pharmaceutical Industry	
	Tons	\$	Tons	\$	Tons	\$
1932.....			94 (*)	1,811		
1933.....			9,989	141,322	39	4,879
1934.....			26,075	368,576	51	7,278
1935.....			22,485	316,734	59	4,617
1936.....			7,220 (*)	102,176	27	2,546
1937.....			8,006 (*)	113,054	29	2,234
1938.....	323	8,419	3,412 (*)	48,486	21	1,592
1939.....	401	11,636	11 (*)	314	23	1,940
1940.....	522	13,607	14 (*)	410	21	1,820
1941.....	884	25,390	10 (*)	320	34	3,073
1942.....	860	24,831	107 (*)	2,040	40	4,626

(a) Dyeing and finishing.

(\*) Does not include sodium sulphate consumed direct in the smelting of nickel-copper ores. In 1942 the quantity used for this purpose totalled 21,531 short tons.

## STRONTIUM MINERALS

The Bureau of Mines, Ottawa, in a 1942 review of strontium minerals states:

"Several occurrences of celestite (strontium sulphate) of possible economic interest are known in Canada, and in 1920-21, some ground material produced from a deposit in Bagot township, Ontario, was sold to the paint trade. The material from this deposit is coarsely-fibrous in character and is not very pure, containing about 18 per cent of barium sulphate. It is accordingly not favoured for chemical use, but is regarded as suitable for paints and general filler or loader use. The old pit was pumped out in 1941 and a few tons of ore were scaled down from a small drift. This, along with some stockpile material was shipped to Montreal for grinding. The product was used in the paint trade as a substitute for barite, but is reported to have found little favour, and no further work was done. Celestite of similar character and analysis occurs at some of the old fluorspar mines of the Madoc area in Ontario, and part of it might be recoverable from the waste dumps.

"Celestite, analysing 98 to 99 per cent strontium sulphate, occurs as a small vein of coarse platy crystals in Lansdowne township, Ontario, and some of it was mined many years ago. Calcite appears to be the only associated mineral and recovery of a concentrate of high purity should be easily made by jigging and tabling. In the event of a war shortage of imported strontium compounds, this deposit probably offers the best possibility for supplying the deficiency, though the indicated tonnage is small. Celestite similar to this occurs in a small galena prospect shaft in Fitzroy township, in Ontario, analysis of selected material showing 93 per cent strontium sulphate. A moderate supply might be obtained from this source, but the ore would probably need to be concentrated. No important deposits of strontianite (strontium carbonate) are known in Canada.

"World production of strontium minerals is estimated at 5,000 to 7,000 tons a year. England is the principal source of supply, with Germany next. The United States produced 4,724 tons of strontium minerals in 1941. Important deposits are reported to occur in India and Newfoundland, but there has been no production from these sources as yet.

"Celestite is the principal source of strontium used in the manufacture of the various strontium salts, and strontianite, a less common mineral, is used for the same purpose. The nitrate, carbonate, and hydrate are the most important of the strontium compounds used in industry and medicine. Strontium nitrate is employed mainly in pyrotechnics, for fireworks, railroad signal flares, and military flares and rockets, to which it imparts the characteristic strong red flame colour of the element. Other strontium compounds are employed in tracer bullets and shells. The hydrate is used chiefly in the refining of beet sugar by the Scheibler process.

"Strontium metal, made from either the natural sulphate or carbonate, is used in limited quantities in certain alloys, mainly of copper, tin, lead, zinc, and cadmium.

"As yet, there is no serious shortage of strontium minerals in North America and supplies of ore from Great Britain are available. The United States production was supplemented by imports, most of it from England and Mexico.

"Trade in strontium minerals is mainly confined to a few importer-dealers, with sales based on individual contract. Price quotations in American trade journals in 1942 for powdered celestite, 92 per cent grade, remained unchanged at \$45 a ton; crude domestic ore sold at \$15 to \$20 a ton f.o.b. mines. Crude lump strontianite, 84 to 86 per cent grade, was quoted at \$55 a ton, while the manufactured carbonate of 90 per cent purity sold at 15 to 18 cents a pound. Strontium nitrate, one of the chief commercial salts, remained at about 8 cents a pound."

### VOLCANIC DUST

There has been no Canadian production of volcanic dust since 1934. In that year, 31 tons valued at \$620 was shipped chiefly from deposits located at Williams Lake, B.C. The following is abstracted from a report prepared by the Bureau of Mines, Ottawa:

"Deposits of volcanic dust (pumice dust) are found in Saskatchewan, Alberta, and British Columbia. There has been intermittent production from Waldeck, near Swift Current, Saskatchewan, and from near Williams Lake in British Columbia.

"In Saskatchewan, deposits occur also five miles north of Braddock; west of Beverley; and near St. Victor, all of which are grey to buff in colour. Some stripping and prospecting was done during 1940 on a deposit of white volcanic dust overlain by bentonite 5 miles west of Rockglen, and laboratory experiments were carried out during 1940-41 by the University of Saskatchewan on the Rockglen and several of the other deposits of volcanic dust.

"In British Columbia there are several deposits, of which the purest known is a snow-white, fine-grained volcanic dust from the Deadman river, north of Kamloops lake. Extensive beds of compact dust also occur north of Quesnel lake in the Cariboo district but there has been no production.

"The war cut off supplies of high quality Italian pumice, but suitable material is being produced in California.

"In the past, about 60 per cent of the United States output was used as the abrasive base in scouring and cleansing compounds and to a lesser extent for glass bevelling, polishing aluminium, etc., but in 1941 about 43 per cent was used for these purposes and 48 per cent as a concrete admixture and concrete aggregate. The value of the latter, however, was only 11 per cent of the total against nearly 60 per cent for abrasive purposes: 4 per cent for acoustic plaster; and the remainder for asphalt filler, stucco, filtering and insulating media, paint filler, insecticide, floor sweep, and dusting the inside of tires. Some of the United States volcanic dust was also used in the manufacture of fire-proof walls, building tiles and slabs, and in the refining of petroleum."

United States quotations for pumice stone, March, 1942, were: per pound f.o.b. New York or Chicago, in barrels, powdered, 2½ cents to 4½ cents; lump 5 to 7½ cents.

Tripoli was quoted in the United States, 1943: Missouri, f.o.b. 40 mesh \$14.50 per ton.



Table 233.—Production of Miscellaneous Non-Metallic Minerals in Canada, 1941 and 1942

Item	Unit of measure	1941		1942	
		Quantity	Value	Quantity	Value
Barite .....	Ton	6,800	\$ 74,416	19,667	\$ 188,144
Diatomite .....	Ton	344	9,935	365	9,088
Fluorspar .....	Ton	5,534	97,767	6,199	146,039
Garnets (schist) .....	Ton	16	160	17	176
Graphite .....			132,924		117,904
Grindstones (b) .....	Ton	188	11,500	216	10,000
Lithium minerals .....					
Magnesium sulphate .....	Ton	265	7,343	1,140	38,760
Magnesian dolomite (c) .....			831,041		1,089,374
Mineral waters .....	Imp. gal.	181,064	72,631	157,085	74,505
Peat for fuel .....	Ton	355	2,153	(d)	(d)
Peat moss .....	Ton	27,803	644,253		
Phosphate (a) .....	Ton	2,487	33,378	1,204	17,431
Silica brick .....	M	4,111	238,433	4,273	263,006
Sodium carbonate .....	Ton	186	1,488	256	2,048
Sodium sulphate .....	Ton	115,608	931,554	131,258	1,079,662
Strontium minerals .....	Ton	27	280		
<b>Total (Gross) .....</b>			<b>3,939,156</b>		<b>3,006,167</b>
Sulphur production (*) .....	Ton	260,023	1,702,788	303,714	1,994,891

(a) Represents apatite mined in Quebec and Ontario, usually a by-product in mica production.

(b) Includes sharpening stones, etc.

(c) In 1942 includes the value of calcined brucite granules shipped from Wakefield, Quebec.

(d) Compiled as a separate industry in 1942.

(\*) Includes sulphur content of pyrites at its sales value and estimated figures for quantity and value of sulphur in smelter gases used for acid making or recovered as elemental sulphur, or in ammonium sulphate (direct). General statistics relating to production of sulphur included with those of the copper-gold mining and non-ferrous smelting industries.

Table 234.—Principal Statistics Relating to Miscellaneous Non-Metal Mining Industries in Canada, 1941 and 1942

	1941	1942
Number of plants .....	83	64
Capital employed .....	\$ 3,473,984	4,919,871
Number of employees—On salary .....	119	88
On wages .....	1,231	723
<b>Total .....</b>	<b>1,350</b>	<b>811</b>
Salaries and wages—Salaries .....	\$ 247,213	142,266
Wages .....	\$ 1,117,603	999,806
<b>Total .....</b>	<b>\$ 1,364,816</b>	<b>1,142,072</b>
Selling value of products (gross) .....	\$ 3,089,156	3,006,167
Cost of fuel and electricity .....	\$ 499,370	656,538
Cost of process supplies used .....	\$ 315,666	296,322
Selling value of products (net) .....	\$ 2,274,120	2,053,307

Table 235.—Capital Employed in the Miscellaneous Non-Metal Mining Industries in Canada, 1942

	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>	
Present cash value of the land (excluding minerals) .....	698,650
Present value of buildings, fixtures, machinery, tools and other equipment .....	2,764,991
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand .....	355,493
Inventory value of finished products on hand .....	119,614
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.) .....	991,123
<b>Total .....</b>	<b>4,919,871</b>

Table 236.—Wage-Earners, by Months, in the Miscellaneous non-metal Mining Industries in Canada, 1940-1942

Month	1940	1941	1942		
			Surface	Underground	Mill
January .....	352	451	221	37	303
February .....	352	463	226	30	332
March .....	392	452	249	41	310
April .....	359	473	250	33	339
May .....	482	559	256	37	346
June .....	472	682	292	35	500
July .....	548	607	274	35	480
August .....	617	696	301	40	469
September .....	604	695	262	63	445
October .....	614	718	251	64	474
November .....	581	650	230	65	502
December .....	451	603	209	57	496
<b>Average .....</b>	<b>480</b>	<b>601</b>	<b>258</b>	<b>40</b>	<b>416</b>

## CHAPTER NINE

## CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

Including Cement, Clay and Clay Products (Brick, Drain Tile, Kaolin, Sewer Pipe, Structural Tile, Stoneware and Pottery made from Domestic Clays, Fireclay, Firebrick, Fireclay Blocks and Shapes, Imported Clay Products), Lime, Sand and Gravel, Sand-Lime Brick, and Stone, including Slate.

Grouped in this Chapter are those industries producing structural materials from non-metallic minerals, rocks and clays of Canadian origin. These industries include those firms engaged in the production of Clay Products, Portland Cement, Lime, Sand, Gravel and Stone.

The combined production of these materials in 1942 totalled \$45,729,807 compared with \$45,373,272 in 1941, or an increase of 0.7 per cent. Compared with 1941, the value of brick and other clay products produced in 1942 showed a slight decrease; both the quantity and value of cement shipments during the year under review were considerably greater than in the preceding year; lime production in 1942 realized a slight increase over 1941 in both quantity and value, a fact partially accounted for by the continued consumption of this material in the expanding chemical industries; output of sand and gravel decreased greatly in 1942, indicating to some extent a falling off in highway construction and road maintenance throughout the older sections of the Dominion. The quantity of stone produced in Canadian quarries during 1942 was somewhat less than in 1941; however, a higher value was realized, reflecting somewhat the generally rising production costs under wartime conditions, and a decreasing demand for lower priced stone used in road work.

The quality of structural materials produced in Canada compares favourably with that of other countries. Most of the larger plants producing cement, clay products, lime, stone and sand and gravel are equipped with modern machinery and the Dominion is endowed with practically inexhaustible deposits of most primary materials required in any building or construction project of the future.

**Table 237.—Value of Clay Products and Other Structural Materials Produced in Canada, by Provinces, 1937-1942**

Province	1937	1938	1939	1940†	1941	1942
	\$	\$	\$	\$	\$	\$
Nova Scotia.....	2,293,325	1,611,111	1,829,207	1,855,771	1,330,888	1,980,912
New Brunswick.....	1,128,931	2,188,889	1,911,041	936,161	1,145,412	1,305,343
Quebec.....	10,350,553	11,619,514	12,319,773	15,001,749	16,631,657	17,723,293
Ontario.....	15,121,178	11,997,177	12,856,694	16,636,844	18,652,999	16,557,804
Manitoba.....	1,073,124	1,805,875	1,646,797	2,606,304	2,197,095	2,317,933
Saskatchewan.....	585,673	781,224	559,973	906,181	631,732	707,123
Alberta.....	1,303,533	1,627,462	1,947,453	2,971,550	2,626,277	2,836,160
British Columbia.....	2,413,352	2,247,414	2,314,821	2,795,389	3,416,996	3,564,405
<b>Canada—Gross Value.....</b>	<b>34,869,699</b>	<b>33,878,666</b>	<b>35,382,759</b>	<b>43,763,949</b>	<b>46,633,056</b>	<b>46,992,975</b>
<b>Net value.....</b>	<b>28,868,189</b>	<b>28,446,299</b>	<b>29,628,817</b>	<b>34,893,571</b>	<b>35,865,916</b>	<b>35,334,369</b>

† Includes value of cement containers for 1940, 1941 and 1942.

NOTE: For statistics relating to employment, etc., in these combined industries see totals in Tables 21 and 22, Chapter 1.

**Table 238.—Value of Construction Contracts Awarded, by Provinces, 1938-1942**  
(Maclean Building Reports Ltd.)

Province	1938	1939	1940	1941	1942
	\$	\$	\$	\$	\$
Maritimes.....	19,522,800	16,146,300	21,142,100	36,736,400	26,305,500
Quebec.....	65,778,900	62,846,600	96,326,300	154,541,200	92,235,500
Ontario.....	73,079,100	82,605,500	140,806,100	145,598,600	108,679,500
Manitoba.....	6,115,200	5,374,400	28,003,700	11,701,600	18,914,300
Saskatchewan.....	3,969,000	3,246,100	12,566,700	11,098,700	5,480,200
Alberta.....	8,180,000	5,234,900	23,940,100	15,598,800	14,401,100
British Columbia.....	10,641,900	11,724,700	17,224,800	18,716,000	20,578,000
<b>Canada.....</b>	<b>187,277,900</b>	<b>187,178,500</b>	<b>346,069,500</b>	<b>393,991,300</b>	<b>281,594,100</b>

Table 239.—Total Value of Work Performed in Canada by General and Trade Contractors (including Subcontractors), Municipalities, Harbour Commissions, Provincial and Dominion Government Departments 1937 to 1942  
(Construction Branch, Dominion Bureau of Statistics)

	\$
1937.....	351,874,114
1938.....	353,223,285
1939.....	373,203,680
1940.....	474,122,778
1941.....	639,750,624
1942.....	635,649,570

Table 240.—Types of Canadian Construction 1939-42  
(Construction Branch, Dominion Bureau of Statistics)

*Type of Construction	1939	1940	1941	1942
	\$	\$	\$	\$
Total Value of Construction.....	373,203,680	474,122,778	639,750,624	635,649,570
Building Construction.....	150,041,080	257,800,560	374,491,173	351,774,680
Residential.....	53,926,429	59,925,197	87,586,340	70,346,090
Institutional.....	21,214,315	17,208,419	15,174,464	14,246,025
Commercial.....	35,100,121	41,748,521	41,157,146	30,638,095
Industrial (includes factories, warehouses, mine buildings, etc.).....	36,654,828	80,024,101	177,698,268	159,346,630
Other (includes armouries, barracks, hangars, etc.).....	12,145,387	58,294,322	52,874,955	71,197,840
Engineering, Harbours, Rivers, etc.....	168,302,939	164,831,545	200,656,038	217,279,062
Streets, highways, etc.....	86,600,394	60,468,279	68,358,529	59,619,536
Bridges, watermains, sewers, dams, reservoirs, etc.....	25,582,167	23,093,053	40,490,145	34,044,730
Electric stations and transmission lines.....	27,520,189	33,718,009	37,090,038	60,697,808
Docks, wharves, piers, etc.....	9,232,258	4,809,071	6,476,872	10,009,471
Other engineering (includes landing fields, parks, canals, dredging, pile driving, etc.).....	19,301,931	42,743,133	48,241,454	52,817,517
Building Trades (Jobbing).....	45,859,661	51,490,073	64,603,413	60,595,828

\* This survey is based on reports received from General and Trade Contractors and Subcontractors, Municipalities, the Harbours Board and Dominion and Provincial Departments, and covers alterations, maintenance and repairs, as well as new construction.

Table 241.—The following table gives the total value of construction contracts awarded in Canada from 1925 to 1942, also index numbers of wholesale prices of building materials, and index numbers of wage rates.

Year	Value of construction contracts awarded in Canada	Average index numbers of employment in building construction (1926=100)	Average index numbers of wholesale prices of building materials (1926=100)	Index of wage rates in the building trades (1935-39=100)
	(a)	(b)	(c)	(d)
	\$			
1925.....	297,073,000	75.8	102.0	103.1
1926.....	372,047,000	100.0	100.0	104.2
1927.....	418,951,000	108.7	96.1	108.5
1928.....	472,032,600	112.0	97.4	112.3
1929.....	376,651,500	133.3	99.0	119.6
1930.....	456,969,600	121.3	99.8	123.0
1931.....	315,482,000	104.3	81.9	118.5
1932.....	132,872,400	51.1	77.2	107.9
1933.....	97,280,800	38.5	78.3	95.6
1934.....	125,811,500	47.8	82.5	93.7
1935.....	160,305,000	55.4	81.2	90.7
1936.....	162,588,000	55.4	85.3	97.3
1937.....	224,056,700	60.1	94.4	100.1
1938.....	187,277,000	60.1	89.1	102.6
1939.....	187,178,500	62.1	89.7	103.3
1940.....	346,009,800	83.5	95.0	105.7
1941.....	393,991,300	(e) 139.5	107.3	111.7
1942.....	281,594,100	157.9	115.2	118.4

(a) Compiled by MacLean Building Reports Ltd.

(b) Employment Statistics Branch, Dominion Bureau of Statistics.

(c) Internal Trade Branch, Dominion Bureau of Statistics.

(d) Labour Department; 8 trades 1925-1926; 9 trades from 1927 to 1942; 13 cities to 1927; 14 cities to 1930, hereafter 31 to 42 cities.



## CEMENT INDUSTRY

Producers' sales of cement in 1942 as reported by the Canadian cement industry totalled 9,126,041 barrels valued at \$14,365,237, compared with 8,368,711 barrels valued at \$13,063,588 in 1941. The output in 1942 was the largest attained since 1931 when production totalled 10,161,658 barrels worth \$15,826,243. Of the 1942 sales, 4,446,416 barrels were produced in Quebec plants; 2,784,782 barrels in Ontario; 654,855 barrels in Manitoba; 668,043 barrels in Alberta, and 571,945 barrels in British Columbia. The high and low prices per barrel in 1942 were \$2.70 and \$1.25.

The number of firms reporting commercial production of Portland cement in Canada during 1942 was 3 and the plants in operation numbered 8. Capital employed totalled \$51,121,894 and the industry distributed \$2,059,337 in salaries and wages to 1,241 employees. The total value of fuel and electricity used during the year under review amounted to \$3,127,264, of which \$2,308,873 were expended for coal and \$771,092 for purchased electricity. Process supplies consumed, including chemicals, explosives, etc., were valued at \$1,024,057.

The following tonnages of primary materials of mineral origin were used in the manufacture of the final product: limestone, 2,155,750; clay, 188,202; gypsum, 49,816; shale, 30,498; silica sand, 20,711; and iron oxide, 2,094.

The erection or expansion of plants for the production of munitions of war, the building of office structures for war-time service, and the construction of air training centres and other military projects have greatly stimulated the production of cement in Canada since the outbreak of war in 1939. A report on cement, prepared by the Bureau of Mines, Ottawa, contains the following information:

"Portland cement, the principal raw materials for which are limestone and clay, is manufactured in five provinces of Canada. In addition to the standard or ordinary variety of Portland cement, several other varieties, including high-early-strength, alkali-resistant, and white cement are made in this country, the last named variety, however, being made from imported clinker.

"Canada Cement Company, Limited, operates plants at Hull and Montreal East in Quebec; at Port Colborne and Belleville in Ontario; at Fort Whyte, Manitoba; and at Exshaw, Alberta. St. Mary's Cement Company, Limited, operates a plant at St. Mary's, Ontario. British Columbia Cement Company operates at Bamberton, British Columbia. The total rated daily capacity of all plants is about 35,000 barrels, (a barrel of cement weighs 350 pounds net).

"When the change-over from the 'dry' to the 'wet' process, now under way at the Exshaw plant of Canada Cement Company, is completed, all Canadian plants making cement from domestic raw materials will be using the wet process. Remarkable uniformity in the chemical and physical properties of the standard variety of cement is achieved throughout the country as the result of close technical control and improvements in plant equipment.

"Froth flotation is used in a number of plants in the United States and other countries to remove certain materials, principally excess silica and mica, from limestone. The successful adaptation of this process to the beneficiation of cement raw materials has permitted the utilization of limestone deposits, which, though advantageously situated, were not sufficiently pure in their natural state for cement manufacture."

Table 242.—Summary Statistics of Cement Production, Sales, etc., in Canada, 1941 and 1942

	1941		1942	
	Barrels (*)	Value	Barrels (*)	Value
		\$		\$
Output.....	8,480,987		8,634,184	
Sold or used.....	8,368,711	13,063,588	9,126,041	14,365,237
Stocks on hand December 31.....	1,369,676		873,819	
<b>Apparent Consumption.....</b>	<b>8,069,824</b>		<b>8,878,481</b>	

(\*) 1 barrel=350 pounds.

Table 243.—Production and Apparent Consumption of Cement in Canada, 1929-1942

	Sold or Used		Apparent Consumption
	Barrels	\$	Barrels
1929.....	12,284,081	10,337,235	12,105,950
1930.....	11,032,538	17,713,067	10,977,238
1931.....	10,161,658	15,826,243	10,085,986
1932.....	4,498,721	6,930,721	4,466,738
1933.....	3,007,432	4,536,935	2,974,020
1934.....	3,783,226	5,667,946	3,727,521
1935.....	3,648,080	5,580,043	3,610,217
1936.....	4,508,718	6,908,192	4,479,656
1937.....	6,168,971	9,005,867	6,157,485
1938.....	5,519,102	8,241,350	5,478,180
1939.....	5,731,264	8,511,211	5,591,328
1940.....	7,559,648	11,775,345	7,272,886
1941.....	8,368,711	13,063,588	8,069,824
1942.....	9,120,041	14,365,237	8,878,481

Table 244.—Producers' Sales of Cement in Canada, by Provinces, 1940-1942

Province	1940		1941		1942	
	Barrels	Value (*)	Barrels	Value (*)	Barrels	Value (*)
Quebec.....	3,854,330	5,432,105	4,048,740	5,708,188	4,446,416	6,487,078
Ontario.....	2,355,352	3,518,247	2,748,854	4,019,066	2,784,782	3,998,294
Manitoba.....	572,408	1,287,918	576,648	1,274,392	634,855	1,374,498
Alberta.....	414,183	832,508	492,515	985,030	668,043	1,307,353
British Columbia.....	363,366	704,567	501,945	980,322	571,945	1,198,014
Canada.....	7,559,648	11,775,345	8,368,711	13,063,588	9,120,041	14,365,237

(\*) Less value of containers.

Table 245.—Number and Capacity of Kilns in Canadian Cement Plants, 1933-1942

Year	Total kilns		Kilns in use during the year	
	Number	Total capacity barrels per 24 hours	Number	Total capacity barrels per 24 hours
1933.....	41	43,622	(*)	(*)
1934.....	41	43,722	(*)	(*)
1935.....	20	32,650	(*)	(*)
1936.....	19	33,000	(*)	(*)
1937.....	18	33,900	(*)	(*)
1938.....	21	35,200	10	23,100
1939.....	21	35,000	11	23,700
1940.....	21	35,000	13	27,950
1941.....	20	33,050	16	30,350
1942.....	19	34,650	17	32,450

(\*) Data not recorded.

Table 246.—Specified Materials Used in Canadian Cement Plants, 1933-1942

Year	Shale	Limestone	Gypsum	Silica sand	Clay	Iron Oxides (†)
	tons	tons	tons	tons	tons	tons
1933.....	(*)	610,364	13,310	(*)	(*)	(*)
1934.....	(*)	806,546	19,172	(*)	(*)	(*)
1935.....	(*)	818,443	21,611	5,047	(*)	(*)
1936.....	(*)	1,180,358	25,447	8,549	94,943	(*)
1937.....	(*)	1,465,168	33,691	9,281	195,877	444
1938.....	13,821	1,344,868	51,975	9,465	143,421	22
1939.....	27,241	1,379,858	31,492	7,942	105,982	16
1940.....	18,347	1,765,944	38,903	15,298	144,152	170
1941.....	26,837	2,089,781	40,031	16,110	185,954	614
1942.....	30,498	2,155,750	40,816	20,711	188,292	2,094

(\*) Data not recorded. (†) Produced from iron pyrites by the chemical industry.

Table 247.—Principal Statistics of the Cement Manufacturing Industry in Canada, 1940-1942

	1940	1941	1942
Number of firms.....	3	3	3
Number of plants.....	8	8	8
Capital employed.....	\$ 50,370,276	51,108,264	51,121,894
Number of employees—On salary.....	83	87	89
On wages.....	969	1,148	1,152
Total.....	1,052	1,235	1,241
Salaries and wages—Salaries.....	\$ 191,548	190,771	200,779
Wages.....	1,324,218	1,670,160	1,858,558
Total.....	\$ 1,515,766	1,860,931	2,059,337
Selling value of products (Gross).....	\$ 13,006,643	14,323,372	15,628,403
Cost of fuel and electricity.....	2,347,730	2,897,383	3,127,264
Cost of process supplies (*).....	712,193	887,041	1,024,057
Value of containers.....	1,231,298	1,259,784	1,263,166
Net value of products sold.....	\$ 8,715,422	9,279,164	10,213,916

(\*) Other than fuel and electricity.

Table 248.—Capital Employed in the Cement Industry in Canada, 1942

	\$
CAPITAL EMPLOYED AS REPRESENTED BY—	
Present cash value of the land.....	9,797,282
Present value of buildings, fixtures, machinery, tools and other equipment.....	31,501,157
Inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand.....	1,016,668
Inventory value of finished products on hand.....	1,120,527
Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).....	7,686,260
Total.....	51,121,894

Table 249.—Wage-Earners on the the Last Day of Each Month, or Nearest Representative Date, 1940-1942

Month	1940	1941	1942	
			Quarry	Mill
January.....	736	1,051	146	932
February.....	711	1,058	154	938
March.....	795	1,084	150	961
April.....	974	1,169	159	989
May.....	1,021	1,177	153	988
June.....	1,041	1,219	150	1,032
July.....	1,046	1,221	154	1,058
August.....	1,052	1,177	155	1,038
September.....	1,111	1,197	148	1,040
October.....	1,146	1,158	156	993
November.....	1,100	1,145	157	1,018
December.....	923	1,124	155	973

## THE CLAY AND CLAY PRODUCTS INDUSTRY

The industrial clays of Canada may be classified as common clays, stoneware clays, fireclays, and china clays. Statistically, the ceramic industry of Canada is conveniently classified into two divisions: (1) Production from domestic clays, which includes the production of building brick, structural tile, drain tile, roofing tile, stoneware, sewer pipe, pottery and refractories, and (2) production from imported clays, which includes the manufacture of electrical porcelains, sanitary ware, sewer pipe, table ware, pottery, ceramic floor and wall tile, and various kinds of fireclay refractories.

A total of 148 plants, representing in the aggregate, a capital investment of \$23,570,089, operated in the domestic and imported clay products industries in Canada during 1942. These two industries provided employment for 3,919 persons during the year; their earnings totalled \$5,123,339. The combined production in 1942 was valued at \$12,478,951 compared with \$12,947,189 in 1941.



## 1. PRODUCTION FROM DOMESTIC CLAYS

The gross value of Canadian producers' sales of domestic clays and products made from same totalled \$7,081,723 in 1942 compared with \$7,575,336 in 1941 and \$13,904,643, the all-time high record established in 1929. Commercial production of domestic clay products in 1942 was reported from every province except Prince Edward Island; no output of these materials has as yet been recorded for the Yukon and Northwest Territories. Of the total value of sales in 1942, Ontario and Quebec firms contributed \$2,549,486 and \$1,741,297 respectively.

Sales of building brick in 1942 totalled 169,317 thousand, valued at \$3,018,375. Sewer pipe shipments aggregated \$1,392,545; hollow blocks, roofing and floor tile, \$1,106,310; drain tile, \$329,035; and pottery, including earthenware, \$646,088.

Fireclay was mined during 1942 in Nova Scotia, Ontario, Saskatchewan, Alberta and British Columbia with sales of this material totalling 5,601 short tons valued at \$40,722. Firebrick and other fireclay products made from Canadian clays were evaluated at \$408,076. Bentonite shipments during the year under review were valued at \$44,204. Shipments of Kaolin were also reported from the province of Quebec in 1942; these totalled 408 short tons appraised at \$6,130.

The number of firms reported as active in the Canadian domestic clay products industry totalled 120 in 1942, of which 61 were located in Ontario, 19 in Quebec, 12 in Alberta, 9 in British Columbia, and the balance in Nova Scotia, New Brunswick, Saskatchewan and Manitoba. Capital employed by the industry was reported at \$17,793,931; employees numbered 2,523, and salaries and wages paid amounted to \$3,073,011. Fuel and electricity used during 1942 totalled \$1,292,373 and chemicals and various other process supplies consumed were valued at \$158,866.

Such ceramic products as glass, cement, and artificial abrasives are not included in this report.

The following information has been abstracted from a report on clay and clay products as prepared by the Bureau of Mines, Ottawa.

"Common clays suitable for the production of building brick and tile are found in all the provinces of Canada.

"The largest production in Canada of stoneware clay or semi-fireclays comes from the Eastend and Willows area, Saskatchewan. Large quantities of the clays from the area are selectively mined and shipped to Medicine Hat, Alberta, where, owing to the availability of cheap gas fuel, they are used extensively in the manufacture of stoneware, sewer pipe, pottery, tableware, etc.

"Stoneware clays and moderately refractory fireclays occur near Shubenacadie and Musquodoboit, Nova Scotia. Some of the Musquodoboit clay is used for the production of pottery, but it has not been extensively developed for ceramic use.

"Stoneware clays or low-grade fireclays occur near Williams Lake, and Chimney Creek Bridge in British Columbia; in the Cypress Hills of Alberta; and near Swan River, Manitoba; but they are difficult of access and have not been developed.

"Two large plants and a few small plants manufacture fireclay refractories from domestic clay. At one plant, about 50 miles south of Vancouver, a high-grade, moderately plastic fireclay is extracted by underground mining from the clay beds in the Sumas Mountain, and the plant manufactures firebrick and other refractory materials. Another plant at Claybank, Saskatchewan, by selective mining, utilizes the highly plastic refractory clays from the 'White Mud' beds of southern Saskatchewan.

"A small amount of the most refractory clays in the deposits near Shubenacadie is mined and used by the steel plant at Sydney, Nova Scotia, for refractory purposes and some of the Musquodoboit clay is used for stove linings. Almost all other manufacturers of fireclay refractories (including high temperature cements, plastic refractories, etc.) use imported clay.

"China clay (kaolin) has been produced commercially in Canada only from the vicinity of St. Remi d'Amherst, Papineau county, Quebec, where mining operations were carried on for several years prior to 1923. The large-scale operation of this deposit has been under consideration for a number of years and a company was organized a few years ago to extract the kaolinized material by underground mining, to refine it into high-grade china clay, and to recover washed silica sand as a by-product. Following its reorganization as Canada China Clay and Silica Products, Limited, the company constructed a modern plant and is equipped to carry out the washing process in accordance with the most up-to-date and scientific methods. The project is of special interest in view of the hazards involved in obtaining shipments of china clay from the United Kingdom for the paper, rubber, ceramic, and other industries. The Canadian production of grades of silica sand suitable for the glass trade is also of much greater importance, now that the Belgian source of supply has been cut off. Canadian Kaolin-Silica Products' property at Lac Remi, Quebec, which was operated chiefly for the production of high-grade silica sand, has been idle since the destruction of the plant by fire a few years ago.

"Several other interesting occurrences of kaolin have been discovered in Quebec in recent years. One of these, located on Thirty-One-Mile Lake, near Point Comfort, Hull county, is being explored and portions of the deposit yield china clay of a high grade in the crude state. The extent and uniformity of the deposit is not as yet proved, but its possibilities as a source of high-grade fireclay are receiving attention. Kaolin has also been discovered near Brébeuf; on Lake Labelle; and near Chateau Richer in Quebec, but there has been little exploratory work on the deposits.

"Important deposits of high-grade, plastic, white-burning and buff-burning clays occur on the Mattagami, Abitibi, and Missinabi rivers in northern Ontario. Some of these can be classed as china clays, others as fireclays, and still others as ball clays. The deposits have attracted considerable interest in recent years, but efforts to develop them have been handicapped owing to the distance of the deposits from industrial centres, and to the lack of transportation facilities.

"In British Columbia, along the Fraser river, about 25 miles above Prince George, is an extensive clay deposit, parts of which yield a high grade of china clay. As china clay from England is difficult to obtain on the West coast, owing to shipping risks, consideration is being given to the possibility of using material from this deposit as a source of china clay suitable for the pulp and paper trade.

"In the manufacture of porcelain, sanitary ware, dinner ware, ceramic floor and wall tile, etc., china clay from England has been used almost entirely. Separate production figures are not published for these classes of ceramic ware as there are only one or two producers in each case. Canada also imports large quantities of china clay for use in the production of paper; in the rubber industry; and for other industrial purposes.

"Ball clays of high bond strength occur in the 'White Mud' beds of southern Saskatchewan, but as yet they have not been developed. Activated clays for oil bleaching are largely imported. The value of such clays imported into Canada by oil refineries in 1942 was \$348,068, compared with \$321,028 in 1941. Fuller's and infusorial earths are also imported for use in sugar refineries, vegetable oil mills, etc."

**Table 250.—Production (Total Sales) of Clay Products, by Provinces, 1939-1942**  
(Gross values)

Province	1939	1940	1941	1942
	\$	\$	\$	\$
Nova Scotia.....	339,952	490,543	529,435	618,441
New Brunswick.....	129,985	171,745	193,643	246,041
Quebec.....	1,274,776	1,546,246	1,944,358	1,741,297
Ontario.....	2,346,638	2,508,540	3,087,616	2,549,486
Manitoba.....	78,892	102,906	84,817	80,890
Saskatchewan.....	148,774	164,828	224,897	271,325
Alberta.....	461,079	838,856	952,144	1,013,497
British Columbia.....	371,140	520,883	558,426	560,746
<b>Canada.....</b>	<b>5,151,236</b>	<b>6,344,547</b>	<b>7,375,336</b>	<b>7,081,723</b>

Table 251.—Production (Sales) of Domestic Clay and Clay Products in Canada, 1941-1942

Product	Unit of measure	Sales or shipments			
		1941		1942	
		Quantity	\$	Quantity	\$
Clay—Bentonite.....			7,830		44,204
Fireclay.....	ton	5,431	35,475	5,601	40,722
Kaolin.....	ton	2	30	408	8,130
Other clay.....	ton	21,620	34,807	24,803	71,826
Fireclay blocks and shapes.....			190,407		210,246
Firebrick.....	M	3,643	183,897	3,816	197,830
Brick—Soft mud process—Face.....	M	14,258	285,260	11,385	233,251
Common.....	M	30,664	455,385	20,387	325,762
Stiff mud process—Face.....	M	52,419	1,218,632	39,104	872,287
(wire cut) Common.....	M	69,750	1,043,832	59,901	893,488
Brick—Dry press—Face.....	M	15,621	363,908	12,871	278,701
Common.....	M	25,449	358,097	25,145	404,730
Fancy or ornamental brick (including special shapes, embossed and enamelled brick).....	M	36	2,100	11	676
Sewer brick.....	M	644	10,279	513	9,480
Paving brick.....	M	120	7,312	153	9,353
Structural tile—					
Hollow blocks (including fireproofing and load-bearing tile).....	ton	117,530	1,063,120	109,905	1,082,573
Roofing tile.....			750		32
Floor tile (quarries).....			21,349		23,705
Drain tile.....	M	12,319	333,364	11,659	329,035
Sewer pipe (including copings, flue linings, conduits, etc.).....			1,422,389		1,392,545
Pottery, glazed or unglazed (including coarse earthenware, sanitary ware, flower pots, and all other pottery).....			502,212		646,088
Other products.....			6,811		9,059
<b>Total.....</b>			<b>7,575,336</b>		<b>7,081,723</b>

In addition to the clays recorded in the above table, there were 188,202 tons of ordinary clay consumed in Canada during 1942 in the production of Portland cement; the corresponding consumption in 1941 was 185,954 tons. Also consumed by the Canadian cement industry in 1942 were 30,498 tons of shale.

Table 252.—Production of Building Brick in Canada, 1933-1942

		Soft mud process		Stiff mud process (wire cut)		Dry press		Fancy or ornamental brick	Sewer brick	Total
		Face	Common	Face	Common	Face	Common			
1933.....	M	2,482	12,389	19,602	23,894	4,544	3,916	630	243	67,790
	\$	41,737	156,709	412,367	356,498	101,252	44,377	7,824	3,693	1,121,517
1934.....	M	4,904	14,256	23,800	30,317	6,065	6,440	43	307	86,072
	\$	76,247	183,585	494,341	424,131	130,392	66,616	2,625	5,992	1,343,929
1935.....	M	6,695	21,197	25,289	32,334	8,454	6,381	13	175	100,538
	\$	122,215	250,504	500,066	437,123	175,042	55,253	729	5,236	1,555,167
1936.....	M	6,097	24,180	30,218	35,592	8,961	10,241	25	418	115,732
	\$	111,378	302,690	575,765	484,078	165,924	100,785	1,374	6,778	1,748,772
1937.....	M	9,904	23,638	37,610	55,689	12,565	14,136	55	175	153,770
	\$	175,544	316,534	735,615	755,630	233,542	152,062	2,972	2,777	2,375,276
1938.....	M	10,838	24,104	34,179	50,734	13,125	15,536	63	228	118,807
	\$	208,610	313,082	671,471	681,744	209,039	192,741	4,175	3,581	2,341,443
1939.....	M	10,927	26,652	45,993	51,114	12,263	17,790	68	217	165,024
	\$	182,376	372,116	941,096	692,224	242,518	236,597	4,601	4,506	2,676,634
1940.....	M	15,946	40,395	41,652	52,777	14,932	24,870	47	694	191,213
	\$	323,634	611,750	903,638	738,416	333,717	351,335	2,477	12,222	3,377,187
1941.....	M	14,288	30,664	52,419	69,750	15,621	25,449	36	644	268,871
	\$	285,260	455,385	1,218,632	1,043,832	363,908	386,097	2,100	10,279	3,765,493
1942.....	M	11,385	20,387	39,104	59,901	12,871	25,145	11	513	169,317
	\$	233,251	325,762	872,287	893,488	278,701	404,730	676	9,480	3,018,375

Table 253.—Production of Building Brick in Canada—Per Capita of Population for Years Specified

Year	M per capita	Year	M per capita
1905.....	0.087	1936.....	0.010
1914.....	0.070	1937.....	0.014
1924.....	0.035	1938.....	0.013
1929.....	0.046	1939.....	0.015
1930.....	0.031	1940.....	0.017
1933.....	0.006	1941.....	0.018
1934.....	0.008	1942.....	0.014
1935.....	0.009		



Table 254.—Production of Paving Brick in Canada, 1933-1942

Year	Quantity	Value
	M	\$
1933.....	1	42
1934.....	10	352
1935.....	15	627
1936.....	116	3,149
1937.....	3	131
1938.....	1	34
1939.....	157	6,089
1940.....	19	819
1941.....	120	7,312
1942.....	153	9,353

Table 255.—Production of Structural Tile in Canada, 1933-1942

Year	Hollow Blocks(*)		Roofing Tile		Floor Tile (Quarries)	
	Short tons	\$	No.	\$	Sq.ft.	\$
1933.....	26,747	160,059	20,469	1,136	91,495	14,297
1934.....	31,136	244,122	44,115	1,852	80,356	17,491
1935.....	(a) 47,195	344,608	82,015	3,660	51,765	7,629
1936.....	58,501	467,860	52,730	2,139	97,738	13,798
1937.....	64,526	533,843	60,542	3,302	73,191	12,169
1938.....	70,648	591,416	150,504	5,196	109,958	15,330
1939.....	86,120	714,291	148,291	4,964	90,812	15,233
1940.....	105,073	788,478	41,772	1,839	(b)	13,631
1941.....	117,530	1,063,120	(b)	750	(b)	21,349
1942.....	109,905	1,082,573	(b)	32	(b)	23,705

(\*) Including fireproofing and load-bearing tile.

(a) In addition, there was produced \$615 worth of ceramic tile.

(b) Data not available.

Table 256.—Production of Sewer Pipe, Copings, Flue Linings, etc., in Canada, 1933-1942

Year	Value	Year	Value
	\$		\$
1933.....	354,458	1938.....	778,107
1934.....	436,433	1939.....	613,208
1935.....	481,559	1940.....	1,152,603
1936.....	588,485	1941.....	1,422,389
1937.....	790,210	1942.....	1,392,545

Table 257.—Production of Drain Tile in Canada, 1933-1942

Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$
1933.....	10,057	222,829	1938.....	12,862	322,774
1934.....	7,385	180,553	1939.....	14,361	353,973
1935.....	7,124	205,330	1940.....	10,550	277,551
1936.....	8,148	214,549	1941.....	12,319	333,364
1937.....	11,391	298,970	1942.....	11,659	329,035

Table 258.—Production of Pottery† from Domestic Clays in Canada, 1933-1942

Year	Value	Year	Value
	\$		\$
1933.....	202,500	1938.....	235,890
1934.....	213,733	1939.....	*280,420
1935.....	220,711	1940.....	474,452
1936.....	218,402	1941.....	502,212
1937.....	232,209	1942.....	646,088

†Including coarse earthenware, stoneware, flower pots, and all other pottery.

\*In addition \$2,292 worth of sanitary ware was produced.

Table 259.—Production of Kaolin\* and Fireclay in Canada, 1933-1942

Year	Kaolin		Fireclay		Year	Kaolin		Fireclay	
	Quantity	Value	Quantity	Value		Quantity	Value	Quantity	Value
	Tons	\$	Tons	\$		Tons	\$	Tons	\$
1933.....			1,421	11,273	1938.....			2,344	17,243
1934.....	48	504	1,043	12,598	1939.....			10,045	30,824
1935.....	170	1,520	2,272	15,574	1940.....			4,881	30,504
1936.....			2,437	17,639	1941.....	2	30	5,431	35,475
1937.....			4,123	26,081	1942.....	408	6,130	5,601	40,722

\*Produced in the province of Quebec.

Table 260.—Production of Firebrick and Fireclay Blocks and Shapes in Canada, from Domestic Clays, 1933-1942

Year	Firebrick		Fireclay blocks and shapes	Year	Firebrick		Fireclay blocks and shapes
	Quantity	Value	Value		Quantity	Value	Value
	M	\$	\$		M	\$	\$
1933.....	1,547	73,226	80,625	1938.....	2,213	113,581	73,512
1934.....	2,109	101,219	62,388	1939.....	2,331	119,346	95,256
1935.....	1,817	90,149	71,344	1940.....	3,167	165,525	85,127
1936.....	2,538	118,923	65,171	1941.....	3,043	183,897	190,497
1937.....	2,950	142,827	75,431	1942.....	3,816	197,830	210,246

Table 261.—Production (Sales) of Bentonite in Canada, by Provinces, 1933-1942

Year	Bentonite							
	Manitoba		Alberta		British Columbia		Canada	
	tons	\$	tons	\$	tons	\$	tons	\$
1933.....					55	1,363	55	1,363
1934.....					63	1,578	63	1,578
1935.....					41	781	41	781
1936.....					(a) 120	180	(a) 120	180
1937.....	132	1,154			31	817	163	1,971
1938.....			1,136	3,444	43	215	1,179	3,659
1939.....	99	591	889	2,850			988	3,441
1940.....	710	2,023	714	2,240	45	225	1,469	4,488
1941.....	760	1,330	1,317	5,882	95	918	2,172	7,830
1942.....		38,800		5,404				44,204

(a) Partly for experimental purposes.

## BENTONITE

(Bureau of Mines, Ottawa)

Bentonite, mainly of the highly-colloidal, "swelling" variety, is widely distributed over large areas of the Prairie Provinces, where it occurs at several horizons in Upper Cretaceous sediments. The more important known deposits are exposed mainly in areas dissected by drainage channels where they show as beds in the slopes bordering valleys and in the sides or on top of small buttes in typical "bad-land" topography. Thus, many of the chief exposures are found in the Red Deer Valley section of Alberta; over a wide area in southern Saskatchewan; and in the district around Morden, in southern Manitoba. One lower-lying bed occurs as a persistent parting in the No. 1 or main coal seam mined at a number of points in the Drumheller district, Alberta, as well as near Cluny, farther east. Other exposures exist in the Edmonton region, Alberta, and farther west, on McLeod River, near Edson. In British Columbia, a deposit of unusual thickness occurs in Tertiary beds near Merritt and at Princeton.

Several of the above occurrences have been mined on a small scale, but the total production to date is comparatively small. Most of the output has come from the Drumheller area in the Red Deer Valley, Alberta, and from the Morden area, Manitoba.

Gordon L. Kidd of Drumheller, who commenced operations in 1937, reported shipments in 1942, most of which went to Alberta Mud Company, 502 Lancaster Building, Calgary, for processing and use in oil drilling in the Turner Valley field. Aetna Coal Company, East Coulee, south of Drumheller, supplied bentonite to Mineral Sales Limited, of Calgary, the material being shipped to Lethbridge and Okotoks, also for oil drilling use. Total production by Drumheller and district producers to the end of 1942 is about 5,500 tons.

In Manitoba, Pembina Mountain Clays Limited, 915 Paris Building, Winnipeg, which commenced operations in 1940, continued development of its deposits near Morden in the southern part of the province and reported 1,650 tons of clay mined. Part of this was processed in the company's plant at Winnipeg and marketed as foundry clay and bleaching clay. Most of the foundry clay has gone to local foundries, and the bleaching clay is used in oil refining and in the packing house trade. The bentonite of the Morden district possesses high bleaching power in the natural state, and the company installed an activation unit in 1942. Tests in the Bureau of Mines Laboratories at Ottawa have shown that for foundry use Morden bentonite is equal, if not superior, to the bentonite imported for this purpose from the United States.

No world figures of bentonite production are available. The United States supplies and uses most of the output; its exports have included ground natural clay for foundry and other uses, and activated clay for bleaching.

Bentonite prices in the United States have been showing a downward trend and the nationwide average level in 1941 declined to \$6.93 per ton f.o.b. mines, from \$7.65 in 1940. Price average of the colloidal-type Wyoming material dropped from \$10.65 to \$9.39 in the same period. Trade journal quotations, however, have remained substantially unchanged. Wyoming dried and granulated clay sold in 1942 for \$6.50 per ton, f.o.b. mines, in carload lots, and air-floated 200-mesh material for \$9.50 bagged. Selected air-floated Wyoming clay was priced at \$26 per ton, f.o.b. Chicago. Freight rates from Wyoming points to Montreal are about \$14 per ton. Imported activated (Filtrol-type) bentonite has cost \$75 to \$80 per ton, in carload lots, delivered eastern Canadian points, while American natural bleaching clay has sold for \$25 per ton laid down.

**Table 262.—Fuller's Earth Used in Canada in the Manufacture of Soaps and Washing Compounds and in the Petroleum Products Industry, 1932-1942**

Year	Petroleum products industry		Soaps and washing compounds	
	*pounds	\$	pounds	\$
1932.....	19,642,179	258,034	507,807	7,444
1933.....	22,811,655	314,515	588,434	8,501
1934.....	18,588,514	230,357	508,316	6,562
1935.....	18,487,148	260,885	660,018	13,694
1936.....	18,007,295	243,164	1,328,219	20,601
1937.....	18,843,458	240,309	1,167,766	20,393
1938.....	19,687,467	281,668	1,195,208	19,575
1939.....	19,814,473	304,214	1,586,163	30,924
1940.....	23,828,660	406,155	1,651,471	40,695
1941.....	30,155,750	571,010	1,486,000	39,332
1942.....	24,162,091	528,350	1,350,000	37,831

\*Includes all clays.

**Table 263.—China Clay (Kaolin) Used in the Manufacture of Paper in Canada, 1931-1942**

Year	Tons	Value	Year	Tons	Value
		\$			\$
1931.....	11,484	173,660	1937.....	41,738	578,223
1932.....	14,432	205,068	1938.....	34,968	488,147
1933.....	20,048	267,014	1939.....	32,709	430,092
1934.....	27,550	357,286	1940.....	36,931	558,659
1935.....	33,706	422,584	1941.....	32,844	588,585
1936.....	39,165	520,121	1942.....	28,734	578,190

**Table 264.—Clays and Earths Used in Canadian Rubber Goods Industry, 1933-1942**

Year	Tons	Value	Year	Tons	Value
		\$			\$
1933.....	1,391	32,361	1938.....	2,942	81,935
1934.....	2,391	54,368	1939.....	3,438	80,745
1935.....	2,639	63,553	1940.....	3,586	90,867
1936.....	3,017	70,709	1941.....	4,059	101,441
1937.....	3,614	79,300	1942.....	1,523	37,186



**Table 265.—Firebrick and Fireclay Used in the Manufacture of Iron and Steel and Their Products in Canada, 1932-1942**

Year	Firebrick		Fireclay		Other Fireclay, Firebrick and Cupola Blocks
	Number	Value	Tons	Value	
		\$		\$	\$
1932.....	3,409,000	123,532	5,910	52,492	36,395
1933.....	1,846,016	141,784	7,615	62,602	(b) 11,628
1934.....	2,590,452	102,538	8,248	75,906	21,488
1935.....	(a)	451,604	11,610	101,601	28,064
1936.....	(a)	(a)	(c) \$ 779,014	(a)	(a)
1937.....	(a)	(a)	(c) \$1,058,787	(a)	(a)
1938.....	(a)	(a)	(c) \$ 838,012	(a)	(a)
1939.....	(a)	(a)	(c) \$ 939,495	(a)	(a)
1940.....	(a)	(a)	(c) \$1,587,898	(a)	(a)
1941.....	(a)	(a)	(c) \$2,581,813	(a)	(a)
1942.....	(a)	(a)	(c) \$3,268,181	(a)	(a)

(a) Not published separately.

(b) From 1933 includes only cupola blocks.

(c) Combined value for firebrick, fireclay and other fireclay, firebrick and cupola blocks.

**Table 266.—Fuller's and Infusorial Earth Used in Specified Canadian Industries, 1933-1942**

Year	Sugar Refineries		Vegetable Oil Mills	
	Pounds	\$	Pounds	\$
1933.....	(a)	(a)	126,880	2,730
1934.....	(a)	(a)	115,120	2,171
1935.....	(a)	(a)	88,980	2,425
1936.....	(b) 59,200	1,730	143,720	10,044
1937.....	(c) 4,586,786	95,532	(x) 212,997	9,349
1938.....	(a) 4,908,597	101,473	190,253	9,063
1939.....	(c) 4,819,811	105,711	(b) 207,105	10,166
1940.....	(c) 4,984,362	112,369	(b) 216,254	7,731
1941.....	(c) 5,333,131	133,129	(b) 275,290	10,604
1942.....	(c) 3,007,180	75,295	(b) 437,120	20,154

(a) Not recorded.

(b) Fuller's earth, in 1942, includes 97,785 pounds clarex earth valued at \$4,657.

(c) Infusorial earth.

(x) Includes other earth.

Note.—In addition to the consumption recorded, there is a considerable quantity of fuller's earth used by the slaughtering industry.

**PRICES (a)**

**Bentonite**.—per ton, carload lots, f.o.b. Wyoming mines, dried and crushed, in bulk, \$7.50; pulverized, 200 mesh, \$9.50 in 100-lb. paper bags.

**China Clay (Kaolin)**.—per ton, f.o.b. South Carolina and Georgia mines, in bulk: saggar clays, \$2.50 to \$3.50; tailings, \$4.50 to \$5.00. No. 2 grades, \$5.50 to \$6.00; No. 1 grades, air-floated, crude, \$6.75 to \$8.00; No. 1 washed, \$8.00. Florida: washed, crushed, bulk, \$11.75; air-floated and washed, \$14 to \$15. Maryland: ball clays, shredded bulk, \$3.00 to \$7.00; air-floated, in paper bags, \$10.10 to \$18.25; New Jersey: plastic kaolin, pulverized, in paper bags, \$10.25 to \$10.75. Insecticide clay, \$11.50 to \$16.50. Imported English, per long ton, C and F. American ports: lump, \$26 to \$28 in bulk; air-floated \$40 to \$60 nominal.

**Fuller's Earth**.—per ton, f.o.b. Colorado, \$9; f.o.b. Georgia or Florida, 30 to 60 mesh, \$14.50; 15 to 30, \$14; 200 and up, \$10; 100 and up, \$7.

(b) **Fuller's Earth**.—English, long ton, nominal; Georgian, carlots, long ton \$27.78.

**China Clay**.—Imported, carlots, bulk, ton \$25 to \$50 (U.S. only). Pigment clay for rubber, carlots, bags, ton \$23.00 less carlots, ton, \$26.50. Kaolin-nominal, (refined grades), cwt. \$4.80, specially refined 10 cents a pound.

(a) "Engineering & Mining Journal's Metal & Mineral Markets"—New York, November, 1942 and July, 1943.

(b) F.O.B. market at Toronto—"Canadian Chemistry & Process Industries"—Toronto, December, 1942 and June, 1943.

Table 267.—Capital Employed in the Clay Products Industry in Canada, by Provinces, 1942

Industry and province	Capital employed as represented by:					Total
	Present value of land†	Present value of buildings, fixtures, machinery, tools and other equipment	Inventory value of materials on hand, stocks in process, fuel, etc.	Inventory value of finished products on hand	Operating capital, including cash, bills and accounts receivable, etc.	
		\$	\$	\$	\$	\$
<b>By INDUSTRIES—</b>						
*Brick and Tile—						
Nova Scotia.....	113,107	573,798	24,479	25,361	138,882	875,627
New Brunswick.....	19,568	153,394	981	12,250	13,270	199,163
Quebec.....	800,270	2,284,976	96,578	348,106	602,953	4,233,183
Ontario.....	1,281,892	4,217,485	153,092	490,824	1,967,428	8,110,721
Manitoba.....	14,000	38,361	5,300	8,292	89,555	155,708
Saskatchewan.....	259,945	411,405	20,849	44,220	80,508	816,927
Alberta.....	119,455	1,364,535	212,816	104,684	175,532	1,976,572
British Columbia.....	139,674	387,091	10,897	125,346	160,044	823,052
<b>Total for Canada.....</b>	<b>2,747,911</b>	<b>9,431,045</b>	<b>525,292</b>	<b>1,139,083</b>	<b>3,318,172</b>	<b>17,181,593</b>
Stoneware and pottery—						
<b>Total for Canada.....</b>	<b>40,169</b>	<b>344,626</b>	<b>13,315</b>	<b>57,594</b>	<b>156,724</b>	<b>612,428</b>
<b>By PROVINCES—</b>						
Total for clay and clay products—						
Nova Scotia.....	113,107	573,798	24,479	25,361	138,882	875,627
New Brunswick.....	25,760	165,579	4,201	20,979	19,381	235,960
Quebec.....	801,470	2,295,776	97,678	348,906	694,453	4,238,283
Ontario.....	1,293,892	4,237,485	154,092	495,114	1,987,117	8,167,700
Manitoba.....	14,000	38,361	5,300	8,292	89,555	155,708
Saskatchewan.....	259,945	411,405	20,849	44,220	80,508	816,927
Alberta.....	140,232	1,666,176	220,911	148,459	304,958	2,480,734
British Columbia.....	130,074	387,091	10,897	125,346	160,044	823,052
<b>Canada.....</b>	<b>2,788,090</b>	<b>9,775,671</b>	<b>538,607</b>	<b>1,216,677</b>	<b>3,474,896</b>	<b>17,793,931</b>

\*Clay, sewer pipe, firebrick products and other clays included under brick and tile.

†Excluding unmined material.

Table 268.—Employees, Salaries and Wages in the Clay Products Industry in Canada, by Provinces, 1942

Province	*Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners		Salaries	Wages	Total
	Male	Female	Male	Female			
					\$	\$	\$
Nova Scotia.....	9	4	194		38,461	165,315	203,776
New Brunswick.....	7	3	76	17	11,632	67,089	78,721
Quebec.....	49	7	485		139,247	595,264	734,511
Ontario.....	94	26	755	5	241,888	943,205	1,185,093
Manitoba.....	0	2	43	1	20,134	40,127	60,261
Saskatchewan.....	12		46		20,375	61,310	81,685
Alberta.....	29	7	295	137	71,165	359,499	430,664
British Columbia.....	18	5	188		47,643	250,657	298,300
<b>Canada.....</b>	<b>227</b>	<b>54</b>	<b>2,082</b>	<b>160</b>	<b>590,545</b>	<b>2,482,466</b>	<b>3,073,011</b>

\*See note, page 96.

Table 269.—Average Number of Wage-Earners, by Months, 1940-1942

Month	1940	1941	1942		
			Pit	Plant	
				Male	Female
January.....	1,190	1,907	143	1,683	140
February.....	1,051	1,792	115	1,559	137
March.....	1,287	1,871	123	1,563	143
April.....	1,739	2,427	161	1,707	148
May.....	2,047	3,250	241	1,987	154
June.....	3,143	3,309	258	2,160	146
July.....	3,191	3,281	248	2,170	164
August.....	3,027	3,070	227	2,158	175
September.....	2,812	2,809	182	2,042	165
October.....	2,530	2,628	162	1,979	185
November.....	2,300	2,424	148	1,900	170
December.....	2,161	2,153	128	1,637	155

## II. PRODUCTS FROM IMPORTED CLAYS

This industry covers the operations of Canadian plants which were occupied chiefly in making ceramic products from imported clays. Products made in these plants during 1942 included high tension insulators, vitreous china sanitary ware, china dinnerware, firebrick, sewer pipe, floor and wall tile, refractory cements, electrical porcelains, etc.

Twenty-four plants reported in this group for 1942 and their output was valued at \$5,397,228 against last year's total of \$5,371,853 and the 1940 figure of \$4,503,791. Capital employed amounted to \$5,776,158. The average number of workers was 1,396 and payments for salaries and wages totalled \$2,050,238. Fuel and electricity cost \$386,969 and materials for use in manufacturing processes cost \$1,170,938.

Table 270.—Products Made in the Imported Clay Products Industry, 1941 and 1942

Product	1941	1942
	Gross selling value at works	Gross selling value at works
Firebrick and stove linings—Rigid.....	\$ 861,633	\$ 1,138,761
Plastic.....	193,093	213,712
High temperature cements.....	105,467	131,478
High tension porcelain insulators, china sanitary ware, clay sewer pipe, floor and wall tile, pottery, china tableware, etc. (Separate figures cannot be shown for these items as there were only one or two producers in each case).....	4,411,600	3,913,277
<b>Total.....</b>	<b>5,371,853</b>	<b>5,397,228</b>

Table 271.—Materials Used in the Imported Clay Products Industry, 1941 and 1942

Material	1941		1942	
	Short tons	Total cost at works	Short tons	Total cost at works
Imported clays—Ball clay.....	3,746	\$ 71,966	2,614	\$ 53,881
China clay.....	3,504	78,708	3,344	80,003
Fireclay.....	39,423	277,448	35,391	249,635
Saggur clay.....	076	15,008	847	14,347
Other imported clays.....	1,161	20,820	733	16,848
Canadian clays—Fireclay.....	2	20	23	1,615
Other clays.....	215	1,669	164	836
Feldspar.....	3,333	74,247	2,700	62,525
Silica and ground quartz.....	4,055	63,116	3,753	63,259
Talc.....	762	11,542	565	7,774
Other glazing materials.....		37,742		24,401
Insulator hardware.....		230,375		125,662
Shipping containers and packing materials.....		140,739		109,255
All other materials.....		301,148		360,897
<b>Total.....</b>		<b>1,331,608</b>		<b>1,170,938</b>



## LIME INDUSTRY

Production of quick and hydrated lime in Canada during 1942 totalled 884,830 net tons valued at \$6,530,839 compared with 860,885 net tons worth \$6,357,941 in 1941. The output in 1942 comprised 749,282 net tons of quicklime valued at \$5,646,049 and 135,548 net tons of hydrated lime at \$84,790. During the year under review, 712,307 net tons of quicklime and 89,252 net tons of hydrated lime were sold or used by lime producers for chemical manufacture, while the balance of Canadian lime production, totalling 83,271 net tons was sold or used for building, agricultural and other purposes.

Stone used in the production of lime in Canada includes calcium, high calcium and dolomitic varieties of limestone. It is estimated that about 1,574,508 net tons of limestone were consumed in the production of lime in 1942. In 1942 lime was produced in all Canadian provinces with the exception of Prince Edward Island and Saskatchewan; no commercial production of lime in the Territories has ever been officially reported. Of the total Canadian output of lime in 1942, Ontario plants produced 415,698 net tons or approximately 47 per cent, and Quebec 348,576 net tons or 39.4 per cent. Data relating to Canadian imports and exports of lime are not available for publication during the war, and such information is supplied only for confidential use by the External Trade Branch of the Dominion Bureau of Statistics, Ottawa.

During 1942 the industry reported 48 plants as active; capital employed totalled \$4,742,066, and \$1,312,320 in salaries and wages were distributed to 1,022 employees. The cost of fuels and purchased electricity used amounted to \$2,421,292 and the value of explosives, chemicals and other process supplies consumed aggregated \$177,268.

Lime is marketed in the form of quicklime and in the hydrated state, the latter being specially prepared slaked lime in the form of a fine powder that is usually marketed in 50-pound, multi-wall paper bags.

Quicklime is marketed in the lump, pebble, crushed and pulverized forms; lump lime and pebble lime are sold either in bulk or packed in barrels; crushed lime (1 inch and under) and pulverized lime (ground to minus 20 mesh, and in some plants to minus 50 mesh) are sold in airtight multi-wall paper bags.

Prices of the various lime products vary over a wide range depending on the geographical position of the plants and on differences in quality of the lime.

A review of lime in 1942 by the Bureau of Mines, Ottawa, contains the following information:

"The steadily increasing demand for lime by the war industries has raised production above all previous records, and most of the forty-eight plants throughout the country operated at capacity during 1942. A new source of hydrated lime became available in 1942 with the coming into operation of the magnesia plant of the Aluminum Company of Canada, Limited, at Wakefield, Quebec. At this plant hydrated lime is produced as a co-product of magnesia. The large rotary-kiln lime plant of Shawinigan Chemicals Limited, at Shawinigan Falls, Quebec was enlarged in 1942 by the addition of two kilns.

"There are many prospective lime-producing localities in Canada because of the abundance of suitable limestone throughout the country. With the northward development of the mining industry, considerable interest is being manifested in making lime from limestone deposits in the far north."

Table 272.—Production of Lime in Canada, by Provinces, 1942, Showing Purposes for Which Used (\*) or Sold

	Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba and Alberta	British Columbia	Total Canada
(1 ton = 2,000 pounds)						
<b>QUICKLIME</b>						
Building trades—						
Finishing lime..... ton		50	2,500	2,495		5,045
\$		437	15,500	22,598		38,535
Masons' lime..... ton	2,760	4,804	9,401	644		17,609
\$	25,315	60,919	83,780	7,121		177,115
Sand-lime brick..... ton		1,599	4,274			5,873
\$		7,838	33,261			41,099
Agriculture..... ton	100	130	75			305
\$	838	1,970	562			3,370
<b>CHEMICAL—</b>						
Smelters (non-ferrous)..... ton		10,559	6,671	3,282	25	20,537
\$		70,532	41,569	26,296	187	138,584
Iron and steel furnaces (†)..... ton	23,700	5,985	24,387	760	105	54,937
\$	241,744	52,138	176,034	6,080	786	476,782
Cyanide and flotation mills..... ton		2,473	10,772	7,800	507	21,552
\$		17,548	70,204	70,938	3,797	162,487
Pulp and paper mills..... ton	10,874	108,394	6,223	11,473	20,659	155,623
\$	96,990	695,292	42,423	85,321	164,606	1,084,632
Glass works..... ton			15,745	51		15,796
\$			106,659	563		107,222
Sugar refineries..... ton	107	30	6,924	9,593	45	16,699
\$	893	420	59,080	79,518	337	140,324
Tanneries..... ton		1,214	3,697			4,911
\$		10,648	25,263			35,911
Fertilizer plants..... ton			349			349
\$			2,063			2,063
Insecticide plants..... ton			1,607	90	135	1,832
\$			11,127	1,105	1,011	13,243
Other chemical works..... ton	216	128,103	289,782	1,970		429,071
\$	2,811	1,043,682	2,091,502	14,810		3,153,805
Uses unspecified..... ton		1,890	290	1,402	4,601	8,053
\$		20,111	2,030	15,422	33,714	71,277
<b>Total Quicklime..... ton</b>	<b>37,757</b>	<b>263,321</b>	<b>382,667</b>	<b>39,566</b>	<b>35,977</b>	<b>749,282</b>
<b>\$</b>	<b>368,661</b>	<b>1,981,535</b>	<b>2,761,613</b>	<b>329,772</b>	<b>201,138</b>	<b>5,616,049</b>
<b>HYDRATED LIME—</b>						
Building trades—						
Finishing lime..... ton	85	16	16,653	5,233		21,987
\$	700	96	206,536	86,547		293,879
Masons' lime..... ton	843	2,911	7,863			11,617
\$	7,289	19,010	70,516			97,815
Sand-lime brick..... ton						
\$						
Agriculture..... ton	872	533	3,137		3,769	8,311
\$	7,820	3,474	31,865		24,197	67,356
<b>CHEMICAL—</b>						
Smelters (non-ferrous)..... ton		59,585	91	42	355	60,073
\$		186,320	835	420	2,279	189,854
Iron and steel furnaces..... ton			50			50
\$			505			505
Cyanide and flotation mills..... ton		5,267	811	310		6,388
\$		22,640	8,627	3,100		34,367
Pulp and paper mills..... ton	4,375	5,172	353		45	9,945
\$	35,000	43,928	3,770		289	82,987
Glass works..... ton			8			8
\$			79			79
Sugar refineries..... ton	35	30	87			152
\$	315	255	939			1,539
Tanneries..... ton		431	571			1,002
\$		3,664	6,072			9,736
Fertilizer plants..... ton		110	176			286
\$		660	1,542			2,202
Insecticide plants..... ton	310		24		122	456
\$	4,030		232		783	5,045
Other chemical works..... ton		7,995	2,797	100		10,892
\$		30,807	28,688	1,000		60,495
Uses unspecified..... ton		3,205	410		766	4,381
\$		30,688	3,725		4,918	39,331
<b>Total Hydrated Lime..... ton</b>	<b>6,320</b>	<b>85,255</b>	<b>33,031</b>	<b>5,645</b>	<b>5,057</b>	<b>135,548</b>
<b>\$</b>	<b>53,154</b>	<b>342,172</b>	<b>363,931</b>	<b>91,067</b>	<b>32,466</b>	<b>881,706</b>
<b>Grand Total..... ton</b>	<b>44,277</b>	<b>348,576</b>	<b>415,698</b>	<b>45,211</b>	<b>31,034</b>	<b>881,830</b>
<b>\$</b>	<b>423,815</b>	<b>2,323,707</b>	<b>3,125,574</b>	<b>430,839</b>	<b>236,904</b>	<b>6,330,839</b>

(\*) Not necessarily consumed in provinces where produced.

(†) Includes calcined dolomite used as a refractory material.

NOTE.—Of the total quantity of 884,830 tons of lime produced, 413,948 tons were consumed by the producers themselves.

Table 273.—Lime Sold or Used for Chemical and Other Purposes in Canada, 1931-1942

Year	Lime sold or used for chemical purposes				Lime sold or used for building or other non-chemical purposes			
	Quicklime		Hydrated Lime		Quicklime		Hydrated Lime	
	Short tons	\$	Short tons	\$	Short tons	\$	Short tons	\$
1931.....	213,782	1,469,434	18,055	167,885	65,726	595,550	47,222	531,546
1932.....	234,342	1,627,720	21,130	131,178	33,926	287,795	31,252	347,841
1933.....	207,463	1,496,271	28,347	168,675	60,464	459,451	27,266	307,909
1934.....	201,609	1,440,221	28,297	158,685	106,513	798,035	31,694	348,856
1935.....	229,597	1,596,518	31,288	179,139	112,450	828,904	32,084	321,239
1936.....	349,940	2,499,074	39,384	171,192	41,559	290,898	37,518	374,806
1937.....	421,867	2,922,482	44,929	189,665	44,671	329,901	37,886	382,869
1938.....	373,278	2,557,329	30,547	159,598	42,483	365,762	40,614	429,963
1939.....	424,287	2,887,244	30,861	172,002	50,466	439,403	46,595	504,805
1940.....	568,479	3,944,748	44,421	250,570	55,324	477,010	48,506	516,227
1941.....	668,319	4,797,078	56,202	496,531	58,545	490,633	50,819	573,699
1942.....	712,307	5,314,653	89,252	386,800	36,975	331,396	46,296	497,081

Table 274.—Number of Firms, Employees, Salaries and Wages and Net Value of Lime (Quick and Hydrated) Sold or Used, by Provinces, 1942

Province	Number of firms	Number of employees		Salaries and wages	Fuel, electricity and process supplies used	Production Net value
		Salaried employees	Wage-earners			
New Brunswick (†).....	6	8	130	\$ 181,751	\$ 99,172	\$ 324,643
Quebec.....	14	25	374	440,289	1,432,111	891,596
Ontario.....	14	32	232	435,265	857,242	2,268,332
Manitoba.....	4	6	89	99,626	109,212	155,867
Alberta.....	4	7	39	70,036	45,934	109,826
British Columbia.....	2	20	60	85,353	54,889	182,015
<b>Canada.....</b>	<b>44</b>	<b>98</b>	<b>921</b>	<b>1,312,320</b>	<b>2,598,560</b>	<b>3,932,279</b>

(†) Includes data for two firms operating in Nova Scotia.

Table 275.—Capital Employed in the Lime Industry in Canada, by Provinces, 1942

Province	Capital employed as represented by:					Total
	Present cash value of land	Present value of buildings, fixtures, machinery, tools and other equipment	Inventory value of stone on hand, fuel and miscellaneous supplies on hand	Inventory value of finished products on hand	Operating capital (cash bills and accounts receivable, prepaid expenses, etc.)	
New Brunswick (*).....	25,500	116,742	\$ 11,318	\$ 3,168	\$ 47,507	\$ 204,235
Quebec.....	20,650	487,553	203,662	10,245	255,648	977,758
Ontario.....	111,216	1,821,232	332,612	14,080	39,711	2,318,860
Manitoba.....	.....	498,791	26,487	9,144	.....	534,422
Alberta.....	2,500	187,808	11,500	3,900	39,229	211,988
British Columbia.....	5,000	309,588	67,186	5,466	74,563	461,803
<b>Canada.....</b>	<b>164,866</b>	<b>3,421,774</b>	<b>652,765</b>	<b>46,012</b>	<b>456,649</b>	<b>4,742,066</b>

(\*) Includes data for 2 firms in Nova Scotia.

Table 276.—Number of Wage-Earners on Payroll or Time Record on the Last Day of Each Month or Nearest Work Day, 1939-1942

Month	1939		1940		1941		1942	
	Quarry	Kiln	Quarry	Kiln	Quarry	Kiln	Quarry	Kiln
January.....	274	450	275	440	300	605	285	628
February.....	252	449	271	463	319	630	297	610
March.....	300	489	274	297	343	666	314	647
April.....	340	492	316	530	350	666	311	640
May.....	366	539	366	563	375	668	319	643
June.....	370	522	370	554	368	674	331	637
July.....	362	539	390	590	379	705	327	633
August.....	369	538	372	596	372	666	307	604
September.....	359	549	365	582	375	660	299	587
October.....	351	585	378	594	373	674	261	631
November.....	347	539	328	597	365	659	271	614
December.....	310	471	326	536	333	631	272	590



## THE SAND-LIME BRICK INDUSTRY

Five plants in Canada were engaged chiefly in making sand-lime building brick during 1942. Four of these were located in Ontario and 1 in Quebec. Production, including some cement blocks and brick, was valued at \$303,762, a decrease of 29 per cent from the 1941 total of \$431,359.

Capital invested in these works amounted to \$357,140. An average of 93 people were employed and they were paid \$120,039 in salaries and wages. Expenditures for fuel and electricity amounted to \$30,318, and for processing materials to \$99,724.

Production of sand-lime brick amounted to 12,472 M valued at \$169,716, a decline in both quantity and value from the output of 19,223 M brick at \$230,030 in the previous year. Production value of sand-lime building blocks dropped to \$30,691 from \$46,665.

Table 277.—Products Made, 1941 and 1942

		1941		1942	
		Quantity	Selling value at works	Quantity	Selling value at works
Sand-lime brick.....	M	19,223	\$ 230,030	13,472	\$ 169,716
Sand-lime building blocks.....	M		46,665	213	30,691
Other products (*).....			154,664		103,355
<b>Total.....</b>			<b>431,359</b>		<b>303,762</b>

(\*) Includes cement blocks, cinder blocks and insulating brick.

Table 278.—Materials Used in Manufacturing, 1941 and 1942

Material	Unit of measure	1941		1942	
		Quantity	Cost at works	Quantity	Cost at works
Portland cement.....	brl.	13,175	\$ 26,550	7,949	\$ 17,295
Quicklime.....	ton	5,157	41,674	3,518	29,037
Sand and gravel.....	cu.yd.	60,973	47,647	36,206	35,756
Cinders.....	cu.yd.	8,614	7,466	4,964	4,080
Other materials.....			19,605		13,556
<b>Total.....</b>			<b>142,942</b>		<b>99,724</b>

## SAND AND GRAVEL INDUSTRY

Commercial production of sand and gravel in Canada during 1942 totalled 26,349,907 short tons valued at \$9,005,414 compared with 31,604,806 short tons worth \$10,375,723 in 1941. Included in the totals for both years are sands and gravels from all sources, including recoveries by dredges and material used by railroads as ballast and by mines as backfill.

Quebec and Ontario are Canada's largest sand and gravel producing provinces, the output in these provinces in 1942 being, respectively, 11,026,249 short tons and 8,420,358 short tons; in 1942, the quantity of material washed or screened at Canadian sand and gravel plants totalled 3,656,889 short tons compared with 4,458,426 short tons in 1941, while the quantity of bank or pit-run grades amounted to 22,693,018 short tons as against a corresponding tonnage of 27,146,380 in the preceding year.

Of the total sand and gravel output in 1942, there were 16,139,859 short tons used for concrete, roads, etc., and 1,610,323 short tons as railroad ballast. In addition, there were produced 2,535,366 short tons of straight-run sand for building, etc., 35,807 short tons for moulding; 2,694 short tons as core sand and 54,029 short tons for other purposes. The quantity of crushed gravel produced during the year under review amounted to 2,135,072 short tons and 836,757 short tons of sand were employed as mine fill.

Firms (including individuals) reported as active in the Canadian sand and gravel industry numbered 1,419 in 1942; of these, 800 were located in Quebec, 554 in Ontario, 26 in British Columbia and lesser numbers in Nova Scotia, New Brunswick, Manitoba, Saskatchewan and Alberta. Capital employed by the industry totalled \$4,477,547; employees were reported at 2,141; salaries and wages paid totalled \$2,404,755; fuel, electricity and process supplies used aggregated \$677,149 and the total net value of production was estimated at \$8,328,265.

The following information has been abstracted from a report prepared by the Bureau of Mines, Ottawa:

"Deposits of gravel and sand are numerous throughout Eastern Canada, with the exception of Prince Edward Island where gravels are scarce. Owing to the widespread occurrence of gravels and sands and to their bulk in relation to value, local needs for these materials are usually supplied from the nearest deposits, as their cost to the consumer is governed largely by the length of haul; hence the large number of small pits and the small number of large plants. Some grades of sand particularly suitable for certain industries command a much higher price than does ordinary sand.

"Road improvement, concrete works and railway ballast absorb by far the greater part of the gravel and sand used. Gravel in particular has proved a good material for building all-weather roads at low cost and its use has steadily increased with the growth of motor traffic.

"A considerable tonnage of sand and gravel is also used in the mines for re-filling underground workings. Some mines used several thousand tons a day.

"Most of the gravel used for road work comes from pits worked for that purpose. Usually a portable or semi-portable plant is used to extract enough gravel to supply the immediate need and then a sufficient reserve is built up, in the form of stock piles, for two years' requirements. Road pits may remain idle for two years or more. The amount of gravel produced from year to year thus fluctuates, depending on the program of road construction and improvement. Intermittent operation also applies to railway pits, which may remain idle for several years.

"Part of the gravel used is crushed, screened and in some cases even washed, and the proportion thus processed is increasing steadily. Some Provincial Highway Departments have used crushed instead of pit-run gravel on their main highways for a number of years. Most of the large commercial plants are equipped for producing crushed gravel, a product that can compete with crushed stone.

"The amount of sand consumed follows the trend of building activity, as most of it is used in the building industry for concrete work, cement and lime mortar, or wall plaster. The sand must be clean, that is, free from dust, loam, organic matter, or clay, and contain but little silt, and is usually obtainable from local deposits."

Prices of sand, gravel and crushed stone in the four largest cities in Canada were as follows, at the end of 1941 and 1942. Prices per ton or cubic yard, as indicated below, are for earlots f.o.b. cars:

	Montreal		Toronto		Winnipeg		Vancouver	
	per ton		per ton		per cu.yd.		per cu.yd.	
	1941	1942	1941	1942	1941	1942	1941	1942
Sand.....	\$ 1.15	\$ 1.15	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00
Gravel.....	1.10	1.10	1.53	1.55	1.60	1.00	1.00	1.00
Crushed stone.....	0.82	0.93	1.61	1.67			1.13	1.10

Every province except New Brunswick and Prince Edward Island produces natural bonded moulding sand. One deposit in New Brunswick was operated in 1918 and another in 1921 and 1922. A small production also came from Prince Edward Island of a grade suitable only for light-weight castings. By far the greater part of the output has come from the Niagara peninsula, Ontario. Occasionally new deposits have been opened up, mostly in Ontario and in the western provinces.

The results of a general investigation of moulding sands in Canada were published in 1936 by the Bureau of Mines, Ottawa, in the form of report No. 767, "Natural Bonded Moulding Sands of Canada." This report directs attention to the large number of deposits from which supplies have been obtained for local foundries and the probability of replacing imported material with Canadian sands.

Small quantities of moulding sands not tabulated in official records are produced in nearly all the provinces by foundrymen for their own use from nearby deposits; or by part time operators, such as farmers, for local foundries.

The industry is seasonal in nature as foundrymen usually obtain their supplies in the summer and autumn.

Table 279.—Production in Canada of Sand and Gravel, by Kinds, 1941 and 1942

		Washed or screened	Bank or pit run	Total value
		tons	tons	\$
Production (*)—	1941			
Sand—				
Moulding sand.....		25,624	12,685	40,066
Building sand and sand for concrete, roadwork, etc.....		1,305,256	887,149	729,961
Core sand.....		37,468	73	17,680
Mine filling.....			1,363,317	190,504
Other sand (including blast sands, engine sands, etc.).....		7,485	84,533	28,054
Sand and Gravel—				
Sand and gravel for railway ballast.....		340,005	4,496,903	916,979
Sand and gravel for concrete, road-building, etc.....		2,194,901	17,574,897	7,135,258
Crushed gravel.....		547,687	2,726,823	1,310,281
Total.....		4,458,426	27,146,380	10,375,723
Cost of fuel, electricity and process supplies used.....				474,647
Total net value.....				9,901,076
Production (*)—	1942			
Sand—				
Moulding sand.....		25,753	10,054	41,825
Building sand and sand for concrete, roadwork, etc.....		1,617,886	917,480	931,777
Core sand.....		2,454	240	3,670
Mine filling.....			830,757	117,602
Other sand (including blast sands, engine sands, etc.).....		2,727	51,302	12,534
Sand and Gravel—				
Sand and gravel for railway ballast.....		275,814	4,334,500	957,781
Sand and gravel for concrete, road-building, etc.....		1,342,011	14,797,848	6,010,412
Crushed gravel.....		390,244	1,744,828	896,813
Total.....		3,656,899	22,693,018	9,065,414
Cost of fuel, electricity and process supplies used.....				677,149
Total net value.....				8,328,265

(\*) Does not include production of natural silica sand or of silica sand manufactured from quartz or silica rock; production of these is recorded under quartz in the bulletin—The Feldspar and Quartz Mining Industry.

Table 280.—Production of Sand and Gravel in Canada, by Railway Operators, 1941 and 1942

Kind	1941		1942	
	Tons	Value	Tons	Value
		\$		\$
<b>Sand—</b>				
Moulding sand.....	225	450	300	600
Building sand and sand for concrete, roads, etc.....	121	45	1,350	150
Other sand (including blast and engine sands).....	74,819	15,423	45,517	7,645
<b>Sand and gravel—</b>				
Sand and gravel for railway ballast.....	4,238,565	688,920	3,821,861	742,668
Sand and gravel for concrete, roads, etc.....	304,394	62,309	140,285	25,049
Crushed gravel.....	132,957	54,642	128,125	68,717
<b>Total.....</b>	<b>4,751,681</b>	<b>821,789</b>	<b>4,137,438</b>	<b>811,829</b>

Table 281.—Production of Sand and Gravel in Canada, by Operators, Other Than Railways, 1941 and 1942

Kind	1941			1942		
	Washed or screened	Bank or pit-run	Value	Washed or screened	Bank or pit-run	Value
	Tons	Tons	\$	Tons	Tons	\$
<b>Sand—</b>						
Moulding sand.....	25,624	12,460	39,016	25,753	9,754	41,225
Building sand and sand for concrete, roads, etc. Core sand.....	1,305,256	887,028	729,856	1,617,886	916,130	934,627
	37,468	73	17,680	2,454	240	3,670
Other sand (including blast and engine sands).....	7,485	9,714	10,631	2,727	5,765	4,889
<b>Sand and gravel—</b>						
Sand and gravel for railway ballast.....	340,005	258,338	228,050	275,814	512,648	215,113
Sand and gravel for concrete, roads, etc.....	2,194,901	17,270,503	7,072,949	1,342,011	14,657,513	5,985,363
Mine filling.....		1,363,317	190,504		830,757	117,602
Crushed gravel.....	547,687	2,593,866	1,264,639	390,244	1,616,703	828,096
<b>Total.....</b>	<b>4,458,426</b>	<b>22,395,290</b>	<b>9,553,934</b>	<b>3,656,899</b>	<b>18,555,590</b>	<b>8,166,585</b>



Table 282.—Production of Sand for Building and Concrete, Roads, etc., and Sand and Gravel for Railway Ballast and for Concrete, Roads, etc., 1933-1942

Year	SAND		SAND AND GRAVEL			
	For building, concrete, roads, etc.		For railway ballast		For concrete roads, etc.	
	Tons	\$	Tons	\$	Tons	\$
1933.....	775,412	218,559	561,538	110,449	9,937,832	3,907,911
1934.....	686,631	209,002	1,454,618	260,292	12,418,408	3,411,751
1935.....	787,412	264,435	2,267,195	415,092	17,531,047	5,357,331
1936.....	956,502	362,542	6,318,681	1,054,703	14,336,640	5,216,942
1937.....	1,356,269	476,824	2,764,639	533,876	19,453,188	8,340,764
1938.....	1,750,187	685,976	2,359,703	443,936	22,513,256	9,101,882
1939.....	1,169,899	364,829	3,223,718	603,258	22,899,751	8,988,114
1940.....	1,961,604	537,937	3,634,904	699,518	21,465,961	9,100,612
1941.....	2,192,405	729,901	4,836,908	916,979	19,760,798	7,135,258
1942—						
Nova Scotia.....			186,646	33,898	496,067	274,393
New Brunswick.....	40	18	241,411	74,656	681,569	465,867
Quebec.....	1,351,372	371,870	1,136,286	210,841	6,942,225	1,310,935
Ontario.....	1,040,482	492,108	1,673,027	391,239	4,541,580	2,217,155
Manitoba.....	19,508	8,489	614,913	119,735	707,418	251,134
Saskatchewan.....	135	15	163,903	25,698	481,235	403,512
Alberta.....	23,781	25,023	194,852	29,575	261,990	164,079
British Columbia.....	100,048	37,254	399,285	72,139	2,027,775	923,337
<b>Canada.....</b>	<b>2,535,366</b>	<b>934,777</b>	<b>4,610,323</b>	<b>957,781</b>	<b>16,139,859</b>	<b>6,010,412</b>

Table 283.—Production of Sand and Gravel in Canada, by Provinces, 1942

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
<b>Sand—</b>								
Moulding sand..... tons	1,118			33,349	1,295	18	27	
\$	3,275			37,147	1,337	36	30	
Building sand and sand for concrete, roadwork, etc..... tons		40	1,351,372	1,040,482	19,508	135	23,781	100,048
\$		18	371,870	492,108	8,489	15	25,023	37,254
Core sand..... tons				2,454	240			
\$				3,492	178			
Other sand (including blast sand, engine sand, etc.)..... tons			1,080	15,655		33,060	994	3,240
\$			270	4,074		5,693	207	2,290
<b>Sand and gravel—</b>								
Sand and gravel for railway ballast..... tons	186,646	241,411	1,136,286	1,073,027	614,913	163,903	194,852	399,285
\$	33,898	74,656	210,841	391,239	119,735	25,698	29,575	72,139
Sand and gravel for concrete, roads, etc..... tons	490,067	681,569	6,942,225	4,541,580	707,418	481,235	261,990	2,027,775
\$	274,393	465,867	1,310,935	2,217,155	251,134	403,512	164,079	923,337
Mine filling..... tons				836,757				
\$				147,002				
Crushed gravel..... tons	91,964		1,595,285	277,054	99,627	1,628		69,513
\$	60,404		591,937	141,169	46,277	844		56,182
<b>Total..... tons</b>	<b>775,795</b>	<b>923,029</b>	<b>11,026,219</b>	<b>8,420,358</b>	<b>1,443,001</b>	<b>679,979</b>	<b>481,644</b>	<b>2,599,861</b>
<b>Gross value..... \$</b>	<b>371,970</b>	<b>540,541</b>	<b>2,485,853</b>	<b>3,433,986</b>	<b>427,150</b>	<b>435,798</b>	<b>218,914</b>	<b>1,091,202</b>

Table 284.—Capital Employed in the Sand and Gravel Industry in Canada, by Provinces, 1942

	Capital employed as represented by:					
	Present cash value of the land*	Present value of buildings, fixtures, machinery, tools and other equipment	Inventory value of materials on hand, stocks in process, fuel and miscellaneous supplies on hand	Inventory value of finished products on hand	Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)	Total
	\$ (a)	\$ (a)	\$ (a)	\$ (a)	\$ (a)	\$ (a)
Nova Scotia.....	5,000	30,000			5,000	40,000
New Brunswick.....	89,880	92,228	7,648	100	30,958	220,814
Quebec.....	140,614	968,907	38,420	69,093	703,632	1,920,726
Ontario.....	351,709	153,479	83,233	2,211	219,432	810,064
Manitoba.....	3,000	1,500			500	5,000
Saskatchewan.....	15,600	25,915	500	1,000	19,744	62,759
Alberta.....	740,791	560,163	8,861	1,612	109,757	1,418,184
British Columbia.....						
<b>Canada</b> .....	<b>1,346,594</b>	<b>1,832,252</b>	<b>138,662</b>	<b>74,016</b>	<b>1,086,623</b>	<b>4,477,547</b>

\* Excluding unmined materials.

(a) Not available.

† Includes value of dredges.

Table 285.—Employees, Salaries and Wages in the Sand and Gravel Industry, by Provinces, 1942

Province	Average number of employees			Salaries and wages		
	Salaried Employees	Wage-earners	Total	Salaries	Wages	Total
				\$	\$	\$
Nova Scotia.....	1	227	228	250	121,541	121,791
New Brunswick.....		146	146		77,277	77,277
Quebec.....	26	859	885	30,892	957,795	988,687
Ontario.....	29	340	369	65,963	427,199	493,162
Manitoba.....	28	238	266	62,834	280,175	343,009
Saskatchewan.....	1	27	28	100	46,364	46,464
Alberta.....	4	60	64	24,000	83,334	107,334
British Columbia.....	24	131	155	40,829	186,202	227,031
<b>Canada</b> .....	<b>113</b>	<b>2,028</b>	<b>2,141</b>	<b>224,868</b>	<b>2,179,882</b>	<b>2,404,750</b>

Table 286.—Average Number of Wage-Earners, in the Sand and Gravel Industry, by Months, 1941 and 1942

	1941	1942
January.....	450	369
February.....	440	434
March.....	517	524
April.....	815	782
May.....	4,400	3,796
June.....	8,493	5,352
July.....	8,023	4,787
August.....	7,225	3,183
September.....	3,421	1,835
October.....	2,570	1,142
November.....	764	954
December.....	412	528

## THE STONE INDUSTRY IN CANADA

The Stone Industry in Canada comprises two main divisions: 1. The Stone Quarrying Industry, including quarries and dressing works operated in conjunction with quarries, and 2. The Stone Products Industry, comprising the operations of firms having no quarries but who operate dressing works where stone for building and monumental purposes is cut, polished or otherwise finished. In the Census of Industry, statistics on the stone quarrying industry are included under mining, while statistics of the Stone Products Industry are included under manufactures. For convenience, this report carries data for both of these industries.

These two major divisions, constituting the Canadian stone industry, represented a capital investment of \$14,895,507 in 1942. Production during the year totalled \$11,114,999, which figure includes the value of the quarry output and the value added by manufacturing in the secondary stone industry. Salaried employees and wage-earners employed in 1942 numbered 3,622 and their combined earnings amounted to \$4,721,645.

The two industries are treated separately in the following review:

## 1. PRIMARY PRODUCTION—THE STONE QUARRYING INDUSTRY

The kinds of stone quarried in Canada include granite (traprock, syenite and other igneous rock), limestone, marble, sandstone, and slate. Stone of almost every known variety occurs in Canada; rocks of the igneous areas of British Columbia, Manitoba, Ontario, Quebec and the Maritime Provinces exhibit a wide range of physical characteristics, some varieties being especially noted for their richness of colour and beauty of crystallization. The sedimentary rocks, including limestones, sandstones and marbles are quarried at various points in Canada. The products from quarries operating in these different formations not only yield high class structural and decorative materials but provide the chemical and other allied industries with many of their increasing requirements.

The gross value of all varieties of stone produced in Canada during 1942 totalled \$8,746,594 compared with \$8,000,684 in 1941. Comprising the tonnage shipped in 1942 were 6,442,583 tons of limestone valued at \$6,468,525; 1,366,425 tons of granite (igneous rocks) valued at \$1,946,249; 153,865 tons of sandstone valued at \$226,810; 13,824 tons of marble valued at \$88,209, and 1,369 tons of slate worth \$16,801. Of the total value of domestic stone produced in 1942, quarries in the province of Quebec contributed 47.6 per cent, Ontario 34.1 per cent, and British Columbia 4.5 per cent.

The number of firms in the stone quarrying industry reported as active in 1942 totalled 412; capital employed amounted to \$10,988,011; employees numbered 2,697; salaries and wages paid aggregated \$3,454,263, and the cost of fuel, electricity and process supplies used was reported at \$1,517,169.

Table 287.—Production (Sales) of Stone from Canadian Quarries, by Kinds and by Provinces, 1941 and 1942

Province	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
<b>1941</b>						
Nova Scotia..... tons	410	46,073		66,219		113,602
\$	30,537	69,501		169,307		269,345
New Brunswick..... tons	1,529	131,941		4,678		133,148
\$	63,184	274,000		10,680		347,864
Quebec..... tons	216,372	3,370,875	10,800	76,928	346	3,775,330
\$	890,182	2,567,422	92,916	82,701	346	3,609,567
Ontario..... tons	152,426	3,353,856	6,540	13,420		3,526,242
\$	388,325	2,832,056	30,365	27,190		3,277,936
Manitoba..... tons	244	38,103				38,347
\$	4,155	80,743				64,898
Alberta..... tons		7,942				7,942
\$		24,303				24,303
British Columbia..... tons	129,941	201,359	300	8,640	950	341,190
\$	146,403	229,702	2,600	15,650	12,216	406,771
<b>Canada..... tons</b>	<b>600,922</b>	<b>7,151,049</b>	<b>17,649</b>	<b>169,885</b>	<b>1,296</b>	<b>7,940,801</b>
\$	<b>1,498,786</b>	<b>6,057,727</b>	<b>126,081</b>	<b>395,528</b>	<b>12,562</b>	<b>8,000,684</b>
<b>1942</b>						
Nova Scotia..... tons	429	185,232		43,856		229,517
\$	41,985	645,680		76,502		764,167
New Brunswick..... tons	964	82,623		4,350		87,937
\$	29,334	281,206		10,650		321,280
Quebec..... tons	1,178,765	2,926,904	9,429	72,894	158	4,188,210
\$	1,449,840	2,565,029	58,714	92,724	158	4,166,465
Ontario..... tons	90,530	2,992,885	4,295	18,835		3,106,545
\$	288,528	2,636,431	27,675	33,004		2,984,938
Manitoba..... tons	133	43,355				43,488
\$	2,452	99,514				71,966
Alberta..... tons		12,028				12,028
\$		40,436				40,436
British Columbia..... tons	95,604	199,496	100	13,030	1,211	310,341
\$	133,810	230,139	1,820	13,030	16,643	396,342
<b>Canada..... tons</b>	<b>1,366,425</b>	<b>6,442,583</b>	<b>13,824</b>	<b>153,965</b>	<b>1,369</b>	<b>7,978,066</b>
\$	<b>1,946,249</b>	<b>6,468,525</b>	<b>88,209</b>	<b>226,810</b>	<b>16,801</b>	<b>8,746,594</b>

(a) All igneous rocks included.

(b) Includes dolomite, also marl for agricultural purposes.

NOTE.—Not included in the above limestone statistics are 2,155,750 tons of limestone consumed in the cement industry in 1942 and 2,086,781 tons in 1941. Limestone used in the Canadian lime industry is also not included; it is estimated that approximately 1,574,508 tons of limestone were burned in the manufacture of lime in 1942 and 1,530,200 tons in 1941.



Table 288.—Production (Sales) of Stone from Canadian Quarries, by Provinces, Showing Purposes for Which Used, 1942 (\*)

For use as follows:	Nova Scotia	New Brun- swick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
1942								
Building stone—Rough..... tons	333	32	10,616	3,070			1,633	15,684
\$	2,700	480	33,024	15,905			3,398	55,516
Dressed..... tons		690	5,088	2,475	960			9,213
\$		30,978	180,125	78,062	17,100			306,265
Monumental and ornamental stone—Rough..... tons	30	126	5,663	53			1,030	6,911
\$	300	4,002	83,867	1,349			10,752	100,369
Dressed..... tons	399		3,185		188		270	4,045
\$	41,085		259,088		5,002		45,107	369,072
Flagstone..... tons		10	22	1,081				1,265
\$		50	62	5,877	850			6,639
Curbstone..... tons			5,571					5,571
\$			24,781					24,781
Paving blocks..... tons			2,008	25				2,033
\$			12,776	280				13,056
Lining open-hearth furnaces..... tons				20,311				20,311
\$				15,238				15,238
Chemical—								
Flux in iron and steel furnaces..... tons	143,054	6	2,138	428,752	4,813	1,849	701	581,373
\$	556,544	9	1,817	346,460	8,149	4,947	2,315	920,241
Flux in non-ferrous smelters..... tons			91	115,895			62,051	178,037
\$			209	83,091			38,842	123,042
Glass factories..... tons			1,177			3,358		4,535
\$			5,483			4,197		9,680
Manufactured magnesium..... tons				5,267				5,267
\$				3,051				3,051
Pulp and paper mills..... tons	3,142	6,339	116,095	31,414	1,892		49,112	267,994
\$	12,792	14,034	146,544	85,368	2,081		70,113	330,033
Sugar refineries..... tons		28		12,175	7,753			19,956
\$				10,554	10,840			21,397
Other chemical uses..... tons		133	726	243,383			40	244,149
\$			1,274	244,925			360	246,559
Pulverized Stone—								
Whiting (substitute)..... tons				3,035			307	3,342
\$				19,098			3,684	23,682
Asphalt filler..... tons	575		7,063	4,452			1,455	13,545
\$	4,600		28,792	15,041			8,180	56,613
Dusting coal mines..... tons						1,347	351	1,698
\$						5,388	2,369	7,757
Agricultural purposes and fertilizer plants..... tons	30,768	71,025	154,958	22,203	1,518	1,930	3,792	286,184
\$	63,615	261,664	243,064	48,755	1,897	7,800	14,405	641,200
Other uses..... tons		30	7,741	1,038		91	20	9,826
\$			150	24,700	1,806	364	220	27,330
Crushed stone for manufacture of artificial stone..... tons								
\$			127	239				366
Roofing granules..... tons			618	952				1,570
\$				35,512			842	36,354
Poultry grit..... tons			1,166	3,197			13,512	196,053
\$			4,938	19,245	110	3,430	898	8,891
Stucco dash..... tons			873		890	17,080	3,866	46,699
\$			5,353		81	3	809	1,826
Terrazzo chips..... tons			1,584	1,372	355	60	10,240	16,068
\$			8,989	9,206				2,956
Rock wool..... tons				9,042				18,195
\$				9,799				9,842
Rubble and riprap..... tons	4,495	7,764	286,896	82,722	200		30,361	412,528
\$	6,607	6,532	198,473	91,942	390		26,330	330,274
Crushed stone—								
Concrete aggregate..... tons	26,769	1,680	2,488,006	406,889			1,393	2,921,737
\$	44,789	2,940	2,030,117	345,257			1,254	2,421,337
Road metal..... tons	19,952	237	902,109	1,191,873	20,288		141,247	2,275,706
\$	30,526	368	737,687	962,326	19,192		127,374	1,877,473
Railroad ballast..... tons			193,615	472,897	3,505		13,930	683,317
\$			145,234	365,226	3,424		13,930	527,814
<b>Total Canada..... tons</b>	<b>229,517</b>	<b>87,937</b>	<b>4,188,210</b>	<b>3,166,545</b>	<b>43,488</b>	<b>12,028</b>	<b>310,341</b>	<b>7,978,066</b>
<b>  \$</b>	<b>764,167</b>	<b>321,290</b>	<b>4,166,465</b>	<b>2,885,938</b>	<b>21,966</b>	<b>40,436</b>	<b>396,342</b>	<b>8,746,594</b>
Per cent of total..... Quantity	2.88	1.10	52.50	38.94	0.55	0.15	3.88	
Value	8.74	3.67	47.64	34.14	0.82	0.46	4.53	

(\*) Includes the production of slate and marl.

Table 289.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for Which Used, 1941 and 1942

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
<b>1941</b>						
Building stone—Rough.....tons	2,589	15,687	61	1,902		20,239
\$	11,248	36,557	3,036	9,584		60,425
Dressed.....tons	13,772	19,455	422	374		34,023
\$	284,803	241,298	51,535	15,016		592,632
Monumental and ornamental stone—						
Rough.....tons	7,260	148	24			7,432
\$	81,073	434	798			82,305
Dressed.....tons	4,925	52		20		4,997
\$	291,043	2,339		400		294,382
Flagstone.....tons	150	1,459		927		2,536
\$	336	2,625		5,474		8,435
Curbstone.....tons	3,379	70		31		3,480
\$	14,483	42		207		14,732
Paving blocks.....tons	2,106					2,106
\$	16,931					16,931
Lining open-hearth furnaces.....tons		29,124				29,124
\$		20,893				20,893
Chemical—						
Flux in iron and steel furnaces.....tons		254,998				254,998
\$		222,916				222,916
Flux in non-ferrous smelters.....tons		275,918				275,918
\$		178,543				178,543
Glass factories.....tons		2,605	899			3,504
\$		3,256	3,428			6,684
Pulp and paper mills.....tons		240,031	334			240,365
\$		305,023	668			305,691
Sugar refineries.....tons		6,219				6,219
\$		8,024				8,024
Other chemical uses.....tons		184,686				184,686
\$		167,716				167,716
Pulverized Stone—						
Whiting (substitute).....tons		5,481				5,481
\$		31,907				31,907
Asphalt filler.....tons		18,463	5,240		63	24,191
\$		62,089	9,956		504	74,184
Dusting coal mines.....tons		1,804				1,804
\$		8,472				8,472
Agricultural purposes and fertilizer plants.....tons		216,557	480			217,137
\$		453,548	940			454,388
Other uses.....tons		12,871	837			13,708
\$		37,278	4,267			41,545
Crushed stone for manufacture of artificial stone						
Roofing granules.....tons			862			862
\$			3,711			3,711
Poultry grit.....tons		867			887	1,754
\$		2,405			11,712	14,117
Stucco dash.....tons		3,912	2,195			6,107
\$		16,397	10,909			27,306
Terrazzo chips.....tons		2,697	1,412			4,109
\$		14,958	9,018			24,091
Rock wool.....tons		806	4,131			5,027
\$		2,688	26,049			28,737
Rubble and riprap.....tons		8,313				8,313
\$		8,339				8,339
Concrete aggregate.....tons		414,827	410	47,678	346	581,389
\$		232,741	1,638	47,236	346	267,173
Crushed stone—						
Concrete aggregate.....tons		2,350,850		52,122		2,581,583
\$		1,648,057		123,213		1,984,226
Road metal.....tons		2,647,787	342	56,303		2,958,613
\$		2,038,208	228	93,579		2,484,793
Railroad ballast.....tons		435,052		10,528		445,580
\$		310,974		10,819		322,348
<b>Total Canada.....tons</b>	<b>600,922</b>	<b>7,151,049</b>	<b>17,649</b>	<b>169,885</b>	<b>1,296</b>	<b>7,940,801</b>
<b>  \$</b>	<b>1,498,786</b>	<b>6,057,727</b>	<b>126,081</b>	<b>305,528</b>	<b>12,562</b>	<b>8,000,684</b>

Table 289.—Production (Sales) of Stone from Canadian Quarries, by Kinds, Showing Purposes for Which Used, 1941 and 1942—Concluded

For use as follows:	Granite (a)	Limestone (b)	Marble	Sandstone	Slate	Total
1942						
Building stone— Rough..... tons	2,354	11,818	214	1,298		15,684
..... \$	12,540	25,250	10,592	7,034		55,516
Dressed..... tons	2,497	6,230	146	340		9,213
..... \$	108,807	169,382	19,476	8,600		306,265
Monumental and ornamental stone—						
Rough..... tons	6,858		53			6,911
..... \$	99,011		1,349			100,360
Dressed..... tons	3,827	218				4,045
..... \$	356,459	4,513				360,972
Flagstone..... tons		223		1,042		1,265
..... \$		1,276		5,363		6,639
Curbstone..... tons	5,571					5,571
..... \$	28,781					28,781
Paving blocks..... tons	2,008			25		2,033
..... \$	12,776			280		13,056
Lining open-hearth furnaces..... tons		20,311				20,311
..... \$		15,238				15,238
Chemical—						
Flux in iron and steel furnaces..... tons		581,373				581,373
..... \$		920,241				920,241
Flux in non-ferrous smelters..... tons		178,037				178,037
..... \$		123,042				123,042
Glass factories..... tons		3,358	1,177			4,535
..... \$		4,197	5,483			9,680
Manufacture of magnesium..... tons		5,267				5,267
..... \$		3,051				3,051
Pulp and paper mills..... tons		207,994				207,994
..... \$		330,933				330,933
Sugar refineries..... tons		19,656				19,656
..... \$		21,527				21,527
Other chemical uses..... tons		236,812	1	7,336		244,149
..... \$		237,681	6	8,873		246,559
Pulverized Stone—						
Whiting (substitute)..... tons		3,942				3,942
..... \$		23,682				23,682
Asphalt filler..... tons		13,494			51	13,545
..... \$		56,205			408	56,613
Dusting coal mines..... tons		1,698				1,698
..... \$		7,757				7,757
Agricultural purposes and fertilizer plants..... tons		285,924	20		240	286,184
..... \$		639,182	98		1,920	641,200
Other uses..... tons		9,570	250			9,820
..... \$		25,990	1,370			27,330
Crushed stone for manufacture of artificial stone—						
..... tons		239	127			366
..... \$		952	618			1,570
Roofing granules..... tons	35,204	310			840	36,354
..... \$	181,352	1,240			13,461	196,053
Poultry grit..... tons	3	5,320	3,445		27	8,801
..... \$	70	26,433	19,782		324	46,609
Stucco dash..... tons	6	814	953		53	1,826
..... \$	80	8,445	6,953		530	16,008
Terrazzo chips..... tons		443	2,513			2,956
..... \$		1,329	16,866			18,195
Rock wool..... tons		9,942				9,942
..... \$		9,799				9,799
Rubble and riprap..... tons	83,966	289,188	4,925	34,291	158	412,528
..... \$	51,201	234,940	5,517	38,458	158	330,274
Crushed stone—						
Concrete aggregate..... tons	1,051,168	1,818,625		54,944		2,924,737
..... \$	897,444	1,444,013		82,900		2,424,357
Road metal..... tons	171,228	2,063,819		40,659		2,235,706
..... \$	196,102	1,619,990		61,372		1,877,473
Railroad ballast..... tons	1,735	667,652		13,930		669,317
..... \$	1,626	612,258		13,930		527,814
Total Canada (b)..... tons						
..... \$	1,366,425	6,442,583	13,821	153,865	1,309	7,978,066
	1,946,249	6,468,525	88,299	226,810	16,801	8,746,594

(a) Includes all igneous rock.

(b) Does not include limestone used in Canadian lime and cement industries but includes marl used for agricultural purposes.



## GRANITE

Table 290.—Production of Granite (\*) in Canada, 1933-1942

Year	Short tons	\$	Year	Short tons	\$
1933.....	256,723	679,585	1938.....	705,307	1,379,417
1934.....	200,285	781,739	1939.....	1,102,395	2,119,501
1935.....	326,354	1,120,287	1940.....	1,147,747	1,884,410
1936.....	941,743	1,319,313	1941.....	600,922	1,498,786
1937.....	1,135,969	1,827,433	1942.....	1,366,125	1,946,249

(\*) Includes all igneous rock.

The following abstracts are from a report on granite prepared by the Bureau of Mines, Ottawa:

"The stone quarried in this industry consists of granite and related crystalline igneous rocks used for building, decorative, ornamental, or constructional purposes. Producing properties are situated in Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, and British Columbia. Large areas in Canada are underlain by granite, and the prospects of finding stone suitable for its various uses are good.

"The industry in the Maritime Provinces was comparatively quiet in 1942. No new deposits were opened and production came from the well-established firms.

"Quebec furnishes most of the granite for building, the Stanstead, St. Samuel, Lake St. John, and Rivière-à-Pierre districts being the leading producers. The low ebb of building construction during the past few years has seriously affected this branch of the industry. The Silver Granite Company continued its operations in the Lake St. John district. Material from quarries in Quebec was made use of in the past few years in a number of Canada's public buildings, including the Supreme Court Building, Ottawa, the Ottawa Post Office, and several structures in British Columbia. It was also used in the construction of the T. Eaton Company's stores in Port Arthur and Edmonton.

"A red granite of medium to coarse texture and of a uniform mixture has recently been developed near Coe Hill, Ontario, by Upper Canada Granite Quarries, Limited, and this deposit was being exploited with a view to supplying the domestic and export markets for monumental and building stock. It has been closed for the duration.

"Prospecting for granite deposits suitable for building and monumental use has been active in Manitoba, and several deposits of red granite of various shades have been located, but so far little development has taken place.

"Granite for monumental use is produced in the Maritime Provinces and in Quebec, Ontario, Manitoba, and British Columbia, and is finding a small but steadily increasing market. Early in 1939 an appreciable amount of foreign stone, principally of the black and red varieties, was imported mainly from Finland and Sweden, but this source of supply is now cut off. Black granite has been quarried in Canada, notably in the vicinity of Lake St. John, Quebec, and from quarries along the north shore of Lake Superior, and stone from these areas should find a ready market for monumental use. Other deposits of 'black granite' in the Maritime Provinces, Quebec, Ontario, and Manitoba show promise of yielding stone of good quality.

"Granite is used for building purposes mainly in large buildings, such as public and semi-public structures and institutions.

"Much of the granite produced in Canada is used for foundations for highways; for the permanent ballasting of railway roadbeds; for heavy aggregate in large concrete structures; for the filling of breakwaters; and for bridge piers. The market curtailment of such operations during the past several years has seriously affected production. Production is far below the record years.

"Some granite is being imported from the United States for monumental use, but these imports are likely in time to be replaced by Canadian material. The demand for stone for monumental use varies, and a variety which has enjoyed a steady market for a number of years may later be completely superseded by another variety. At present, the so-called 'black granite' and the 'grey' varieties seem to be in most demand for monuments, although the various shades of reds are still popular in many districts.

"Now that shipments from the Scandinavian countries to the United States and to Canada have been discontinued, Canadian producers would be well advised to give careful study to the market possibilities of a monumental stock, especially for the black and red varieties.

"In the building trade, coloured granites are being used to an increasing extent in the form of thin polished slabs for trim for buildings in which the main colour scheme calls for contrast.

"Canadian granites are suitable for all the purposes for which granite is used, and with persistent advertising there is no reason why this industry should not have a flourishing future."

## LIMESTONE

Table 291.—Production of Limestone (\*) in Canada, 1933-1942

Year	Short tons	\$	Year	Short tons	\$
1933.....	2,572,911	2,142,516	1938.....	4,288,507	3,884,619
1934.....	3,747,779	3,157,832	1939.....	4,149,580	3,817,551
1935.....	3,631,605	3,253,573	1940.....	6,108,591	5,126,075
1936.....	3,731,548	3,143,872	1941.....	7,151,049	6,057,727
1937.....	5,542,806	4,073,942	1942.....	6,442,583	6,468,525

(\*) Includes dolomite and marl; production of marl in 1942 totalled 23,026 tons.

The following abstracts are from a report prepared by the Bureau of Mines, Ottawa:

"Limestone is available in great bedded formations and in massive highly metamorphosed deposits, the former being much more common and yielding most of the production. At present almost all Canadian limestone is won by open pit methods, though underground mining of the rock has been adopted by several companies producing limestone for chemical and metallurgical uses and for making lime. Underground mining will undoubtedly become more common, particularly for the production of high-grade stone for chemical use, as the readily accessible parts of deposits become worked out.

"Of significance in connection with future production of pure limestone is the progress being made in beneficiation, whereby siliceous material is in part removed from limestone by flotation. This method of purifying limestone is now in use at several Portland cement plants in various parts of the world.

"For domestic use limestone is marketed in a variety of forms ranging from huge squared blocks of dimension stone used in construction, to extremely fine dust used chiefly as a mineral filler. Some of the products are processed little if at all from the condition in which the rock is obtained from the quarry (as for example limestone used in the wood pulp industry), but the bulk of the output is crushed and screened for use as road metal, concrete aggregate, railroad ballast, and as flux in metallurgical plants. Large quantities are used in the manufacture of Portland cement, lime, and various chemical products. Argillaceous dolomite is used in the manufacture of rock wool.

"Pure dolomite is now an important source of magnesia and magnesium metal. In the calcined state it is used for precipitating magnesia from sea water and from magnesium chloride brines, the magnesia content of the dolomite itself being recovered at the same time. It is also the raw material in several processes in which the magnesia of the dolomite alone is recovered. The magnesia so obtained may be used for the making of magnesium metal as well as for various other purposes for which magnesia is used. Magnesium metal is also recovered directly from calcined dolomite by reduction with ferrosilicon.

"A use for limestone that is capable of enormous development is in agriculture. Though the necessity of applying limestone or lime to agricultural land in order to maintain or increase soil fertility has been emphasized for many years by authorities on agriculture, the quantity so used in Canada is still very small, whereas if the proper quantity were applied it would constitute one of the principal outlets for limestone.

"Limestone in blocks of large dimensions for sawing into building stone is quarried in Quebec, Ontario, and Manitoba. In Quebec, quarries at St. Marc des Carrières, Portneuf county, produce grey limestone, and several in and near Montreal yield limestone of similar colour. In Ontario, two quarries near Queenston in the Niagara peninsula yield silver-grey limestone as well as small quantities of buff and of variegated buff and grey. At Longford Mills, near Orillia, buff, silver-grey, and brown limestone for use as marble and as building stone is available, but has not been quarried for the past several years. The Manitoba quarries are near Tyndall and yield mottled buff, mottled grey, and mottled variegated limestone. Besides these large quarries, the products of which have a wide shipping range, small quarries producing building stone for local use are worked near Quebec City, Montreal, and Hull in Quebec; and at Ottawa, Kingston, and Wiarton in Ontario. Rubble is their chief product.

"Some of the quarry companies market stone in all stages of manufacture, from the mill block to elaborately carved material; others sell stone only in the mill block. Waste material is utilized for crushed stone, rubble, riprap, flagging, chemical and metallurgical purposes, and for lime manufacture.

"There were no developments of importance in 1942. Although building construction is active owing to defence needs, most of the buildings are of the factory type and require little cut stone; thus, the building-stone industry is relatively inactive and a number of the quarries are either shut down or operated only for a short time each year.

"The limestone deposits being worked for building stone are favourably situated in respect to centres of population and the supply of stone is adequate for present and future demands.

"Prices of limestone in the mill block f.o.b. quarry have remained almost stationary in recent years, and range from 50 cents to \$1 per cubic foot, depending on the size of block and grade of stone."

### MARBLE

Table 292.—Production of Marble in Canada, 1933-1942

Year	Short tons	\$	Year	Short tons	\$
1933.....	10,807	65,913	1938.....	19,375	87,274
1934.....	13,783	69,475	1939.....	14,124	204,054
1935.....	15,975	85,360	1940.....	13,739	75,400
1936.....	22,866	169,698	1941.....	17,649	126,081
1937.....	21,642	88,595	1942.....	13,824	88,200

The following abstracts are from a report prepared by the Bureau of Mines, Ottawa:

"Marble quarries are operated in Quebec, Ontario, Manitoba, and British Columbia. The products include squared blocks for sawing into slabs and for making monuments, and broken marble for rubble and for making terrazzo, stucco dash, whiting substitute, marble flour and artificial stone. Waste from some of the quarries is sold for chemical uses and for road metal.

"In Quebec, several varieties of clouded grey marble and also a black marble are quarried at Philipsburg by Missisquoi Stone and Marble Company, Limited. Some brown marble used for counters and wainscoting is obtained from the building stone quarries in the Trenton limestones at St. Marc des Carrières, Portneuf county. Dolomitic white marble is quarried and crushed by White Grit Company at Portage de Fort, Pontiac county, and by Canada Marble and Lime Company, L'Annonciation, Labelle county, for the making of terrazzo chips, stucco dash, poultry grit, artificial stone, and for chemical and ceramic uses. A small quantity of dark red marble has been quarried at Cap St. Martin near Montreal, chiefly for making tombstones.

"In Ontario, black marble in beds up to 40 inches thick is quarried at St. Albert, near Ottawa, by Silvertone Black Marble Quarries, Limited. White marble is quarried at Marmora by Bonter Marble and Calcium Company, Limited, and at Haliburton by Bolander Brothers for making terrazzo chips, poultry grit, stucco dash, and artificial stone. Buff, red, white, green, and black marbles are quarried north of Madoc by Karl Stockloser and by Connolly Marble, Mosaic and Tile Company, Limited for use as terrazzo.



"In Manitoba, a number of highly coloured marbles are available, but there is only a small production to supply terrazzo chips and building rubble.

"In British Columbia there are many deposits of marble, but there is only a small production of white marble near Victoria and on Texada Island for use as terrazzo, poultry grit, marble sand, and whiting substitute.

"Many known deposits of beautifully coloured marbles have never been fully investigated chiefly because the present demand in Canada for marble of any one colour, other than for a staple variety, such as white, is comparatively small.

"The war has adversely affected the Canadian marble industry, for though construction activity is again at a high level, most of the buildings erected are of the industrial type in which little or no standing marble is used.

"The Canadian market calls for interior decorative marble almost entirely, and very little is used for the exteriors of buildings. A considerable quantity is, however, used for tombstones.

"There is a wide range in the price of marble depending on quality and rareness of colouring, but these prices are as a rule governed by those of European marbles of similar kind, most of which, in peacetime, enjoy a world-wide market, whereas the markets for marble produced on this continent are mostly domestic."

### SANDSTONE

Table 293.—Production of Sandstone in Canada, 1933-1942

Year	Short tons	\$	Year	Short tons	\$
1933.....	99,043	108,562	1938.....	101,854	218,405
1934.....	115,169	143,283	1939.....	176,265	331,830
1935.....	342,824	838,005	1940.....	176,475	305,543
1936.....	285,508	495,856	1941.....	169,885	305,528
1937.....	235,165	343,871	1942.....	153,865	256,810

Canadian sandstone has been utilized extensively in the construction of many important public buildings in Canada and is finding increasing favour as a material in the construction of the better type home. The rock occurs in Canada in a variety of colours, including white, reddish brown, yellow and grey. Shipments of sandstone were made in 1942 from quarries located in all of the provinces with the exception of Prince Edward Island, Manitoba and Saskatchewan.

The greater part of the crude output in 1942 was employed as rubble and riprap and in the crushed state for concrete, highway construction and railroad ballasting. Sandstone in British Columbia, New Brunswick and Nova Scotia has been employed in the manufacture of abrasive wheels and sharpening stones; such production is included with natural abrasives manufacture. Crude, crushed or ground quartzite sold for fluxing purposes or as silica sand is included under quartz as production.

### SLATE

Table 294.—Production of Slate in Canada, 1933-1942

Year	Short tons	\$	Year	Short tons	\$
1933.....	250	3,750	1938.....	979	6,311
1934.....	738	4,802	1939.....	1,149	6,760
1935.....	1,129	4,329	1940.....	1,113	7,522
1936.....	1,247	5,414	1941.....	1,296	12,582
1937.....	900	5,519	1942.....	1,369	16,801

Canadian slate production in 1942 came entirely from the provinces of Quebec and British Columbia and represented shipments of the stone in the form of granules for roofing purposes, riprap and asphalt filling. No Canadian deposits of slate suitable for the production of high grade roofing slates or shingles have been reported as being under development in recent years.

Table 295.—Production of Stone for Building Purposes, Chemical Use, Cement Manufacture, Concrete Aggregate, Road Metal and Railroad Ballast, 1934-1942

		Building stone (a)	For chemical purposes (b)	For concrete aggregate	For road metal	For railroad ballast	For cement manufacture
1934.....	tons	52,665	489,580	821,099	2,062,487	345,802	806,746
	\$	490,095	447,429	608,240	1,668,927	209,296	.....
1935.....	tons	200,899	537,799	804,719	1,976,363	351,302	818,443
	\$	1,258,741	483,709	523,847	1,887,351	211,993	.....
1936.....	tons	42,335	615,207	1,014,145	1,993,927	784,081	1,180,368
	\$	714,616	553,597	730,617	1,653,134	659,656	.....
1937.....	tons	49,098	603,947	1,497,655	3,169,136	642,248 (c)	1,465,198
	\$	746,370	626,297	1,214,181	2,522,080	570,606	.....
1938.....	tons	49,606	551,737	981,739	2,721,922	86,019	1,358,689
	\$	725,402	468,000	791,971	2,347,010	58,816	.....
1939.....	tons	71,288	577,278	1,344,636	2,131,306	900,266	1,407,099
	\$	1,344,340	523,579	1,109,028	1,773,337	522,882	.....
1940.....	tons	97,336	725,685	2,673,678	2,300,613	896,408	1,784,291
	\$	722,514	681,796	2,171,487	1,885,744	741,772	.....
1941.....	tons	54,262	965,690	2,581,583	2,958,613	440,505	2,113,618
	\$	653,077	889,574	1,986,226	2,484,393	322,348	.....
1942.....	tons	24,897	1,236,044	2,924,737	2,275,706	683,317	2,186,248
	\$	361,781	1,661,982	2,424,357	1,877,473	527,814	.....

(a) Does not include monumental or ornamental stone.

(b) Does not include limestone used in Canadian lime industry.

(c) Includes shale. (Includes 13,821 tons shale in 1938; 27,241 tons in 1939; 18,347 in 1940; 20,837 in 1941 and 30,498 in 1942.)

## WHITING SUBSTITUTE

(Bureau of Mines, Ottawa)

Whiting substitute, as the name implies, is a material that may be used in place of chalk whiting, all of which originates in England or in Europe. It may be made from white limestone or white marble, marl, lime, or the waste calcium carbonate sludge resulting from the manufacture of caustic soda.

The products made from white marble or white limestone are pulverized to various degrees of fineness ranging from 200 to 400 mesh, and the raw material used contains very little magnesium carbonate, though in the past a whiting substitute made from white dolomite was produced in Eastern Canada for making putty.

The principal differences between whiting made from chalk, and whiting substitute made from marble or limestone are that the latter is usually whiter, has a low capacity for absorbing oil, and the individual particles are sub-angular rather than rounded. Most of the whiting substitute made in Canada is made from white marble.

Marl suitable for making whiting substitute should be white or nearly so, be nearly free from grit and clayey material, and have a very low content of organic matter. This last-named constituent, which is present to some extent in all deposits of marl, renders the product unsuitable for use as a filler in products, such as putty and paint where it will come in contact with oils. The oil-absorptive capacity of whiting substitute made from marl is usually greater than that of whiting, but in other respects the physical characteristics of the two products are much the same. Two plants are engaged in making whiting substitute from marl.

Calcium carbonate filler, a product closely akin to whiting substitute and made by introducing carbon dioxide gas into milk-of-lime made from high-calcium quicklime, has been produced in Canada for the past several years. Its use up to the present has been as a filler in newsprint, book, and magazine paper, and its manufacture has been undertaken by the paper companies using it.

By-product precipitated chalk, made from waste sludge resulting from the manufacture of caustic soda from soda ash and lime, is classed as a whiting substitute, but its usefulness is restricted by the fact that it almost invariably contains a small amount of free alkali. The raw materials for the manufacture of by-product precipitated chalk are available but it is not yet being made in Canada.

Producers of whiting substitute are Pulverized Products, Limited, Montreal; Claxton Manufacturing Company, Toronto; White Valley Chemicals, Limited, Toronto; Marlhill Mines, Limited, Marlbank, Ontario; Gypsum, Lime and Alabastine, Canada, Limited, Winnipeg; and Beale Quarries, Limited, Van Anda, Texada Island, British Columbia.

The Industry has experienced a steady growth in recent years because improvements in grinding equipment and the maintenance of close technical control have enabled products to be marketed that are very consistent in chemical and physical properties. Many manufacturers now use the domestic products with entire satisfaction in place of imported whiting and with all European sources of whiting cut off because of the war, the domestic industry is largely supplying the Canadian market.

Whiting substitute made in Canada is used mostly in the manufacture of oilcloth, linoleum in certain kinds of rubber products, in putty, in explosives, and as a filler in newsprint, book, and magazine paper. In lesser quantities it is used in the manufacture of moulded articles, cleaning compounds and polishes, as a ceramic glaze and for a number of other purposes.

Prices per ton, bagged and in carload lots range from \$8.00 to \$15.00 per ton f.o.b. plants.

**Table 296.—Consumption of Whiting, (and Chalk), by Uses, as Reported to the Annual Census of Industry, 1941 and 1942**

Industry	1941		1942	
	Tons	Cost at works	Tons	Cost at works
		\$		\$
Paints and pigments.....	7,833	203,547	8,274	241,646
Rubber.....	7,619	126,312	4,495	83,129
Miscellaneous textiles*.....	1,191	19,690	4,575	50,254
Explosives (a).....	411	5,443	436	10,454
Toilet preparations (a).....	109	11,874	115	10,991

\* Includes oilcloth and linoleum.

(a) Chalk, ground and precipitated.

**Table 297.—Employees, Salaries and Wages, Specified Costs and Net Values, in the Stone Industry in Canada, by Provinces, 1942**

Province	Firms	Average number of employees			Salaries and wages		Cost of fuel, electricity and process supplies used	Net value of production
		Salaried employees		Wage-earners	Salaries	Wages		
	No.	Male	Female		\$	\$	\$	\$
New Scotland.....	37	9	.....	176	22,225	276,285	44,624	719,543
New Brunswick.....	8	6	3	94	12,638	89,134	18,644	302,636
Quebec.....	170	128	22	1,387	209,871	1,613,366	880,456	3,286,009
Ontario.....	167	84	16	588	194,652	788,431	528,471	2,457,467
Manitoba.....	6	1	1	21	2,825	20,436	7,834	64,132
Alberta.....	2	(a)	(a)	(a)	(a)	(a)	(a)	40,436
British Columbia.....	22	10	2	149	13,993	211,407	37,140	359,202
<b>Canada.....</b>	<b>410</b>	<b>228</b>	<b>44</b>	<b>2,415</b>	<b>456,204</b>	<b>2,998,639</b>	<b>1,517,169</b>	<b>7,229,425</b>

(a) Data not available.



Table 298.—Capital Employed in the Stone Quarrying Industry of Canada, by Provinces, 1942

—	Plant	Capital employed as represented by:					Total
		Present cash value of the land*	Present value of buildings, fixtures, machinery, tools and other equipment	Inventory value of materials on hand, stocks in process, fuel and miscellaneous supplies on hand	Inventory value of finished products on hand	Operating capital (cash, bills and accounts receivable, prepaid expenses, etc.)	
No.		\$	\$	\$	\$	\$	\$
Nova Scotia.....	41	20,066	250,113	59,915	8,150	236,047	574,291
New Brunswick.....	8	50,531	64,417	9,060	.....	122,006	246,014
Quebec.....	183	1,265,154	2,411,876	270,514	122,605	870,157	4,940,308
Ontario.....	173	1,460,694	2,026,194	132,011	147,845	710,590	4,477,334
Manitoba.....	7	45,590	269,265	6,738	.....	61,300	382,893
Alberta.....	2	(a)	(a)	(a)	(a)	(a)	(a)
British Columbia..	76	47,825	253,627	6,970	13,111	45,638	367,171
<b>Canada.....</b>	<b>490</b>	<b>2,889,860</b>	<b>5,275,492</b>	<b>485,210</b>	<b>291,711</b>	<b>2,045,738</b>	<b>10,988,011</b>

\* Excluding unmined materials. (a) Not available.

Table 299.—Average Number of Wage-Earners, by Months, 1941 and 1942

Month	1941 Total	1942			Month	1941 Total	1942		
		Quarry		Dressing works			Quarry		Dressing works
		Surface	Under-ground				Surface	Under-ground	
January.....	1,219	1,235	14	213	July.....	3,190	2,425	5	557
February.....	1,270	1,124	16	209	August.....	3,327	2,426	6	545
March.....	1,319	1,333	6	393	September.....	3,257	2,436	5	517
April.....	2,045	1,882	8	458	October.....	3,146	2,279	6	451
May.....	2,932	2,328	8	526	November.....	2,663	2,152	4	292
June.....	3,024	2,446	7	547	December.....	2,012	1,613	10	244
					Average.....	2,465	1,989	8	418

## 2. SECONDARY PRODUCTION

## THE STONE PRODUCTS INDUSTRY

In 1942 there were 174 stone dressing works whose operations were reported separately from the quarries. These plants were engaged chiefly in cutting or polishing Canadian or imported stone to produce finished monuments or cut and dressed stone for construction purposes. Retail establishments engaged only in selling and lettering monuments have not been included. Five producers of rock wool were also included in this industry.

Output from this industry was valued at \$3,939,764 in 1942, an increase of 1.4 per cent over the total of \$3,883,496 reported for the previous year. The 74 works in Ontario accounted for 62.1 per cent of the total output and the 49 plants in Quebec for 21.7 per cent. The average number of employees was 925 and \$1,267,382 were paid in salaries and wages. Materials used in the cutting and dressing processes, including stone, cost \$1,423,387 and expenditures for fuel and electricity amounted to \$147,972.

Table 300.—Cost of Materials Used in the Stone Products Industry, 1941 and 1942

—	Cost at works	
	1941	1942
Stone—(a) From Canadian quarries.....	\$ 373,780	\$ 367,605
(b) Imported.....	185,162	193,808
Monuments, cut and polished, for lettering only.....	73,799	102,052
All other materials.....	611,272	759,922
<b>Total.....</b>	<b>1,244,013</b>	<b>1,423,387</b>

Table 301.—Production from the Stone Products Industry, by Provinces, 1941 and 1942

	Granite		Marble		Marble chips and dust	Limestone		Finished monuments, lettered only	Other products	Total
	Monu-ments	For building pur-poses	Monu-ments	For building pur-poses		Monu-ments and bases	For building pur-poses			
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island and New Brunswick—										
1941.....	73,588	770	14,411			1,500		2,260	2,793	95,322
1942.....	82,551		11,084			1,500		2,440	1,118	98,690
Nova Scotia—										
1941.....	44,870	930	10,344			1,065		38,172	7,505	102,886
1942.....	38,894	1,770	17,276			1,334		32,034	4,676	95,984
Quebec—										
1941.....	335,936	35,332	5,639	57,565	7,862	4,389	22,972	9,133	283,053	761,881
1942.....	401,774	57,548	8,807	54,429	1,880	4,590	1,000	6,100	319,287	855,421
Ontario—										
1941.....	881,220	25,150	85,337	73,164	2,170	15,705	359,359	36,616	908,655	2,427,466
1942.....	840,207	37,132	92,301	75,426	7,678	3,400	101,038	78,789	1,211,518	2,447,490
Manitoba—										
1941.....	66,460		18,366			350	4,220	26,644	925	116,965
1942.....	52,475		17,386			165	5,482	31,314	8,599	115,421
Saskatchewan—										
1941.....	50,134		37,568		1,707	4,301	1,694	5,215	13,841	114,460
1942.....	47,973		37,918		1,415	6,629	350	5,875	7,991	108,151
Alberta—										
1941.....	50,233	25,000	12,328	8,000	10,112	550		641	3,541	119,405
1942.....	61,087	25,000	10,117	5,000	21,230	500		4,329	1,329	128,592
British Columbia—										
1941.....	79,575	5,717	2,276	9,565	125		240	2,000	4,613	101,111
1942.....	77,893		2,300	4,254				1,160	4,409	96,816
Canada—										
1941.....	1,582,016	92,899	186,269	148,291	22,326	31,829	394,265	120,681	1,314,925	3,883,496
1942.....	1,602,854	121,450	197,189	139,109	32,368	23,433	402,388	162,047	1,338,924	3,933,764

Table 302.—Production in Canada and Imports of Rock Wool, 1932-1942

Year	Production	Imports	
		pounds	\$
1932 (from October 12).....		309,791	5,301
1933.....		2,230,762	38,262
1934.....	1,709	2,987,611	69,267
1935.....	66,459	1,922,938	57,877
1936.....	265,472	2,391,504	101,592
1937.....	346,490	2,030,144	81,050
1938.....	396,261	1,337,954	45,109
1939.....	525,998	1,820,763	44,860
1940.....	935,229	2,062,589	52,233
1941.....	1,185,324	2,633,544	74,791
1942.....	1,417,258	1,613,914	54,776

## CONTRACT DIAMOND DRILLING INDUSTRY, 1943

Firms reporting to the Dominion Bureau of Statistics as having been actively engaged in contract diamond drilling operations in 1943 totalled 27, compared with 28 in 1942. Drilling was conducted in Nova Scotia, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and the Northwest Territories. The footage drilled in the Dominion in 1943 totalled 2,649,708 compared with 2,960,364 in the preceding year. Of the 1943 total, 53.5 per cent was completed in Ontario, 32.2 per cent in Quebec and 10.8 per cent in British Columbia. The total income received by the industry from contract drilling operations during the year under review amounted to \$3,072,481. The average number of employees in 1943 totalled 896 and \$1,493,944 were distributed in salaries and wages.

The diamond drilling industry as a whole purchased in 1943, borts, carbons, readyset and castset bits, etc., valued at \$637,070 as against a value of \$634,233 in 1942. Of the 1943 purchases \$178,249 represented stones in the form of cast or readyset bits.

Equipment reported by contractors included 312 steam or air driven drills, 264 gas, oil and gasoline drills and 3 electric drills.

Not included in this survey are data relating to the drilling of gas and oil wells and diamond drilling conducted by Canadian mining companies with their own personnel and equipment. Statistics relating to these particular operations are combined with those pertaining to the Cana-

dian mining industry proper. However, this report is including, for the first time, supplemental tables showing separately the footage diamond drilled on metalliferous deposits by both contract diamond drillers and mine operators. From data made available it is estimated that this drilling in 1943 comprised 691,050 feet completed for exploration and testing by mining companies with their own equipment and 1,949,825 feet by contractors. In addition, blast hole diamond drilling on these deposits included 1,294,735 feet by the mining companies and 720,603 feet by contractors.

Table 303.—Contract Diamond Drilling Operations in Canada, 1942\*

Province	Footage drilled	Income from drilling	Average number of employees	Total wages paid
		\$		\$
Nova Scotia.....	11,237	15,140	16	10,285
New Brunswick.....	25,171	34,056	20	23,392
Quebec.....	977,295	1,004,674	290	500,624
Ontario.....	1,536,954	1,554,116	553	615,821
Manitoba.....	91,990	146,309	29	54,143
Saskatchewan.....	11,335	11,902	4	9,566
Alberta.....				
British Columbia.....	279,152	360,450	100	177,724
Yukon.....				
Northwest Territories.....	27,221	20,885	7	5,485
<b>Canada.....</b>	<b>2,960,364</b>	<b>3,147,532</b>	<b>1,019</b>	<b>1,597,040</b>
Value of stones, readyset and castset bits purchased, by contractors, 1942.....				\$634,233

\* By contractors only and includes diamond drilling for all purposes.

Table 304.—Contract Diamond Drilling Operations in Canada, 1943\*

Province	Footage drilled	Income from drilling	Average number of employees	Total salaries and wages paid
		\$		\$
Nova Scotia.....	957	1,795	5	1,664
New Brunswick.....				
Quebec.....	852,801	827,742	231	413,453
Ontario.....	1,417,935	1,763,124	508	820,591
Manitoba.....	35,844	43,357	18	23,561
Saskatchewan.....	34,860	40,951	15	20,140
Alberta.....	7,078	34,497	14	13,757
British Columbia.....	286,331	344,064	101	104,439
Yukon.....				
Northwest Territories.....	13,902	16,951	4	6,339
<b>Canada.....</b>	<b>2,649,708</b>	<b>3,072,481</b>	<b>896</b>	<b>1,493,941</b>
Value of stones, readyset and castset bits purchased, by contractors, 1943.....				\$357,000

\* By contractors only and includes diamond drilling for all purposes.

Table 305.—Drilling Completed on Auriferous Quartz Deposits (Gold Mines) in Canada, 1943

	Footage drilled
<b>DIAMOND DRILLING FOR EXPLORATION AND TESTING—</b>	
By mining companies with their own personnel and equipment.....	543,062
By diamond drilling contractors.....	*1,321,727
<b>OTHER DIAMOND DRILLING—</b>	
Blast hole diamond drilling:	
By mining companies with their own personnel and equipment.....	97,298
By diamond drilling contractors.....	*501,588
Drilling by percussion or other machines.....	(a) 20,014,708

\* Included in Table 304. (a) Not complete as records are unavailable at certain mines.



Table 306.—Drilling Completed on Copper-Gold-Silver and Nickel-Copper Deposits in Canada, 1943

	Footage drilled
<b>DIAMOND DRILLING FOR EXPLORATION AND TESTING—</b>	
By mining companies with their own personnel and equipment.....	109 703
By diamond drilling contractors.....	*283,028
<b>OTHER DIAMOND DRILLING—</b>	
Blast hole diamond drilling:	
By mining companies with their own personnel and equipment.....	1,197,437
By diamond drilling contractors.....	*32,042
Drilling by percussion or other machines.....	(a) 16,300,824

\* Included in table 304. (a) Not complete as records are unavailable at certain mines.

Table 307.—Drilling Completed on Silver and Lead Deposits in Canada, 1943

	Footage drilled
<b>DIAMOND DRILLING FOR EXPLORATION AND TESTING—</b>	
By mining companies with their own personnel and equipment.....	5,591
By diamond drilling contractors.....	*64,425
<b>OTHER DIAMOND DRILLING—</b>	
Blast hole diamond drilling:	
By mining companies with their own personnel and equipment.....	
By diamond drilling contractors.....	*96,963
Drilling by percussion or other machines.....	(a) 1,871,957

\* Included in Table 304. (a) Not complete as records are unavailable at certain mines.

Canadian asbestos mining companies reported that 11,307 feet of diamond drilling for exploration purposes were completed by contractors in 1943, and 33,755 feet by the mining companies with their own personnel. No blast hole drilling was recorded and partial returns showed 3,021,001 feet of drilling by machines other than diamond drills.

In addition to the diamond drilling recorded in tables 305, 306 and 307, there were 280,645 feet of diamond drilling completed in 1943 on iron ores and other metal-bearing formations by diamond drilling contractors and 32,694 feet by mine operators using their own equipment. Reports received from these properties do not reveal if any blast hole drilling was included in the totals recorded.

As an aid in the development of approved mica properties, the Department of Mines and Resources, Ottawa, leased drilling equipment to several operators in 1943. Complete data pertaining to this drilling are not yet available at the Bureau of Statistics.

### EXPLANATORY NOTES

*Method of Computing Quantities and Values of the Mineral Production of Canada in 1942.*

**Arsenic.**—White arsenic ( $As_2O_3$ ) produced at Canadian smelters at its sales value plus the arsenic contained in certain gold ores exported at a nominal price per pound.

**Bismuth.**—(a) Recoverable metal in silver-lead-bismuth bullion shipped to foreign smelters for refining at an arbitrary price; (b) Bismuth metal produced at Canadian smelters valued at the average New York price for the year.

**Cadmium.**—Smelter production valued at the average London price for the year.

**Cobalt.**—Cobalt content of the various cobalt products sold by the Ontario smelter producing these products added to the cobalt content of ores and residues exported for treatment in foreign plants; the value given is the gross amount received by the Canadian smelter plus the value of ores exported valued according to grade at agreed prices per pound.

**Copper.**—(a) Recoverable copper in ores and concentrates exported valued at the average London price for the year, in Canadian funds; (b) Copper in blister copper made at Manitoba, Ontario and Quebec smelters valued at the average London price for the year in Canadian funds; (c) Copper in copper-nickel matte exported from Canadian smelters valued at an arbitrary price agreed upon between the Dominion Bureau of Statistics and the Ontario Department of Mines.

The price per pound used throughout 1942 to evaluate Canadian production was that agreed upon by the Canadian Producers and the British Government, with necessary adjustments.

*Gold.*—Gold in bullion produced and the recoverable gold in all other Canadian mine products is valued at the standard rate of \$20.671834 per fine ounce until the end of 1930. For succeeding years, unless otherwise specified, gold is valued at the average price on world markets transposed to Canadian funds.

*Lead.*—Recoverable lead in ores exported from Canada added to lead contained in base bullion made at Trail, B.C., valued at the average London quotations for the year in Canadian funds. The average price used for 1942 was that agreed upon by contract between Canadian producers and the British Government, with necessary adjustments.

*Nickel.*—(a) Refined and electrolytic nickel produced at Canadian refineries valued in Canadian funds at the average price obtained for such products sold during the year; (b) Nickel in oxides and salts sold from Canadian smelters and refineries at its total selling value in Canadian funds in the form in which it was sold; (c) Nickel in matte exported from Canada valued at an arbitrary figure agreed upon by the Ontario Department of Mines and the Dominion Bureau of Statistics (representative of the value of the nickel in matte form).

*Platinum Group Metals.*—Recoverable metals in smelter products and placer platinum at the average London price and transposed to Canadian funds.

*Silver.*—Silver bullion produced and the recoverable silver in other smelter products, and the recoverable silver in Canadian ores exported, at the average New York price for foreign ores in Canadian funds for the refined metal.

*Tellurium and Selenium.*—Smelter production valued at the average London price for the year.

*Zinc.*—Refined zinc produced by the Consolidated Mining and Smelting Co., Ltd., at Trail, B.C., and by the Hudson Bay Mining and Smelting Co., Ltd., Flin Flon, Manitoba, and the recoverable zinc in concentrates exported, valued at the average monthly price quoted in London, in Canadian funds.

The average price used for 1942 was that agreed upon by contract between Canadian producers and the British Government, with necessary adjustments.

*Coal.*—Output tonnage evaluated pro rata according to income from sales.

*Other Non-Metallic Minerals, Clay Products and Structural Materials.*—Shipments during the year at their respective sales values.

*Imports.*—Statements and quantities and values are based on the declarations of importers, as subsequently checked by government officials.

The value of imported merchandise is the fair market value or the price thereof when sold for home consumption in the principal markets of the country whence and at the time when the same were exported directly to Canada. The price and value of the goods in every case are stated as in condition packed ready for shipment, the fair value being shown in the currency of the country of export, and the selling price to the purchaser in Canada shown in the actual currency in which the goods were purchased. In the case of goods that are the manufacture or produce of a foreign country, the currency of which is substantially depreciated, the value stated is the value that would be placed on similar goods manufactured or purchased in the United Kingdom and imported from that country, if such similar goods are made or produced there. If similar goods are not made or produced in the United Kingdom, the value stated is the value of similar goods made or produced in any European country, the currency of which is not substantially depreciated.

*Exports.*—Statements of quantities and values are based on the declaration of exporters as subsequently checked by government officials.

The value of exports of Canadian merchandise is the actual cost or the value at the time of exportation at the points in Canada whence originally shipped.

*Weight.*—Weight, where shown in imports and exports is the net weight of the goods, excluding the weight of the covers or receptacles, except in the cases of certain goods, as provided in the tariff.

The expression "ton" means 2,000 pounds, and cwt. 100 pounds, avoirdupois. Where other units of quantity are used, imperial standards apply.

Unless otherwise arranged, the data relating to the operations of less than three firms producing the same commodity or mineral are not published separately.









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