CANADA
DEPARTMENT OF MINES
HON. JAMES A. LOUGHEED, MINISTER; CHARLES CAMSELL, ACTING DEPUTY MINISTER.

MINES BRANCH
EUGENE HAANEL, PH.D., DIRECTOR.

ANNUAL REPORT

ON THE

INDUSTRIAL OUTPUT

MINERAL PRODUCTION OF CANADA

During the Calendar Year

1919

OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1920

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12348—1

LETTER OF TRANSMITTAL.

DR. EUGENE HAANEL,
Director of Mines Branch,
Department of Mines,
Ottawa.

SIR,—I beg to hand you, herewith, in abbreviated form the Annual Report on the Mineral Production of Canada, giving revised statistical information descriptive of the mining and metallurgical production in Canada during the calendar year 1919.

A preliminary report on the mineral production during 1919 was sent to press February 28, 1920, and issued within the following week.

The present report, as did the corresponding issue for 1918, presents a general summary only of the mineral production and will be supplemented by separate and detailed reports on "The Production of Coal and Coke in Canada, 1919"; "The Production of Iron and Steel in Canada, 1919"; and "The Production of Copper, Gold, Lead, Nickel, Silver, Zinc and other Metals in Canada during 1919."

That section of this report dealing with metals and metalliferous ores, except iron and steel, has been prepared by Mr. A. Buisson; and the entire section dealing with non-metalliferous products, including structural materials, has been prepared by Mr. John Casey.

The co-operation of Canadian mine and smelter operators who have, almost without exception, cheerfully furnished the department with statistics and information regarding their operations is gratefully acknowledged. Thanks are due also to railway and other transportation companies and to smelter operators outside of Canada for data furnished.

(Signed) JOHN McLEISH.

DIVISION OF MINERAL RESOURCES AND STATISTICS,
November 12, 1920.

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The term "ton" used throughout this report signifies a ton of 2,000 pounds; while the year referred to means calendar year, unless otherwise stated. The Government fiscal year formerly ended on the 30th June; but now terminates on the 31st March. This change took place in 1907, hence the fiscal period ending March 31, 1907, covers only nine months.

Statistics of exports and imports given throughout this report are compiled from the reports of the Trade of Canada, collected by the Customs Department and published by the Department of Trade and Commerce.

The term "production" used throughout this report may in general be interpreted as meaning the quantity sold or shipped. Mineral products mined or manufactured, but not sold or shipped at the end of the year, are not included as "production." An exception to this usage will be found in reference to pig-iron, in which case the statistics of production represent the quantities made.

The value of the metallic minerals produced, whether refined in Canada or not, is calculated on the basis of the average price of the metal in some recognized market. New York prices have usually been taken as the standard, except in the case of lead, for which the Montreal price is now used. The value of non-metallic products is given as at the mine or point of shipment.

THE

MINERAL PRODUCTION OF CANADA

During the Calendar Year

1919

A preliminary report on the mineral production of Canada in 1919 was published on February 28, 1920, the statistical record being at that time partially estimated and therefore subject to revision.

According to the revised statement now presented the total value[1] in 1919 was $176,686,390, about three and a half million dollars in excess of the total value estimated in the preliminary report.

Compared with the total value of the production in 1918, which was $211,301,897, that of 1919 shows a decrease of 16·38 per cent.

The detailed comparative statement here presented shows the production of each important product during the past two years, the proportion which each contributes to the total production, and the increase or decrease as the case may be of the production in 1919 as compared with that of 1918.

The total value of the metallic production in 1919 was $73,262,793, as against a value of $114,549,152 in 1918 and $106,455,147 in 1917, showing a decrease of $41,286,359 or over 36 per cent in 1919 as compared with the previous year.

The total value of the production of non-metallic products in 1919 was $103,423,597, as against $96,752,745 in 1918 and $83,191,674 in 1917. The value of non-metallic products in 1919 was greater than that of any previous year. Much of this increase is to be credited to higher prices realized for most of these products though on the other hand important increases have been made in the quantities of products produced including asbestos and the various classes of structural material.

The total value of the production in 1886 was $10,221,255, or about $2.23 per capita. In ten years the value had increased to $22,474,256, or $4.38 per capita, more than twice the total in 1886, and nearly twice the production per capita. The next ten years witnessed an increase to $79,286,697 in 1906, or $12.81 per capita, about three and a half times the production in 1896. The total in 1919 was more than double that of 1906.

The record of annual mineral production in Canada since 1886 and the total annual production of metallic and non-metallic products since 1907 are shown in the following tables:—

[1] 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, silver, and zinc, 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 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.

Annual Mineral Production in Canada since 1886.

Year.	Value of production.	Value per capita.	Year.	Value of production.	Value per capita.
	$	$		$	$
1886	10,221,255	2·23	1903	61,740,513	10·83
1887	10,321,331	2·23	1904	60,082,771	10·27
1888	12,518,894	2·67	1905	69,078,999	11·49
1889	14,013,113	2·96	1906	79,286,697	12·81
1890	16,763,353	3·50	1907	86,865,202	13·75
1891	18,976,616	3·92	1908	85,557,101	13·16
1892	16,623,415	3·39	1909	91,831,441	13·70
1893	20,035,082	4·04	1910	106,823,623	14·93
1894	19,931,158	3·98	1911	103,220,994	14·42
1895	20,505,917	4·05	1912	135,048,296	18·27
1896	22,474,256	4·38	1913	145,634,812	18·77
1897	28,485,023	5·49	1914	128,863,075	15·96
1898	38,412,431	7·32	1915	137,109,171	17·29
1899	49,234,005	9·27	1916	177,201,534	21·77
1900	64,420,877	12·04	1917	189,646,821	22·68
1901	65,797,911	12·16	1918	211,301,897	24·59
1902	63,231,836	11·36	1919	176,686,390	.....

Annual Values of Metallic and Non-Metallic Production.

Year.	Metallic.	Non-Metallic.		Total.
		Fuels and other non-metallics.	Structural or clay and stone quarry products.	
	$	$	$	$
1907	42,426,607	31,275,546	12,863,049	(a) 86,865,202
1908	41,774,362	32,142,784	11,339,955	(a) 85,557,101
1909	44,156,841	31,141,251	16,533,349	91,831,441
1910	49,438,873	37,757,158	19,627,592	106,823,623
1911	46,105,423	34,405,960	22,709,611	103,220,994
1912	61,172,753	45,080,674	28,794,869	135,048,296
1913	66,361,351	48,463,709	30,809,752	145,634,812
1914	59,386,619	43,467,229	26,009,227	128,863,075
1915	75,814,841	43,373,571	17,920,759	137,109,171
1916	106,319,365	53,414,983	17,467,186	177,201,534
1917	106,455,147	63,354,363	19,837,311	189,646,821
1918	114,549,152	77,621,946	19,130,799	211,301,897
1919	73,262,793	76,002,087	27,421,510	176,686,390

(a) Total includes $300,000 allowed for products not reported.

The production of pig-iron given in the general table includes only that proportion of the output of Canadian blast furnaces credited to Canadian ores. There is an important production of pig-iron from imported ores (shown in the footnotes to the general table and in the chapter on iron and steel) and the total value thereof in 1918 was exceeded only by the production of coal and nickel. There is also a large production of aluminium from imported ores for which no value is included, in the general table of production.

Comparative Statement of Mineral Production for Years 1918 and 1919.

Product.		1918.			1919.			Increase (+) or Decrease (−).		Increase (+) or Decrease (−).	
		Quantity.	Value (a).	Per cent of total.	Quantity.	Value (a).	Per cent of total.	Quantity.	%	Value.	%
Metallic.			$			$				$	
Cobalt metallic and contained in oxide‡	Lb.	1,347,544	3,368,860	1·59	530,371	1,325,928	0·75	− 817,173	60·64	− 2,042,932	60·64
Copper (*b*)	"	118,769,434	29,250,536	13·84	75,053,581	14,028,265	7·94	−43,715,853	36·81	−15,222,271	52·04
Gold	Fine oz.	699,681	14,463,689	6·85	766,764	15,850,423	8·97	+ 67,083	9·59	+ 1,386,734	9·59
Iron, pig, from Canadian ore (*c*)	Tons.	47,444	1,204,703	0·57	38,457	899,406	0·51	− 8,987	18·94	− 305,297	25·34
Iron ore sold for export (*k*)	"	118,472	498,999	0·24	5,883	46,525	.....	− 112,589	95·00	− 452,474	90·68
Lead (*d*)	Lb.	51,398,002	4,754,315	2·25	43,827,699	3,053,037	1·73	− 7,570,303	14·73	− 1,701,278	35·78
Molybdenite	"	378,029	434,733	0·21	83,002	69,203	.....	− 295,027	78·04	− 365,530	84·08
Nickel (*e*)	"	92,507,293	37,002,917	17·51	44,544,883	17,817,953	10·08	−47,962,410	51·85	−19,184,964	51·85
Palladium	Crude oz.	.....	.....	.....	62	3,534	.....	+ 62	.....	+ 3,534	.....
Platinum	"	39	2,560	.....	48	3,597	.....	+ 9	23·07	+ 1,037	40·51
Silver (*f*)	Fine oz.	21,383,979	20,693,704	9·79	16,020,657	17,802,474	10·07	− 5,363,322	25·08	− 2,891,230	13·97
Tungsten concentrates	Lb.	27,088	11,700	.....	.....	.....	.....	− 27,088	100·00	− 11,700	100·00
Zinc	"	35,083,175	2,862,436	1·35	32,194,707	2,362,448	1·34	− 2,888,468	8·23	− 499,988	17·47
Total		.....	114,549,152	54·21	.....	73,262,793	41·46	.....	.....	− 41,286,359	36·04
Non-metallic.											
Actinolite	Tons.	228	2,508	.....	80	880	.....	− 148	64·91	− 1,628	64·91
Arsenic, white and in ore	"	3,560	563,639	0·27	3,389	509,924	0·29	− 171	4·80	− 53,715	9·53
Asbestos	"	141,462	8,936,804	4·23	136,765	10,909,452	6·17	− 4,697	3·32	+ 1,972,648	22·07
Asbestic	"	16,797	33,993	.....	22,471	65,917	.....	+ 5,674	33·78	+ 31,924	93·91
Chromite	"	21,994	867,122	0·41	8,541	228,898	0·13	− 13,453	61·17	− 638,224	73·60
Coal	"	14,977,926	55,192,896	26·12	13,681,218	54,413,349	30·80	− 1,296,708	8·66	− 779,547	1·41
Corundum	"	137	26,112	.....	.....	.....	.....	− 137	100·00	− 26,112	100·00
Feldspar	"	18,782	112,728	.....	14,679	86,231	.....	− 4,103	21·85	− 26,497	23·51
Fluorspar	"	7,362	156,029	.....	5,063	97,837	.....	− 2,299	31·22	− 58,192	37·30
Graphite	"	3,114	248,870	0·12	1,360	100,221	.....	− 1,754	56·33	− 148,649	59·73
Graphite, artificial	"	904	.....	.....	179	.....	.....	− 725	80·2	.....	.....
Grindstones	"	3,072	83,005	.....	2,020	60,516	.....	− 1,052	34·24	− 22,489	27·09
Gypsum	"	152,287	823,006	0·39	299,063	1,215,287	0·69	+ 146,776	96·38	+ 392,281	47·66
Magnesite	"	39,365	1,016,765	0·48	11,273	328,465	0·19	− 28,092	71·36	− 688,300	67·70
Magnesium sulphate	"	1,949	14,565	.....	738	9,115	.....	− 1,211	62·13	− 5,450	37·42
Manganese	"	440	6,230	.....	661	14,159	.....	+ 221	50·23	+ 7,929	127·27
Mica	"	747	271,550	0·13	2,754	273,788	0·15	.....	.....	+ 2,238	0·82

Comparative Statement of Mineral Production for Years 1918 and 1919—*Concluded.*

Product.		1918.			1919.			Increase (+) or Decrease (−).		Increase (+) or Decrease (−).	
		Quantity.	Value (a).	Per cent of total.	Quantity.	Value (a).	Per cent of total.	Quantity.	%	Value.	%
			$			$				$	
Mineral pigments—											
Barytes	Tons.	640	10,165	.....	468	8,154	.....	— 172	26·88	— 2,011	19·78
Oxides	"	17,317	112,440	.....	11,862	113,427	.....	− 5,455	31·50	+ 987	0·88
Mineral water		.....	154,468	.....	.....	71,015	.....	.....	.....	− 83,453	54·03
Natural gas (g)	M. cu. ft.	20,140,309	4,350,940	2·06	19,937,769	4,176,037	2·36	− 202,540	1·01	− 174,903	4·02
Peat	Tons.	.....	.....	.....	986	6,561	.....	+ 986	.....	+ 6,561	.....
Petroleum	Brl.	304,741	885,143	0·42	240,466	736,324	0·42	− 64,275	21·09	− 148,819	16·81
Phosphate	Tons.	140	1,200	.....	24	331	.....	− 116	82·85	− 869	72·41
Pyrites	"	411,616	1,705,219	0·81	176,487	522,704	0·30	− 235,129	57·12	− 1,182,515	69·35
Quartz	"	268,155	629,813	0·30	94,991	527,635	0·30	− 173,164	64·58	− 102,178	16·22
Salt	"	131,727	1,285,039	0·61	148,301	1,397,929	0·79	+ 16,574	12·58	+ 112,890	8·78
Strontium	"	.....	.....	.....	48	336	.....	+ 48	.....	+ 336	.....
Talc	"	18,169	119,197	.....	18,642	116,295	.....	+ 473	2·60	− 2,902	2·43
Tripolite	"	500	12,500	.....	565	11,300	.....	+ 65	13·00	− 1,200	9·60
Total		.....	77,621,946	36·74	.....	76,002,087	43·02	.....	.....	− 1,619,859	2·09
Structural Materials and Clay Products.											
Cement, portland	Brl.	3,591,481	7,076,503	3·35	4,995,257	9,802,433	5·55	+ 1,403,776	39·09	+ 2,725,930	38·52
Clay products—											
Brick, common	No.	164,970,087	1,879,811	0·89	291,469,996	3,850,219	2·18	+126,499,909	76·68	+ 1,970,408	104·82
Brick, pressed	"	40,146,536	639,083	0·30	74,423,703	1,304,162	0·74	+34,277,167	85·38	+ 665,079	104·07
Brick, moulded and ornamental	"	357,793	28,296	.....	364,682	10,175	.....	+ 6,889	1·93	− 18,121	64·04
Fireclay, and fireclay products		.....	404,824	0·19	.....	389,354	0·22	.....	.....	− 15,470	3·82
Fireproofing	Tons.	28,087	226,798	.....	41,406	345,382	0·20	+ 13,319	47·42	+ 118,584	52·29
Hollow building blocks	No.	1,402,158	40,876	.....	1,984,848	76,673	.....	+ 582,690	41·56	+ 35,797	87·57
Kaolin	Tons.	863	19,299	.....	759	13,744	.....	− 104	12·05	− 5,555	28·78
Pottery		.....	130,242	.....	.....	185,474	.....	.....	.....	+ 55,232	42·41
Sewerpipe	Tons.	36,574	699,774	0·33	62,821	1,074,146	0·61	+ 26,247	71·76	+ 374,372	53·50
Terra-cotta	No.	174,752	15,146	.....	.....	40,527	.....	.....	.....	+ 25,381	167·58
Tile, drain	"	19,762,101	499,340	0·24	20,078,000	616,510	0·35	+ 315,899	1·60	+ 117,170	23·47
Lime	Bush.	6,363,951	1,876,025	0·89	7,147,504	2,310,607	1·31	+ 783,553	12·31	+ 434,582	23·17
Sand-lime brick	No.	14,589,324	186,066	.....	33,553,699	484,854	0·27	+18,964,375	129·98	+ 298,788	160·58
Sand and gravel		11,262,282	2,367,018	1·12	10,364,481	2,680,460	1·52	− 897,801	7·97	+ 313,442	13·24
Slate	Squares	933	5,124	.....	1,632	10,853	.....	+ 699	74·92	+ 5,729	111·81

Stone—											
Granite		590,871	0·28		850,563	0·48			+	259,692	43·95
Limestone		2,342,403	1·11		3,074,815	1·74			+	732,412	31·26
Marble		550			213,982	0·12			+	213,432	
Sandstone		102,750			86,577				−	16,173	15·74
Total		19,130,799	9·05		27,421,510	15·52			+	8,290,711	43·34
Grand total		211,301,897	100·00		176,686,390					−34,615,507	16·38

*Short tons throughout. (*a*) The metals, copper, lead, nickel, silver and zinc as also cobalt oxides are for statistical and comparative purposes valued at the final average value of the refined metal. Pig-iron is valued at the furnace or spot, and non-metallic products at the mine or point of shipment. (*b*) Copper content of smelter products and estimated recoveries from ores exported, at 18·691 cents per pound in 1919, and 24·628 cents per pound in 1918. (*c*) The total production of blast furnace pig-iron in Canada in 1919 was 910,080 tons valued at $24,245,792, of which, it is estimated, 871,623 tons valued at $23,346,386 should be credited to imported ores; in 1918 the total production was 1,163,520 tons valued at $31,776,257 of which 1,116,076 tons valued at $30,571,554 are credited to imported ores. (*d*) Pig-lead produced in Canada and estimated recoveries from lead ores exported at 6·966 cents per pound in 1919, and 9·250 cents in 1918, the average prices in Montreal. (*e*) Nickel content of matte produced and nickel recovered from silver cobalt-nickel ores valued at 40 cents in 1919 and 1918. (*f*) Silver recovered in bullion and recoverable from ores and smelter products exported at 111·122 cents per ounce in 1919 and at 96·772 cents in 1918. (*g*) Gross returns of sale of gas as furnished by well operators. (*k*) Sold for export as reported by the mine operators. (*p*) This record includes only the reported recovery of platinum from alluvial deposits. Important quantities of platinum are being recovered, chiefly in refineries outside of Canada, from the nickel-copper mattes of the Sudbury district. Only a partial record of this recovery is available.

‡The record of production of cobalt for the year 1918 as given in this table has been revised because of duplication caused by the inclusion of material retreated. The corrected production is 737,157 pounds, valued at $1,842,893. The decrease in production will thereby be corrected to 206,786 pounds or 28·0 per cent; and the decrease in value to $516,965 or 28·0 per cent.

EXPORTS AND IMPORTS.

A very large portion of the mineral production of Canada is exported for consumption or refining outside of Canada. On the other hand considerable quantities of mine products, chiefly those which have been refined or subject to partial treatment, or in the form of manufactured goods ready for consumption, are imported.

The total value of the exports of products of the mine, including direct mine products and manufactures thereof, in 1919 was $182,698,777, compared with $174,558,546 in 1918, according to records compiled from the Monthly Reports of the Trade of Canada published by the Department of Trade and Commerce. The classification is that used in the Trade reports.

A revision of the classification makes comparison in detail with previous records difficult. Of the total exports in 1919, about $58,000,000 can be attributed to metals either in crude or refined metallic form or contained in ores or some form of metallurgical product exported for further refining. About $26,000,000 is attributed to asbestos, coal, mica, and various other non-metallic minerals. About $10,000,000 is attributed to chemical products such as cyanamid, calcium carbide, ammonium sulphate, etc. The balance, over $88,000,000, is made up largely of manufactured products, chiefly manufactures of iron and steel, such as agricultural implements, machinery, boilers and locomotives, rolling-mill products, wire, etc.

A great variety of mineral products, chiefly in the manufactured or semi-manufactured condition, are annually imported into Canada. These imports increased in value with great rapidity during the ten years preceding 1913. During the next two years, however, there was a falling off, but in 1916 the imports again increased to a value almost equal to that of 1913. The total value of these imports during the calendar year 1919 amounted to $324,263,177, as compared with a value of $356,990,627 in 1918; $354,313,551 in 1917; $256,346,726 in 1916; $146,465,510 in 1915; $181,675,667 in 1914; and $259,299,745 in 1913.

It is perhaps significant that of the total value of these imports in 1919 over one-half consisted of iron and steel goods and about 29 per cent of coal, coke and petroleum.

Exports of Products of the Mine and Manufactures of Mine Products, Calendar Years 1918 and 1919.

Products.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Iron and its Products:					
Chromite (chromic iron)	Tons	15,831	353,616	9,078	198,733
Iron ore	"	130,250	650,502	14,480	78,490
Agricultural Implements:					
Cream separators and parts	$	.....	115,120	.....	266,764
Harvesters and binders	No.	5,549	989,031	14,136	2,773,756
Hayrakes	"	1,126	43,315	1,862	73,516
Mowing machines	"	8,694	566,878	14,250	918,635
Reapers	"	457	39,573	1,009	95,113
Cultivators	"	3,383	147,724	11,250	638,741
Drills	"	8,997	791,590	8,227	856,642
Harrows	"	5,104	141,871	11,376	294,111
Ploughs and parts of	$	.....	1,536,550	.....	2,833,743
Seeders	No.	37	3,432	352	38,307
Garden and farm tools	$	.....	.....	*	241,697
Spades and shovels	"	.....	.....	*	219,368
Threshing machines, separators and parts	No.	478	219,174	.....	2,184,605
Other agricultural implements and machines	$	.....	371,667	.....	333,232
Parts of agricultural implements and machines, n.o.p.	"	.....	833,965	.....	988,041
Boilers, Engines, Pumps and Windmills:					
Gasoline engines and parts of	No.	1,395	271,173	2,706	1,184,667
Locomotives and parts of	"	.....	.....	* 130	5,874,091
Cutlery and Hardware:					
Bolts and nuts	Cwt.	.....	.....	* 9,211	84,545
Cutlery	$	.....	.....	*	2,025,493
Hardware, n.o.p.	"	.....	1,995,603	.....	1,580,628
Nails, brads, spikes and tacks of all kinds	Cwt.	.....	.....	* 126,823	761,988
Nails, wire	"	(a).....	6,294,195	204,772	1,302,413
Needles and pins of all kinds	$	.....	.....	*	72,793
Screws of all kinds	"	.....	.....	*	46,820
Machinery (except agricultural):					
Dynamos, generators and motors	$	.....	.....	*	105,531
Lawnmowers	No.	.....	.....	* 4,879	29,872
Linotype machines and parts of	$	.....	5,937	.....	30,957
Sewing machines and parts of	"	.....	50,054	.....	568,224
Typewriters	No.	3,461	192,401	3,830	297,948
Washing machines, domestic and wringers	$	.....	14,447	.....	32,096
Other machinery and parts of, n.o.p	"	.....	5,349,457	.....	5,852,327
Rolling Mill products:					
Bars and rods	Tons	105,285	10,312,657	52,191	3,394,894
Metallic shingles and laths and corrugated roofing	$	.....	13,823	.....	18,514
Rails	Tons	12,952	575,062	30,737	1,297,836
Structural steel	"	.....	.....	* 5,515	465,989
Tubes and piping	$	.....	.....	*	1,715,707
Smelted Products:					
Billets, ingots and blooms	Tons	61,782	2,645,943	28,087	1,731,529
Ferro-manganese and other ferro-products, n.o.p.	"	23,781	2,671,434	22,449	1,229,341
Ferro-silicon	"				
Pig-iron	"	2,130	169,495	63,605	1,820,260
Vehicles:					
Aeroplanes and parts	$	.....	5,679,674	.....	2,480,463
Automobiles, freight	No.	10,361	5,076,076	3,352	1,673,256
" passenger	"	.....	.....	19,597	11,580,260
" parts of	$	.....	919,738	.....	3,490,577
Bicycles	No.	93	4,951	121	4,968
" parts of	$	.....	91,807	.....	114,683
Cars and coaches, railway, and parts of	"	.....	.....	*	1,495,402
Motor vehicles, n.o.p.	No.	.....	.....	* 9	4,130
Other vehicles, n.o.p.	$	.....	.....	.....	103,387

*Nine months, 1919.

(a) Includes wire, barbed fencing, fencing woven and other wire, n.o.p., in 1918.

Exports of Products of the Mine and Manufactures of Mine Products, Calendar Years 1918 and 1919—*Continued*

Products.		1818.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Wire:					
Wire, barbed	Cwt.	(a)		24,960	107,142
Wire, woven, fencing	$	(a)			88,140
Other wire, n.o.p.	"	(a)			2,059,204
Other Iron and Steel Products:					
Castings, n.o.p.	$		516,742		296,236
Forgings	"			*	1,612,236
Furniture	"			*	41,587
Gas buoys	"				
Guns, rifles and firearms of all kinds	"		1,118,562		2,735,086
Lamps and lanterns	"				80,129
Scales and weighing beams	"			*	70,619
Scrap-iron and steel	Tons.	51,545	853,097	245,214	3,779,179
Stoves of all kinds	$		84,640		124,331
Tinware	"		195,812		66,076
Tools, hand or machine, n.o.p.	"		1,962,883		1,059,992
Other manufactures of iron and steel, n.o.p.	"		8,907,060		6,645,007
Non-Ferrous Metals and their Products:					
Aluminium bars, blocks, etc.	Cwt.	216,165	7,223,570	145,763	4,455,031
Aluminium, manufactures of	$		197,670		59,339
Arsenic, metallic	Cwt.	53,448	393,883	50,128	355,654
Arsenic, n.o.p.	"				
Brass, old and scrap	"	91,849	1,454,451	96,569	1,275,448
Brass rods, sheets, tubing, etc.	"	26,368	703,227	5,355	173,654
Brass valves	$			*	236,839
Copper, fine contained in ore, matte, regulus, etc.	Cwt.	733,964	9,221,681	408,513	5,316,151
Copper, blister	"			* 199,561	3,747,355
Copper, old and scrap	"	8,953	171,988	31,170	537,225
Copper, in pigs, bars and sheets, etc.	"	467,807	11,378,440	181,923	4,186,549
Copper, wire and cable, insulated	$			*	867,360
Lead, metallic, contained in ore, etc.	Cwt.	226,841	1,321,890	131,429	616,278
Lead, in pigs, etc.	"	74,617	668,807	113,268	772,734
Cobalt alloys	Lbs.	73,580	298,496	3,402	14,878
Cobalt metallic	"	292,015	748,705	106,835	259,624
Nickel, fine, contained in ore, matte, speiss	Cwt.	857,677	10,556,040	303,954	4,785,173
Nickel, fine	"	17,108	707,206	106,210	3,292,420
Gold-bearing quartz dust, nuggets and bullion direct from milling operations	$		10,040,813		5,037,123
Jewellers' sweepings	"				262,643
Jewellery of all kinds, n.o.p.	"				260,687
Platinum contained in concentrates or other forms	Oz.	12	798	325	28,815
Platinum, old and scrap	"	185	20,094	340	33,814
Silver, contained in ore, concentrates, etc.	"	4,225,007	3,735,830	2,854,928	2,850,592
Silver, bullion	"	15,132,069	14,647,072	12,550,233	13,560,205
Zinc ore	Tons.	10,545	476,791	6,630	296,212
Zinc spelter	Cwt.			* 76,938	701,249
Other Non-Ferrous Metal Products:					
Electric apparatus:					
Batteries, telegraph and telephone apparatus	$				1,175,226
Electric apparatus, n.o.p.	"				
Electrotypes and stereotypes	"				15,178
Molybdenum	Cwt.	3,516	402,435	1,135	84,226
Ore, antimony	Tons.	26	1,430	56	8,420
Ore, manganese	"	784	29,208	603	13,401
Ores, other, n.o.p.	"	26,828	105,628	8,727	8,512
Plated ware, n.o.p.	$		21,735		119,326
Pyrites	Tons.	240,453	949,067	89,089	388,508
Metals, other, unmanufactured	$				39,182
Metals, other, manufactured, n.o.p.	"		3,920,919		1,574,716

*Nine months, 1919.

(a) Includes wire, barbed fencing, fencing woven and other wire, n.o.p., in 1918.

Exports of Products of the Mine and Manufactures of Mine Products, Calendar Years 1918 and 1919—*Continued*

Products.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Non-Metallic Minerals and their Products (except chemicals):					
Asbestos	Tons.	119,454	7,786,710	119,122	9,625,695
Asbestos, sand and waste	"	22,144	228,059	25,306	260,775
Asbestos, manufactures of	$	.....	40,763	.....	232,501
Clay and Clay Products:					
Bricks	M.	3,277	34,593	4,770	52,050
Clays, unmanufactured	Cwt.	.....	.....	* 5,901	3,672
Clay, manufactures of	$	.....	129,691	.....	84,953
Earthenware and all manufactures of	"	.....	10,633	.....	23,579
Coal and Its Products:					
Coal	Tons.	1,817,195	9,405,423	2,070,050	12,438,885
Coke	"	29,612	223,629	14,709	129,703
Tar and pitch	$	.....	67,646	.....	61,654
Graphite and Its Products:					
Graphite or plumbago, crude and refined	Cwt.	13,278	32,710	20,055	72,917
Plumbago, manufactures	$	.....	205,993	.....	23,970
Mica and Its Products:					
Mica, rough cobbed and thumb trimmed	Cwt.	8,658	410,000	54,821	641,366
Mica, scrap and waste	"				
Mica, splittings					
Mica, plate and manufactures of (micanite)	$	.....	.....	*	596
Mineral waters:					
Mineral water, natural, not in bottles	Gal.	55	41	122	89
Mineral and ærated water in bottles	$	.....	20,173	.....	59,580
Petroleum and Its Products:					
Oil, coal and kerosene, crude	Gal.	270,302	28,415	603,748	40,648
Oil, coal and kerosene, refined	"	1,946,967	206,675	2,846,293	287,170
Oil, gasoline and naphtha	"	91,229	28,778	1,566,707	428,754
Mineral wax	Cwt.	36,644	347,823	71,259	626,799
Stone and Stone Products:					
Abrasives, natural, n.o.p., in ore or bulk, crushed or ground, including infusorial earth, rotten stone, tripoli, etc	Cwt.	.....	.....	8,529	10,743
Abrasives, artificial, crude, including carborundum	$				
Abrasives, artificial, made up into wheels, stones, etc	$	.....	2,028,839	.....	1,520,218
Corundum	Tons.	143	18,231	.....	.....
Grindstones, manufactured	$	.....	46,872	.....	38,682
Stone for the manufacture of grindstones, rough	Tons.	265	276	.....	.....
Freestone, limestone and other building stone, unwrought	"	62,683	107,690	16,859	23,899
Granite and marble, unwrought	"	1,042	5,059	846	7,118
Stone of all kinds, dressed	$	.....	4,598	.....	10,108
Cement	"	.....	13,752	.....	465,954
Gypsum, or plaster, crude	Tons.	67,824	80,843	148,394	199,857
Lime	Cwt.	149,657	70,930	193,073	128,810
Plaster of Paris, ground, and prepared wall plaster	"	.....	101,618	.....	140,235
Crushed stone	Tons.	1,526	1,983	13,176	12,990
Sand and gravel	"	902,750	229,957	1,074,341	131,140
Other Non-Metallic Minerals:					
Carbon electrodes	$	.....	.....	*	691,747
Feldspar	"	.....	101,187	.....	104,285
Fluorspar	Tons.	.....	.....	* 697	9,616
Glass and glassware, n.o.p.	$	.....	.....	.....	596,613
Magnesite, crude	"				
Magnesite, calcined, dead burned, etc	"	.....	816,553	.....	232,377
Salt	Cwt.	17,856	16,743	12,333	14,573
Talc, crude	$	.....	208,301	.....	210,150
Talc, refined					
Other non-metallic minerals and products	"	.....	.....	.....	.....

* Nine months, 1919

Exports of Products of the Mine and Manufactures of Mine Products, Calendar Years 1918 and 1919—*Concluded*

Products.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Chemicals and Allied Products-					
Acid sulphuric	Cwt.	111,992	165,579	108,942	108,392
Cyanamid	"	921,274	2,346,918	1,174,584	4,104,052
Phosphate rock	Tons.	.....	.....	48	741
Other fertilizers, manufactured, n.o.p.	$	.....	190,697	.....	241,934
Mineral pigments, iron oxide, ochres, etc	Cwt.	15,389	18,377	15,349	25,229
Acetate of lime	"	42,859	216,613	104,265	257,857
Ammonium sulphate	"	173,926	1,027,558	369,763	1,821,880
Calcium carbide	"	1,172,547	4,369,512	956,556	3,960,410
Cobalt oxides and cobalt salts	Lbs.	588,229	853,737	468,225	731,506
Magnesium sulphate	Cwt.	.....	.....	* 3	15
Potash, crude	"	.....	.....	* 633	8,559
			174,558,546		182,698,777

* Nine months, 1919.

IMPORTS.

Imports of Products of the Mine and Manufactures of Mine Products—Calendar Years 1917, 1918, and 1919.

Products.	1917. Value.	1918. Value.	1919. Value.
	$	$	$
Alumina	1,866,240	2,071,060	1,565,264
Alum, alum cake and chloralum	423,903	382,132	228,250
Aluminium and manufactures	560,481	383,985	594,694
Ammonia, nitrate of	283,853	19,019	205,346
Ammonia, sulphate of	26,062	1,273	12,129
Antimony regulus	61,732	92,678	81,257
Antimony salts	6,295	18,986	8,548
Arsenic, oxide and sulphide of	54,136	33,573	27,938
Asbestos	537,431	604,703	656,037
Asphaltum	454,403	428,173	469,016
Bells and gongs	84,021	77,729	88,914
Bismuth	12,922	13,496	9,569
Blanc fixé and satin white	90,482	92,241	114,732
Blast furnace slag	7,106	18,506	416
Borax	381,294	199,210	227,638
Brick and tile	442,455	303,596	520,708
Brick, fire, of a kind not made in Canada, and n.o.p.	3,156,591	3,712,677	1,461,175
Bromine and bromides	530	1,032	182
Burrstones	910	1,571	3,421
Cement, Portland, and manufactures	28,356	28,360	64,443
Chalk, Cornwall stone, feldspar, fluorspar, magnesite, mica, schist	264,220	256,858	49,658
Clays: china, fire, pipe, and all other	416,209	554,353	362,150
Coal: anthracite, bituminous, slack, and run-of-mine	70,562,357	71,650,584	61,160,799
Coke	6,517,260	8,975,445	2,405,740
Coke, ground, for electric batteries	15,239	22,849	26,615
Copper and manufactures of	10,015,561	6,372,412	3,599,297
Cryolite	101,141	107,586	143,141
Crucibles, clay or plumbago	798,044	113,856	59,239
Chloride of lime	100,834	162,748	304,691
Cyanides of potassium, sodium, cyanogen or cpd. of bromine	505,294	459,136	251,863
Diamonds, unset and bort	1,368,887	1,367,801	3,632,026
Earthenware	2,595,582	2,163,455	2,925,295
Earths, crude	3,917	2,514	19,329
Electric carbons	65,225	57,151	37,292
Emery and manufactures	632,836	659,912	354,428
Fertilizers, compound or manufactured	1,045,140	1,054,962	1,201,121
Flint, quartz, silex, etc	77,104	121,879	114,727
Foundry facings	47,416	45,798	22,700
Fullers' earth	17,004	16,969	19,893
Fossils	6,943	11,324	16,395
Gannister	23,954	12,465	877
Gold and silver and manufactures of, including silver bullion	2,921,018	824,418	4,067,275
Graphites and manufactures of	171,209	226,777	87,574
Grindstones	185,607	297,287	281,066
Gypsum and plaster of Paris	35,460	22,065	47,455
Hydro-fluo-silicic acid	97	80	747
Iron and steel—Total, 1917: 187,191,534 1918: 178,340,779 1919: 181,332,310			
Pig-iron and kentledge	2,764,165	2,102,435	1,022,871
Ferro products and chrome steel	2,045,595	4,335,109	943,584
Ingots, blooms, billets, puddled bars, etc	1,401,782	262,210	494,101
Scrap iron and scrap steel	454,079	775,526	482,963
Plates and sheets	17,582,700	14,114,139	12,820,340
Tin plates and sheets	9,985,631	11,403,887	6,436,047
Bars, rods, hoops, bands, etc	22,567,187	17,849,982	12,771,836
Structural iron and steel	15,282,012	11,004,159	11,142,997
Rails and connexions	944,595	561,970	774,985
Pipes and fittings	143,124	128,257	90,879
Nails and spikes	892,021	404,913	228,580
Wire	4,409,376	3,760,004	4,595,101
Forging castings and manufactures	5,976,313	3,829,760	3,325,859
Other iron and steel products	102,742,954	107,808,428	126,202,167
Iron ore	5,124,889	5,895,974	4,706,440

IMPORTS.

Imports of Products of the Mine and Manufactures of Mine Products—Calendar Years 1917, 1918, and 1919—*Continued.*

Products.	1917. Value.	1918. Value.	1919. Value.
	$	$	$
Iron sand	36,737	67,528	10,247
Kainite	38,828	4,931	22,627
Lead and manufactures; litharge	1,732,428	1,350,689	1,022,265
Lime	78,251	53,745	53,190
Lithographic stone	3,921	2,757	10,698
Manganese, oxide of	92,616	93,477	89,314
Magnesia	16,186	13,200	61,740
Mercury or quicksilver	76,322	68,903	31,573
Metallic alloys:—			
Babbitt metal	36,444	27,062	26,863
Brass and manufactures of	5,328,659	4,647,872	3,964,339
Britannia metal and manufactures	20,513	25,898	15,105
German silver, nickel, and nickel silver	519,064	443,103	479,022
Type metal	1,193	85	200
Mineral and bituminous substances	647,444	914,442	629,865
Mineral water, including aerated water	108,444	105,967	113,743
Nickel anodes	8,348	3,734	5,237
Ochres, etc	417,502	475,853	584,524
Ore, cobalt			43
Ores of metals, n.o.p	3,221,267	1,276,092	444,844
Paraffin wax	140,722	209,916	108,049
Paraffin candles	75,257	64,033	59,151
Petroleum and products of	22,741,709	30,475,621	29,392,823
Phosphates (fertilizer)	62,543	90,363	30,267
Platinum and manufactures of	114,279	31,140	160,885
Potash and manufactures of	135,836	118,900	143,919
Precious stones	192,748	186,365	726,773
Pumice	34,162	36,938	29,910
Salt	1,088,205	1,267,169	1,310,129
Saltpetre	163,556	204,121	35,889
Sand and gravel	312,403	435,992	200,428
Slate and manufactures of	106,893	133,054	142,977
Sand paper	331,776	317,048	362,069
Soda products: barilla, bichromate, caustic, sal and salt cake	3,096,578	3,656,459	2,208,460
Stone and manufactures of (including marble)	764,658	732,162	960,925
Soda, nitrate of	1,935,698	4,077,903	411,423
Sulphate of iron (copperas)	9,952	7,783	16,761
Sulphur and phosphorus	1,549,828	2,093,936	1,035,151
Sulphuric acid	15,680	208,288	38,759
Tar, coal, and pine	208,065	256,372	236,216
Tin and manufactures of (including tinware)	5,656,665	4,204,532	3,367,900
Whiting and prepared chalk	261,812	270,197	283,323
Zinc and manufactures of	3,641,272	2,804,027	1,865,531
	354,313,551	356,990,627	324,263,177

Summary of Imports.

	1916.		1917.		1918.		1919.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Brass and mfgs		$ 4,676,374		$ 5,328,659		$ 4,647,872		$ 3,964,339
Coal Tons.	17,580,603	38,289,666	20,857,460	70,562,357	21,678,587	71,650,584	17,308,837	61,160,799
Coke "	757,116	2,229,078	970,106	6,517,260	1,165,590	8,975,445	383,374	2,405,740
Copper and mfgs		7,566,080		10,015,561		6,372,412		3,599,297
Iron ore Tons.	2,339,677	4,419,013	2,251,397	5,124,889	2,200,838	5,895,974	1,783,098	4,706,440
Iron and steel mfgs		129,040,248		187,191,534		178,340,779		181,332,310
Lead and mfgs		2,077,896		1,732,428		1,350,689		1,022,265
Petroleum and mfgs Gals.	292,426,121	14,604,476	379,148,006	22,741,709	420,728,933	30,475,621	451,261,646	29,392,823
Structural materials		5,562,220		7,901,398		8,117,394		6,691,291
Tin and mfgs		2,999,675		5,656,665		4,204,532		3,367,900
Zinc and mfgs		3,690,577		3,641,272		2,804,027		1,865,531
All other		41,191,423		27,899,819		34,155,298		24,754,342
Total		256,346,726		354,313,551		356,990,627		324,263,177

PRODUCTION BY PROVINCES.

Summaries of the mineral production by provinces in 1918 and 1919 are shown in the accompanying tables. The first shows the total production in the several provinces and the percentages of each for the past three years.

In comparing the relative production of the various provinces it should be remembered that Nova Scotia is not credited with the large production of pig-iron and steel at Sydney and Sydney Mines, which is made almost entirely from imported iron ores and is not naturally credited as Canadian mine product. Similarly a large proportion of the pig-iron production in Ontario is excluded from the total value, because it is derived from imported ores. The province of Quebec, also, is not credited with the production of aluminium at Shawinigan Falls, which is made from imported bauxite.

Mineral Production by Provinces, 1917, 1918, and 1919.

Province.	1917.		1918.		1919.	
	Value of production.	Per cent of total.	Value of production.	Per cent of total.	Value of production.	Per cent of total.
	$		$		$	
*Nova Scotia	21,104,542	11·13	22,317,108	10·56	23,445,215	13·27
New Brunswick	1,435,024	0·76	2,144,017	1·01	1,770,945	1·00
Quebec	17,400,077	9·18	19,605,347	9·28	21,267,947	12·04
Ontario	89,066,600	46·96	94,694,093	44·82	67,917,998	38·44
Manitoba	2,628,204	1·39	3,120,600	1·53	2,868,378	1·62
Saskatchewan	860,651	0·45	1,019,981	0·48	1,521,964	0·86
Alberta	16,527,535	8·71	23,109,987	10·94	21,087,582	11·94
British Columbia	36,141,926	19·06	42,935,333	20·27	34,865,427	19·73
Yukon	4,482,202	2·36	2,355,631	1·11	1,940,934	1·10
Dominion	189,646,821	100·00	211,301,897	100·00	176,686,390	100·00

*Includes a small production of lime from Prince Edward Island.

Mineral Production of Nova Scotia, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Barytes	Tons.	580	9,145	468	8,154
Coal	"	5,818,562	21,095,470	5,720,373	22,078,726
Grindstones	"	256	8,000	283	9,000
Gold	Ozs.	1,176	24,310	850	17,571
Gypsum	Tons.	49,365	115,976	163,852	250,174
Manganese	"			45	3,600
Molybdenite	Lbs.	180	207		
Tripolite	Tons.	500	12,500	565	11,300
Tungsten concentrates	Lbs.	1,063	372		
Clay products			303,515		432,900
Lime	Bus.	748,314	149,663	366,543	73,309
Salt	Tons.			174	2,188
Stone			478,721		413,194
Other products			119,229		145,094
Total			22,317,108		23,445,215

The total production of blast furnace pig-iron in Nova Scotia in 1919 was 285,087 tons valued at $7,141,641 and in 1918, 415,870 tons valued at $10,451,400.

Mineral Production of New Brunswick, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Coal	Tons.	268,212	1,331,710	179,108	794,761
Grindstones	"	2,816	75,005	1,737	51,516
Gypsum	"	27,225	214,114	42,409	315,656
Natural gas	M. cu. ft.	792,396	107,842	682,890	120,510
Petroleum	Bls.	3,009	7,402	4,225	13,141
Tungsten concentrates	Lbs.	22,000	8,693	.....	.....
Clay products	.....	.....	39,055	.....	52,941
Lime	Bus.	482,548	221,935	468,533	223,193
Stone	.....	.....	99,044	.....	125,294
Other products	.....	.....	39,217	.....	73,933
Total	.....	.....	2,144,017	.....	1,770,945

Mineral Production of Quebec, 1918 and 1919.*

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper	Lbs.	5,869,649	1,445,577	2,691,695	503,105
Gold	Ozs.	1,939	40,083	1,470	30,388
Iron ore, sold for export	Tons.	6,330	28,211	321	1,005
Lead	Lbs.	2,110,059	195,180	2,280,000	158,825
Molybdenite	"	333,318	383,315	83,002	69,203
Silver	Ozs.	178,675	172,907	140,926	156,600
Zinc	Lbs.	2,802,928	228,691	1,752,000	128,562
Asbestos and asbestic	Tons.	158,259	8,970,797	159,236	10,975,369
Chromite	"	21,324	835,727	8,541	228,898
Feldspar	"	191	4,279	925	13,073
Graphite	"	(a) 180	40,018	20	400
Magnesite	"	39,365	1,016,765	11,273	328,465
Mica	"	481	229,119	.....	218,437
Mineral water	.....	.....	7,609	.....	13,257
Iron oxides	Tons.	17,317	112,440	11,862	113,427
Peat	"	.....	.....	486	4,811
Phosphate	"	140	1,200	22	300
Pyrites	"	124,871	507,802	52,746	203,222
Quartz	"	1,730	5,383	2,221	7,773
Cement	Bls.	1,564,360	3,003,571	2,260,422	4,340,010
Clay products	.....	.....	798,058	.....	1,563,832
Kaolin	Tons.	863	19,299	759	13,744
Lime	Bus.	1,527,784	418,888	1,796,822	493,762
Slate	Squares	933	5,124	1,632	10,853
Stone	.....	.....	952,402	.....	1,441,919
Other products	.....	.....	182,902	.....	248,707
Total	.....	.....	19,605,347	.....	21,267,947

*There was also in this Province an important production of aluminium from imported ores.
(a) Includes small production from Baffin Land.

Mineral Production of Ontario, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Cobalt, metallic and in oxide, etc.	Lbs.	1,347,544	3,368,860	530,371	1,325,928
Copper	"	47,074,475	11,593,502	24,346,623	4,550,627
Gold	Ozs.	411,976	8,516,299	505,739	10,454,553
Iron ore, sold for export	Tons.	109,942	464,188	5,562	45,520
Iron, pig, from Canadian ore (a)	"	47,444	1,204,703	38,457	899,406
Lead	Lbs.	1,684,366	155,804	1,487,586	103,625
Molybdenite	"	42,931	49,371		
Nickel	"	92,507,293	37,002,917	44,544,883	17,817,953
Silver	Ozs.	17,198,737	16,643,562	12,117,878	13,465,628
Zinc	Lbs.			147,692	10,838
Actinolite	Tons.	228	2,508	80	880
Arsenious oxide	"	2,482	520,525	2,859	488,706
Barytes	"	60	1,020		
Corundum	"	137	26,112		
Feldspar	"	18,591	108,449	13,754	73,158
Fluorspar	"	7,187	150,779	3,425	59,281
Graphite	"	2,934	208,852	1,340	99,821
Gypsum	"	38,214	151,564	58,899	278,120
Mica	"	266	42,431	325	55,351
Mineral water			145,400		55,958
Natural gas	M cu. ft.	13,029,524	2,884,460	11,024,041	2,690,400
Peat	Tons.			500	1,750
Petroleum	Bls.	288,692	777,737	219,804	625,342
Phosphate	Tons.			2	31
Pyrites	"	268,507	1,133,963	117,011	285,832
Quartz	"	216,539	474,772	60,055	179,549
Salt	"	131,727	1,285,039	148,112	1,395,291
Strontium	"			48	336
Talc	"	18,169	119,197	18,542	115,795
Cement	Bls.	1,220,003	1,976,815	2,023,280	3,650,585
Clay products			2,434,215		4,574,796
Lime	Bus.	2,660,791	762,976	3,578,834	1,143,973
Sand-lime brick	No.	8,081,301	91,902	24,141,399	335,200
Stone			1,079,745		1,936,268
Other products			1,316,426		1,197,497
Total			94,694,093		67,917,998

(a) The total production of blast-furnace pig-iron in Ontario in 1919 was 624,993 tons, valued at $17,104,151; in 1918, 747,650 tons, valued at $21,324,857.

Mineral Production of Manitoba, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper	Lbs.	2,339,751	576,234	3,348,000	625,775
Gold	Ozs.	1,926	39,814	724	14,966
Silver	"	13,316	12,886	20,760	23,069
Tungsten concentrates	Lbs.	177	42		
Calcined gypsum	Tons.	37,483	341,352	32,903	371,337
Clay products			116,417		131,737
Lime	Bus.	462,544	134,725	476,452	147,131
Sand-lime brick	No.	5,395,423	82,438	7,389,300	124,847
Stone			238,251		89,067
Other products			1,578,441		1,340,449
Total			3,120,600		2,868,378

Mineral Production of Saskatchewan, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Coal	Tons	346,847	722,148	380,169	820,522
Salt	"	.....	.....	15	450
Clay products		.....	133,935	.....	270,989
Sand-lime brick	No.	512,600	5,126	1,294,000	14,601
Other products		.....	158,572	.....	415,402
Total		.....	1,019,781	.....	1,521,964

Mineral Production of Alberta, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Gold, alluvial	Oz.	27	558	24	500
Coal	Tons	5,972,816	20,537,287	4,964,535	18,294,495
Natural gas	M. cu. ft.	6,318,389	1,358,638	8,230,838	1,365,127
Petroleum	Brl.	13,040	100,004	16,437	97,841
Clay products		.....	381,074	.....	571,949
Lime	Bush.	80,408	44,141	109,067	41,276
Sand-lime brick	No.	600,000	6,600	729,000	10,206
Stone		.....	569	.....	3,189
Other products		.....	681,116	.....	702,999
Total		.....	23,109,987	.....	21,087,582

Mineral Production of British Columbia, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper (a)	Lb.	62,865,681	15,482,560	44,502,049	8,317,884
Gold	Oz.	180,163	3,724,500	167,252	3,457,406
Iron ore sold for export	Tons.	2,200	6,600	.....	.....
Lead	Lb.	47,594,328	4,402,475	40,060,113	2,790,587
Molybdenite	"	1,600	1,840	.....	.....
Platinum	Oz.	39	2,560	25	2,150
Silver	"	3,921,336	3,794,755	3,713,537	4,126,556
Zinc	Lb.	32,280,247	2,633,745	30,295,015	2,223,048
Arsenic	Tons.	1,078	43,114	530	21,218
Chromite	"	670	31,395	.....	.....
Coal	"	2,568,589	11,494,681	2,455,933	12,420,445
Fluorspar	"	175	5,250	1,638	38,556
Manganese	"	440	6,230	616	10,559
Magnesium sulphate	"	1,949	14,565	738	9,115
Mineral water	.....	.....	1,455	.....	1,800
Pyrites	Tons.	18,238	63,454	6,730	33,650
Quartz	"	49,886	149,658	32,715	540,313
Talc	"	.....	.....	100	500
Clay products	.....	.....	257,921	.....	293,478
Lime	Bush.	401,562	143,697	351,253	187,963
Stone	.....	.....	187,842	.....	217,006
Other products	.....	.....	387,236	.....	373,193
Total	.....	.....	42,935,333	.....	34,865,427

(a) Smelter recoveries of copper.

Mineral Production of Yukon, 1918 and 1919.

Product.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper	Lb.	619,878	152,663	165,184	30,874
Gold	Oz.	102,474	2,118,325	90,705	1,875,039
Lead	Lb.	9,249	856	.....	.....
Silver	Oz.	71,915	69,594	27,556	30,621
Tungsten concentrates	Lb.	3,848	2,593	.....	.....
Coal	Tons.	2,900	11,600	1,100	4,400
Total	.....	.....	2,355,631	.....	1,940,934

Mineral Production by Provinces, 1899-1919.

Calendar Year.	Nova Scotia.*	New Brunswick.	Quebec.	Ontario.	Manitoba.	Alberta.	Saskatchewan.	Yukon.	British Columbia.	Total.
1899	$ 6,817,274	$ 420,227	$ 2,585,635	$ 9,819,557		$ 17,108,707			$12,482,605	$49,234,005
1900	9,298,479	439,060	3,292,383	11,258,099		23,452,330			16,680,526	64,420,877
1901	7,770,159	467,985	3,759,984	13,970,010		19,297,940			20,531,833	65,797,911
1902	10,686,549	607,129	3,743,636	14,619,091		16,127,400			17,448,031	63,231,836
1903	11,431,914	580,495	3,585,938	14,160,033		14,082,986			17,899,147	61,740,513
1904	11,212,746	559,913	3,688,482	12,582,843		12,713,613			19,325,174	60,082,771
1905	11,507,047	559,035	4,405,975	18,833,292		11,387,642			22,386,008	69,078,999
1906	12,894,303	646,328	5,242,058	25,111,682		10,092,726			25,299,600	79,286,697
1907	14,532,040	664,467	6,205,553	30,381,638	$ 898,775	$ 4,657,524	$ 533,251	$ 3,335,898	25,656,056	86,865,202
1908	14,487,108	579,816	6,372,949	30,623,812	584,374	5,122,505	413,212	3,669,290	23,704,035	85,557,101
1909	12,504,810	657,035	7,086,265	37,374,577	1,193,377	6,047,447	456,246	4,032,678	22,479,006	91,831,441
1910	14,195,730	581,942	8,270,136	43,538,078	1,500,359	8,996,210	498,122	4,764,474	24,478,572	106,823,623
1911	15,409,397	612,830	9,304,717	42,796,162	1,791,772	6,662,673	636,706	4,707,432	21,299,305	103,220,994
1912	18,922,236	771,004	11,656,998	51,985,876	2,463,074	12,073,589	1,165,642	5,933,242	30,076,635	135,048,290
1913	19,376,183	1,102,613	13,475,534	59,167,749	2,214,496	15,054,046	881,142	6,276,737	28,086,312	145,634,812
1914	17,584,639	1,014,570	11,836,929	53,034,677	2,413,489	12,684,234	712,313	5,418,185	24,164,039	128,863,075
1915	18,088,342	903,467	11,619,275	61,071,287	1,318,387	9,909,347	451,933	5,057,708	28,689,425	137,109,171
1916	20,042,262	1,118,187	14,406,598	80,461,323	1,823,576	13,297,543	590,473	5,491,610	39,969,962	177,201,534
1917	21,104,542	1,435,024	17,400,077	89,066,600	2,628,264	16,527,535	860,651	4,482,202	36,141,926	189,646,821
1918	22,317,108	2,144,017	19,605,347	94,694,093	3,120,600	23,109,987	1,019,781	2,355,631	42,935,333	211,301,897
1919	23,445,215	1,770,945	21,267,947	67,917,908	2,868,378	21,087,582	1,521,964	1,940,934	34,865,427	176,686,390

*Includes a small production from Prince Edward Island.

MINE PRODUCTION.

The statistics of mineral production presented in the preceding tables are based, as already explained, in so far as metalliferous ores are concerned, on the actual or probable recovery of refined metals from the ores treated. An endeavour has been made to compile another series of records eliminating as far as possible the metallurgical operations, and to include only the actual quantities of ores or concentrates shipped from mines and the net value of the same. It has not been found feasible, however, to eliminate entirely the metallurgical operations in certain cases, such as the recovery of bullion in placer operations, the recovery of gold bullion from milling ores and of silver bullion by those plants carrying on milling operations as well as mining, there being no commercial basis on which a separation of values could be made.

A record of mine production compiled on this basis is shown in the following tables and includes a record of the tonnage and value of ores, or minerals mined, treated and shipped, the quantities of metals contained in ores shipped and records of labour employed and wages paid. It should be noted that these records cover only active shipping mines and do not include any record of the labour employed in the smelting and refining of ores, nor in blast furnace operations, with the exceptions noted. Previous to 1917 no record was obtained of the labour employed in connection with the production of petroleum, and similar returns in respect to placer mining were not sufficiently complete to be included in the tables. The values of the ores given are in general those furnished by the operators. In certain cases, however, where such values have not been furnished, estimates have been made.

The tables showing the quantities of metals contained in the ores shipped give the total quantities of metals contained without any deductions or allowances being made for smelter or treatment losses.

Mine Production, 1914.

——	No. of mines or works.	Men employed.		Wages paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
		Underground.	Surface.				
METALLIFEROUS ORES.	No.	No.		$	Tons.	Tons.	$
Iron ores	5	598		364,489	345,410	244,854	542,041
Milling gold ore—							
Bullion shipped	44	1,070	1,206	2,603,414	754,732	13	6,101,463
Concentrates						6,974	860,379
Silver-cobalt ores—							
Mine bullion shipped	29	1,412	1,883	3,207,116	733,174	354	5,665,006
Ore and concentrates						16,917	7,827,140
Nickel-copper ores		736	1,286	1,693,997	1,000,364	999,908	5,020,003
Copper ores	4	113	180	177,721	119,292	117,762	502,637
Silver-lead-zinc ores—							
Lead ore and concentrate	76	394	817	1,110,876	186,646	70,207	2,652,802
Zinc " "						10,893	262,563
Gold-copper-silver ores	20	823	1,746	2,512,241	1,857,788	1,647,973	9,580,537
Placer mining—							
Yukon						10	5,182,616
British Columbia						1	565,000
Alberta							992
Total metalliferous	187	11,994		11,669,854	4,997,406	3,115,855	44,763,179
Total non-metalliferous	451	33,732		22,058,526	17,078,300	14,708,307	43,467,229
Total structural materials	1,023	21,129		9,881,316	.....	.....	26,009,227
	1,661	66,855		43,609,696	.....	.....	114,239,635

Content of Shipments.

——	Gold.	Silver.	Nickel.	Copper.	Lead.	Zinc.
	Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
Milling gold ore—						
Bullion	289,860	85,110	.....	.....	.....	.....
Concentrates	38,717	64,218	.....	90	15,141	.....
Silver-cobalt ores—						
Mine bullion shipped	.....	10,335,527	.....	.....	.....	.....
Ore and concentrates	.....	15,523,608	.....	.....	.....	.....
Nickel-copper ores	.....	.....	60,800,799	36,300,532	.....	.....
Copper ores	1,059	51,440	.....	6,450,899	.....	.....
Silver-lead-zinc ores—						
Lead ore and concentrate	334	2,501,820	.....	.....	50,527,130	.....
Zinc " "	.....	376,420	.....	.....	.....	9,101,460
Gold-copper-silver ores	182,784	761,890	.....	53,771,126	.....	.....
Placer mining—						
Yukon	247,753	55,744	.....	.....	.....	.....
British Columbia	27,332	.....	.....	.....	.....	.....
Alberta	48	.....	.....	.....	.....	.....
Total	787,887	29,755,777	60,800,799	96,522,647	50,542,271	9,101,460

Mine Production, 1915.

——	No. of mines or works.	Men employed.		Wages paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
		Underground.	Surface.				
METALLIFEROUS ORES.	No.	No.		$	Tons.	Tons.	$
Antimony ore	7	157		55,038	15,318	1,491	83,971
Molybdenite	4	52		16,990	.....	37	28,450
Iron ores	5	399		230,346	251,742	398,112	774,427
Milling gold ore—							
Bullion shipped	50	1,324	1,555	2,893,187	1,180,477	18	8,953,130
Concentrates						8,335	711,947
Silver-cobalt ores—							
Mine bullion shipped	25	1,008	1,531	2,363,414	588,404	232	3,410,936
Ore and concentrates						61,362	8,326,776
Nickel-copper ores	9	857	1,745	2,202,536	1,364,048	1,372,724	10,552,673
Copper ores	6	173	205	215,065	141,758	142,121	1,026,562
Silver-lead and zinc ores	66	328	784	960,894	215,694	73,752	2,958,394
Zinc						14,895	540,022
Gold-copper-silver ores	33	886	1,694	2,868,449	2,380,709	2,186,646	10,947,059
Placer mining—							
Yukon	.....	.....	.....	.....	.....	9	4,776,145
British Columbia	.....	.....	.....	.....	.....	.....	770,000
Alberta	.....	.....	.....	.....	.....	.....	4,026
Total metalliferous	205	12,698		11,805,919	6,138,150	4,259,734	53,864,518
Total non-metalliferous	472	30,392		20,257,126	16,594,889	14,481,882	43,373,571
Total structural materials	943	13,786		5,657,717	.....	.....	17,920,759
	1,618	56,876		37,720,762	.....	.....	115,158,848

Content of Shipments.

——	Gold.	Silver.	Nickel.	Copper.	Lead.	Zinc.	Antimony
	Ozs.	Ozs.	Tons.	Tons.	Tons.	Tons.	Tons.
Antimony ore	.....	.....	.....	.....	.....	.....	540
Milling gold ore—							
Bullion	430,981	87,116	.....	.....	.....	.....	.....
Concentrates	35,779	37,507	.....	.....	.....	.....	.....
Silver-cobalt ores—							
Mine bullion shipped	.....	6,752,183	.....	.....	.....	.....	.....
Ore and concentrates	.....	17,603,943	.....	.....	.....	.....	.....
Nickel-copper ores	.....	.....	43,891	23,318	.....	.....	.....
Copper ore	1,151	64,965	.....	3,538	.....	.....	.....
Silver-lead-zinc ores—							
Lead ore and concentrate	459	2,637,444	.....	.....	24,354	.....	.....
Zinc ore and concentrate	.....	316,731	.....	.....	.....	6,116	.....
Gold-copper-silver ores	202,127	849,784	.....	34,758	.....	.....	.....
Placer mining—							
Yukon	229,803	25,689	.....	.....	.....	.....	.....
British Columbia	37,249	.....	.....	.....	.....	.....	.....
Alberta	195	.....	.....	.....	.....	.....	.....
Total	937,744	28,375,362	43,891	61,614	24,354	6,116	540

Mine Production, 1916.

——	No. of mines or works.	Men employed.		Wages paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
		Underground.	Surface.				
METALLIFEROUS ORES.	No.	No.		$	Tons.	Tons.	$
Antimony ore	5	116		59,957	14,947	(a) 938	136,360
Molybdenite	9	262		122,072	13,522	(b) 78	156,461
Iron ores	4	530		376,716	331,822	275,176	715,107
Milling gold ore							
Bullion shipped	49	1,304	1,709	3,540,899	1,502,336	21	10,418,052
Concentrates						9,340	522,409
Silver-cobalt ores—							
Mine bullion shipped						171	3,444,736
Ore and concentrates	32	1,034	1,561	2,450,614	547,882	77,453	9,736,490
Nickel-copper ores	6	875	1,837	2,824,818	1,566,333	1,566,333	11,766,201
Copper ores	12	232	261	293,115	170,666	155,999	1,444,676
Silver-lead and zinc ores	84	573	1,070	1,803,633	395,802	84,516	4,568,500
Zinc						82,077	1,086,249
Gold-copper-silver ores	59	1,259	1,975	4,395,924	2,907,344	2,431,930	18,544,772
Placer mining—							
Yukon						9	4,413,958
British Columbia							580,500
Alberta							1,695
Total metalliferous	260	14,598		15,867,748	7,450,654	4,684,041	67,536,166
Total non-metalliferous	532	30,541		24,987,562	18,170,207	15,699,830	53,414,983
Total structural materials	816	12,465		6,237,168			17,467,186
Total	1,608	57,604		47,092,478			138,418,331

(a) Includes refined antimony.
(b) MoS_2 contents of concentrates produced.

Content of Shipments.

——	Gold.	Silver.	Nickel.	Copper.	Lead.	Zinc.	Antimony
	Ozs.	Ozs.	Tons.	Tons.	Tons.	Tons.	Tons.
Antimony ore							429
Milling gold ore—							
Bullion	519,202	102,349					
Concentrates	30,138	54,136					
Silver cobalt ores—							
Mine bullion shipped		4,982,702					
Ore and concentrates		15,690,716					
Nickel-copper ores			51,127	25,266			
Copper ores	713	65,438		4,638			
Silver-lead-zinc ores	784	2,582,952			27,062		
Zinc products		363,262				24,249	
Gold-copper-silver ores	163,466	905,685		42,126			
Placer mining—							
Yukon	211,010	47,703					
British Columbia	28,082						
Alberta	82						
Total	954,477	24,794,943	51,127	72,030	27,062	24,249	429

Mine Production, 1917.

—	No. of mines or works.	Men employed.		Wages paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
		Underground.	Surface.				
METALLIFEROUS ORES.	No.	No.	No.	$	Tons.	Tons.	$
Antimony ore	1	46		35,739	8,182	361	22,000
Molybdenite	23	501		260,692	26,871	1,554	320,006
Iron ores	9	528		509,163	305,330	215,302	758,621
Milling gold ores—							
Bullion shipped	45	1,388	1,633	3,687,392	1,303,410	18	9,312,424
Concentrates						8,874	365,375
Silver-cobalt ores—							
Mine bullion shipped						318	7,628,740
Ore and concentrates	32	1,079	1,369	2,667,607	527,850	72,719	10,123,838
Nickel-copper ores	6	907	1,737	2,981,896	1,518,783	1,509,841	11,323,808
Silver-lead-zinc ores—							
Lead ore and concentrate	87	716	1,198	2,295,090	445,663	46,799	3,866,862
Zinc ore and concentrate						116,489	1,323,985
Gold-copper-silver ores	83	1,730	2,253	4,667,578	2,554,738	1,878,911	16,048,186
Placer mining—							
Yukon	69	890		1,337,063	.....	8	3,310,268
British Columbia	34	275		208,589	.....		496,000
Total metalliferous	389	16,250		18,650,809	6,690,827	3,851,194	64,900,113
Total non-metalliferous	763	32,088		31,398,570	18,438,815	15,468,048	63,354,363
Total structural materials	739	10,814		6,609,872	.....	.....	19,837,311
	1,891	59,152		56,659,251	25,129,642	19,319,242	148,091,787

Content of Shipments.

—	Gold.	Silver.	Nickel.	Copper.	Lead.	Zinc.	Antimony.	Molybdenite.
	Ozs.	Ozs.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Antimony ore	.....	.....	.....	.....	.....	.....	144	.....
Molybdenum ore	.....	.....	.....	.....	.....	.....	.....	165
Milling gold ore—								
Bullion	447,373	77,250	.....	.....	.....	.....	.....	.....
Concentrates	21,905	99,119	.....	.....	.....	.....	.....	.....
Silver-cobalt ores—								
Mine bullion shipped	.....	9,248,717	.....	.....	.....	.....	.....	.....
Ore and concentrates	.....	12,042,990	.....	.....	.....	.....	.....	.....
Nickel-copper ores	.....	.....	52,587	24,521	.....	.....	.....	.....
Gold-copper-silver ores	77,599	782,521	.....	40,479	.....	.....	.....	.....
Silver-lead-zinc ores—								
Lead ore and concentrate	1,033	1,670,064	.....	.....	19,348	.....	.....	.....
Zinc ore and concentrate	.....	465,153	.....	.....	.....	32,328	.....	.....
Placer mining—								
Yukon	176,548	39,723	.....	.....	.....	.....	.....	.....
British Columbia	23,994	.....	.....	.....	.....	.....	.....	.....
Alberta	.....	.....	.....	.....	.....	.....	.....	.....
Total	748,452	24,425,537	52,587	65,000	19,348	32,328	144	165

Mine Production, 1918.

——	No. of mines or works.	Men employed.		Wages paid.	Ores or minerals mined.	Metals, ores concentrates or minerals shipped.	Net value of shipments.
		Underground.	Surface.				
METALLIFEROUS ORES.	No.	No.	No.	$	Tons.	Tons.	$
Molybdenum ore	18	196	110	274,945	34,030	461	428,997
Iron ore	11	624		693,383	254,424	211,608	885,893
Gold ore—							
Bullion shipped	45	1,238	1,541	3,249,578	974,977	18	9,173,037
Concentrates						15,112	411,090
Silver-Cobalt ores—							
Mine bullion shipped	30	1,044	1,143	2,918,474	521,472	228	6,821,528
Ore and concentrates						73,646	9,763,737
Nickel-copper ores	6	975	1,449	3,186,909	1,641,617	1,641,617	12,312,128
Copper-gold-silver ores	46	1,125	1,723	4,296,649	2,665,548	1,856,899	11,658,397
Silver-lead-zinc ore—							
Lead ore and concentrate	83	647	1,044	1,980,351	428,066	75,256	4,705,573
Zinc " "						121,200	1,228,195
Placer mining—							
Yukon	65	478		878,858	.....	4·5	1,907,702
British Columbia	22	128		134,092	.....	0·5	320,000
Alberta	.....	.....		.....	.....	.....	558
Total metalliferous	326	13,475		17,613,239	6,520,134	3,995,050	59,616,745
" non-metalliferous	787	32,848		39,322,157	19,107,261	16,237,486	77,621,946
" structural	643	9,504		6,989,496	.....	.....	19,130,799
Grand total	1,756	55,827		63,924,892	25,627,395	20,232,536	156,369,490

Content of Shipments.

——	Gold.	Silver.	Nickel.	Copper.	Lead.	Zinc.	Molybdenite.
	Oz.	Oz.	Tons.	Tons.	Tons.	Tons.	Tons.
Molybdenum ore	.....	.....	.....	.....	.....	.....	139
Gold ore—							
Bullion	441,120	75,176	.....	.....	.....	.....	.....
Concentrates	17,108	118,785	.....	.....	.....	.....	.....
Silver-cobalt ores—							
Mine bullion shipped	.....	6,675,863	.....	.....	.....	.....	.....
Ore and concentrates	.....	9,599,621	.....	.....	.....	.....	.....
Nickel-copper ores	.....	.....	56,980	27,688	.....	.....	.....
Copper-gold-silver ores	128,235	811,912	.....	23,376	.....	.....	.....
Silver-lead-zinc ores—							
Lead ore and concentrate	1,479	2,314,542	.....	.....	23,422	.....	.....
Zinc " "	97	431,888	.....	.....	.....	31,513	.....
Placer mining—							
Yukon	101,744	22,892	.....	.....	.....	.....	.....
British Columbia	15,480	.....	.....	.....	.....	.....	.....
Alberta	27	.....	.....	.....	.....	.....	.....
Total	705,290	20,050,679	56,980	51,064	23,422	31,513	139

Mine Production, 1919.

—	No. of mines or works.	Men employed.		Wages paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
		Under ground.	Surface.				
METALLIFEROUS ORES.	No	No.	No.	$	Tons.	Tons.	$
Molybdenum ore	1	25	80	35,536	7,280	46	69,203
Iron ore	5	556		649,517	289,991	195,970	687,386
Gold ore—							
Bullion shipped	28	1,042	1,479	3,506,442	1,212,760	29	10,972,559
Concentrates						5,229	298,222
Silver-cobalt ores—							
Mine bullion shipped	35	922	1,095	2,556,767	444,471	179	4,868,543
Ore and concentrates						62,045	7,096,775
Nickel-copper ores	7	432	590	1,244,713	572,400	572,400	4,579,200
Copper-gold-silver ores	30	951	1,250	3,191,524	1,779,956	1,085,950	9,265,569
Silver-lead-zinc ore—							
Lead ore and concentrate	67	615	1,000	1,884,338	400,959	54,508	3,044,839
Zinc " "						135,535	1,049,493
Placer mining—							
Yukon	70	382		684,159	.....	4½	1,701,514
British Columbia	23	116		93,732	.....	½	288,650
Alberta	.....	.....		.....	.....	.....	500..
Total metalliferous	266	10,535		13,846,728	4,716,817	2,111,896	43,922,453
" non-metalliferous	733	34,422		41,674,932	18,047,064	14,641,415	76,002,087
" structural	654	12,270		9,304,045	.....	.....	27,421,510
Grand total	1,653	57,227		64,825,705	22,763,881	16,753,311	147,346,050

Content of Shipments.

—	Gold.	Silver.	Nickel.	Copper.	Lead.	Zinc.	Molybdenite.
	Oz.	Oz.	Tons.	Tons.	Tons.	Tons.	Tons.
Molybdenum ore	.....	.....	.....	.....	.....	.....	41½
Gold ore—							
Bullion	529,409	94,327	.....	.....	.....	.....	.....
Concentrates	10,525	168,673	.....	.....	.....	.....	.....
Silver-cobalt ores—							
Mine bullion shipped	.....	4,293,887	.....	.....	.....	.....	.....
Ore and concentrates	.....	6,636,457	.....	.....	.....	.....	.....
Nickel-copper ores	.....	.....	19,356	10,807	.....	.....	.....
Copper-gold-silver ores	121,482	637,020	.....	26,307	.....	.....	.....
Silver-lead-zinc ores—							
Lead ore and concentrate	1,623	2,185,376	.....	.....	16,074	.....	.....
Zinc " "	90	535,829	.....	.....	.....	29,980	.....
Placer-mining—							
Yukon	87,923	19,783	.....	.....	.....	.....	.....
British Columbia	13,859	.....	.....	.....	.....	.....	.....
Alberta	24	.....	.....	.....	.....	.....	.....
Total	764,935	14,571,352	19,356	37,114	16,074	29,980	41½

Labour and Wages Statistics Covering Non-Metalliferous Mines during 1917, 1918, and 1919.

—	1917.			1918.			1919.		
	Number Active Mines or Works.	Number Employed.	Wages Paid.	Number Active Mines or Works.	Number Employed.	Wages Paid.	Number Active Mines or Works.	Number Employed.	Wages Paid.
NON-METALLIC.			$			$			$
Asbestos and asbestic	15	3,114	2,312,110	13	3,074	2,871,643	15	3,567	3,954,407
Chromite	9	253	211,105	13	233	223,375	5	138	164,036
Coal	329	24,596	25,963,520	381	25,419	32,899,501	370	27,198	34,826,363
Feldspar	8	101	55,742	12	143	108,592	12	98	46,870
Fluorspar	7	59	28,810	9	125	89,858	4	100	153,034
Graphite	5	282	191,307	5	413	121,885	4	121	72,098
Grindstones, pulpstones and scythestones	5	92	25,052	6	116	45,853	5	95	36,080
Gypsum	12	774	445,128	8	435	275,312	13	725	380,105
Magnesite	2	296	194,864	4	305	326,417	3	186	98,045
Mica and phosphate	28	283	119,440	16	165	84,521	21	147	109,411
Mineral pigments: barytes, and oxides	7	109	56,185	6	95	51,735	5	94	43,473
Mineral water	22	53	22,246	18	50	17,271	16	36	17,119
Natural gas	105	597	520,200	101	711	641,542	99	681	631,567
Petroleum	168	270	167,205	153	264	195,141	120	274	210,936
Pyrites (*b*)	11	454	451,940	15	617	688,720	11	372	372,620
Quartz	12	289	287,817	11	236	319,840	4	111	121,183
Salt	10	309	249,073	9	302	286,781	11	329	350,141
All others†	8	157	96,736	7	145	74,170	15	150	87,444
Total non-metallic	763	32,088	31,398,570	787	32,848	39,322,157	733	34,422	41,674,932
STRUCTURAL.									
Cement	9	1,396	1,424,215	10	1,249	1,474,547	10	1,535	1,836,359
Clay products	276	3,915	2,174,167	230	3,423	2,131,614	221	4,613	3,356,464
Lime	67	770	554,617	65	741	664,367	58	868	829,459
Sand-lime brick	13	150	65,175	10	146	69,514	13	286	206,405
Sand and gravel	208	1,562	770,167	186	1,558	991,169	192	1,945	997,484
Slate	1	19	10,933	1	19	11,298	1	24	17,004
Stone	165	3,002	1,610,598	141	2,368	1,646,987	159	2,999	2,060,870
Total structural	739	10,814	6,609,872	643	9,504	6,989,496	654	12,270	9,304,045
Total non-metalliferous	1,502	42,902	38,008,442	1,429	42,352	46,311,653	1,387	46,692	50,978,977

†Includes in 1917—corundum, manganese, magnesium sulphate, tripolite and talc.
" 1918—actinolite, corundum, magnesium sulphate, manganese, talc and tripolite.
" 1919—actinolite, magnesium sulphate, manganese, peat, strontium, tripolite and talc.
(*a*) Not collected. (*b*) Partial.

METALLIC PRODUCTS.

ALUMINIUM.

No commercial ores of aluminium have as yet been found in Canada. Aluminium is, however, made in extensive works at Shawinigan Falls, Quebec, from imported ores by the Northern Aluminium Company.

The imports of alumina including bauxite, were in 1919, 29,302 tons, valued at $1,565,264, as against 93,221 tons, valued at $2,071,060, in 1918.

The imports of aluminium in ingots, bars, tubes, etc., were in 1919, 379·5 tons, valued at $247,565, besides manufactures of aluminium valued at $347,129, as against 143·5 tons, valued at $109,411, besides manufactures of aluminium valued at $274,574, in 1918.

The exports of aluminium in ingots, bars, tubes, etc., in 1919 amounted to 7,288 tons, valued at $4,455,031, together with manufactures of aluminium valued at $59,339, as against 10,808 tons, valued at $7,223,570, and manufactures valued at $197,670, in 1918.

The restrictions on the price of aluminium were raised by the United States War Industries Board in February, 1919, but there was very little fluctuation throughout the year, the average being 32·14 cents per pound.

ANTIMONY.

Shipments of antimony ore and concentrates and of refined antimony were made intermittently during the last ten years. There has been no reported shipment of antimony in any form during the last two years.

The imports of antimony as regulus, salts, etc., were in 1919, 520·9 tons, valued at $89,805, as against 341·9 tons, valued at $111,664, in 1918.

The Customs Department records show an export of antimony ore in 1919, amounting to 56 tons, valued at $8,420, as against 26 tons, valued at $1,430, in 1918.

The New York price of antimony averaged in 1919, 8·19 cents per pound. Due to an abundant supply early in the year, the price declined to a minimum of 6½ cents in April, then strengthened and rose to 9 cents in July and closed the year at 9½ cents per pound.

Summary of Antimony Statistics.

	1916.	1917.	1918.	1919.
Number of men employed	116	46	.....	.....
Wages paid	$59,957	$35,739	.....	.....
Refined antimony produced.....Lb.	107,185	.....	.....	.....
" " " .....Value.	$41,823	.....	.....	.....
Antimony ore shipped.....Tons.	885	361	.....	.....
" " .....Value.	$94,537	$22,000	.....	.....
Antimony ore exported.....Tons.	794	774	26	56
" " .....Value.	$48,158	$50,476	$1,430	$8,420
Imports of antimony.....Tons.	419·3	172·2	341·9	521
" " .....Value.	$222,341	$68,027	$111,664	$89,805

COBALT.

The Cobalt district of Ontario has been for several years the principal source of the world's supply of cobalt. The recovery of cobalt in Canada is in the form of metallic cobalt, cobalt oxide, cobalt salts, unseparated oxides and stellite, which are produced from the treatment of the cobalt ores and residues in eastern Ontario smelters.

The total production of cobalt contained in smelter products shipped and in cobalt residues exported during 1919 amounted to 530,371 pounds (265·2 tons) valued at $1,325,928 ($2.50 per pound), as against 737,157 pounds (368·6 tons), valued at $1,842,893 ($2.50 per pound), in 1918.

The 1919 production included: (*a*) 113,943 pounds of metallic cobalt, valued by the producers at $220,676; (*b*) 429,359 pounds of cobalt oxides, valued at $611,909; (*c*) other cobalt compounds such as stellite and cobalt sulphate amounting to 60,437 pounds, valued at $34,308; and (*d*) cobalt ores and residues exported amounting to 842 tons, valued at $133,294; making a total valuation by the producers of $900,187.

The 1918 production included: (*a*) 294,476 pounds of metallic cobalt, valued by the operators at $713,072; (*b*) 476,053 pounds of cobalt oxides, valued at $760,121; and (*c*) other cobalt compounds such as stellite and cobalt hydroxide amounting to 191,304 pounds, valued at $936,139; making a total valuation of $2,409,332.

The total cobalt ores and residues treated in 1919 were 9,084 tons with a cobalt content of 1,070,826 pounds, as against 8,354 tons with a cobalt content of 972,679 pounds in 1918.

No price quotations for cobalt are available for 1918 and 1919, but the metal as produced in the refineries of Ontario obtained a price of around $2.50 per pound.

Summary of Cobalt Statistics.

—		1916.	1917.	1918. (*b*).	1919.
Cobalt ores and residues treated	Tons.	8,127	7,770	8,354	9,084
Cobalt content of ores and residues treated	Lbs.	1,254,953	866,327	972,679	1,070,826
Cobalt recovery from smelter products	Lbs.	840,536	1,079,572	737,157	530,371
Cobalt recovery from smelter products	Value.	$924,590	$1,727,315	$1,842,893	$1,325,928
Metallic cobalt produced	Lbs.	215,215	393,773	294,476	113,943
Metallic cobalt produced	Value.	$200,888	$616,633	$713,072	$220,676
Cobalt oxide produced	Lbs.	670,760	802,448	476,053	429,359
Cobalt oxide produced	Value.	$542,341	$1,104,500	$760,121	$611,909
Other cobalt compounds	Lbs.	128,008	214,785	191,304	60,437
Other cobalt compounds	Value.	$267,819	$740,032	$936,139	$34,308

(*b*) The record of cobalt production for 1918 as published in the Annual Report for that year have been revised because of duplication caused by the inclusion of materials re-treated.

COPPER.

The total production of copper in 1919 amounted to 37,526·8 tons, valued at $14,028,265, as against 59,384·7 tons, valued at $29,250,536 in 1918.

The production in 1919 included: 3,467 tons of refined copper; 11,583·5 tons contained in blister copper exported for refining; 12,098·7 tons contained in nickel-copper matte partly exported and partly refined in Canada; 20·7 tons contained in copper sulphate; and 10,356·8 tons, the estimated recoveries from ores exported for smelting and refining.

The 1918 production included: 3,808·7 tons of refined copper, 18,848·3 tons contained in blister copper; 23,482·3 tons contained in nickel-copper matte exported for refining; 22·1 tons contained in copper sulphate; and 13,223·2 tons, the estimated recoveries from ores exported for smelting and refining.

Refined copper was produced in Canada commercially for the first time in 1916 at the Trail refinery of the Consolidated Mining and Smelting Company.

British Columbia contributed 59·3 per cent of the total production for Canada in 1919, while Ontario produced 32·5 per cent, Quebec 3·6 per cent, Manitoba 4·4 per cent, and the Yukon 0·2 per cent.

The imports of copper in 1919 were valued at $3,599,297 and included: crude and manufactured copper, 7,474·7 tons, valued at $3,074,368; copper sulphate, 937·4 tons, valued at $150,388; and manufactures of copper valued at $374,541.

The imports in 1918 were valued at $6,373,361 and included: crude and manufactured copper, 11,162 tons, valued at $5,879,007; copper sulphate, 1,375·7 tons, valued at $240,775; and manufactures of copper valued at $253,579.

The imports of brass in 1919 were valued at $3,964,339 and included: brass in crude and manufactured form 1,653·8 tons, valued at $697,996 and containing approximately 1,157·6 tons of copper, and also manufactures of brass valued at $3,266,343.

The imports of brass in 1918 were valued at $4,647,872 and included: 1,994·3 tons of brass in crude and manufactured form, valued at $993,574, and containing 1,396 tons of copper; and manufactures of brass valued at $3,654,298.

The exports of copper in 1919 were valued at $14,654,640 and included: copper in ore, matte, etc., 20,425·7 tons, valued at $5,316,151; blister copper 9,978 tons, valued at $3,747,355; copper, black or coarse, and in pigs, etc., 9,096·1 tons, valued at $4,186,549; copper "old and scrap," 1,558·5 tons, valued at $537,225; and copper wire and cable valued at $867,360.

The exports of copper in 1918 were valued at $20,772,109 and included: copper in ore, matte, etc., 36,698·2 tons, valued at $9,221,681; copper, black or coarse, and in pigs, etc., 23,390·3 tons, valued at $11,378,440; and "old and scrap," 447·7 tons, valued at $171,988.

The price of copper fluctuated very much during 1919, but there was no real active market until towards the end of the year which closed with copper at 18½ cents per pound.

Summary of Copper Statistics.

		1916.	1917.	1918.	1919.
Ores and concentrates shipped (*a*)	Tons.	2,587,929	1,878,911	1,856,899	1,085,950
Ores and concentrates shipped (*a*)	Value.	$19,989,448	$16,048,186	$11,658,397	$9,265,569
Copper production	Tons.	58,575	54,614	59,385	37,527
Copper production	Value.	$31,867,150	$29,687,989	$29,250,536	$14,028,265
Production by provinces:—					
Quebec	Lbs.	5,703,347	5,015,560	5,869,619	2,691,695
Ontario	Lbs.	44,997,035	42,867,774	47,074,475	24,346,623
Manitoba	Lbs.	.....	(*c*) 1,152,960	2,339,751	3,348,000
British Columbia	Lbs.	63,642,550	57,730,959	62,865,681	44,502,079
Yukon	Lbs.	2,807,096	2,460,079	619,878	165,184
Imports of copper	Tons.	13,699	16,549	12,538	8,412
Imports of copper (*b*)	Value.	$7,566,080	$10,015,561	$6,373,361	$3,599,297
Exports of copper	Tons.	66,610	59,961	60,536	41,058
Exports of copper	Value.	$22,642,699	$23,256,278	$20,772,109	$14,654,640

(*a*) Does not include the nickel-copper ores. See nickel.

(*b*) Includes manufactures of copper for which no quantities are given; in 1916, $234,421; in 1917, $316,190; in 1918, $253,579, and in 1919, $374,541.

(*c*) Includes in 1917 small quantities from New Brunswick and Alberta.

GOLD.

The production of gold in 1919 amounted to 766,764 fine ounces, valued at $15,850,423, and included: (*a*) alluvial gold, 104,495 ounces, or 13·6 per cent of the total; (*b*) gold obtained from the crushing of free-milling quartz ore, 529,296 ounces, or 69·1 per cent; (*c*) gold obtained from ores treated at the Canadian copper and lead smelters, 67,636 ounces, or 8·8 per cent; and (*d*) the estimated gold recoveries from ores exported, 65,337 ounces, or 8·5 per cent of the total production.

The production in 1918 amounted to 699,681 fine ounces, valued at $14,463,689, and included: (*a*) alluvial gold, 16·7 per cent of the total; (*b*) gold from free-milling quartz, 63·1 per cent; (*c*) gold recovered in Canadian smelters, 12·1 per cent; and (*d*) the estimated recoveries from ores exported, 8·1 per cent.

There are two refineries producing fine gold in Canada, that of the Royal Mint at Ottawa, and that of the Consolidated Mining and Smelting Company of Canada, at Trail, B.C.

The production of gold by provinces is as follows: Nova Scotia, 0·1 per cent of the total; Quebec, 0·2 per cent; Ontario, 65·9 per cent; Manitoba, 0·1 per cent; British Columbia, 21·8 per cent, and the Yukon, 11·9 per cent.

The imports of gold in the form of fringe, and manufactures of gold and silver, were valued in 1919 at $477,412. The Customs Department does not report any imports of gold bullion or gold coin after March 31, 1918. The imports in 1918 of gold in the form of bullion, coins, fringe and manufactures of gold and silver were valued at $1,831,795.

The exports of gold in the form of dust, nuggets, etc., in 1919, were valued at $5,037,123, as against $10,040,813 in 1918. Much of the bullion formerly exported was marketed at the Royal Mint during 1919.

Summary of Gold Statistics.

		1916.	1917.	1918.	1919.
Gold ores and concentrates shipped	Tons.	9,340	8,874	15,112	5,229
Gold ores and concentrates shipped	Value.	$522,409	$365,375	$411,090	$298,222
Gold bullion shipped	Tons.	21	18	18	29
Gold bullion shipped	Value.	$10,418,052	$9,312,424	$9,173,037	$10,972,559
Gold production (*a*)	Fine ounces.	930,492	738,831	699,681	766,764
Gold production	Value.	$19,234,976	$15,272,992	$14,463,689	$15,850,423
Production by provinces:—					
Nova Scotia	Ozs.	4,562	2,210	1,196	850
Quebec	Ozs.	1,034	1,511	1,939	1,470
Ontario	Ozs.	492,481	423,261	411,976	505,739
Manitoba	Ozs.	.....	440	1,926	724
Alberta	Ozs.	82	.....	27	24
British Columbia	Ozs.	219,633	133,742	180,163	167,252
Yukon	Ozs.	212,700	177,667	102,474	90,705
Imports of gold	Value.	$20,938,634	$14,601,931	$1,831,795	$477,412
Exports of gold	Value.	$18,382,903	$15,929,051	$10,040,813	$5,037,123

(*a*) Includes gold from copper ores and lead-zinc ores.

IRON AND STEEL.

Iron Ore.—The shipments of iron ore from Canadian mines were in 1919 the lowest that have been recorded in nineteen years and amounted to a total of 197,170 tons, valued at $693,386, as compared with 211,608 tons, valued at $885,893, shipped in 1918. The shipments in 1919 included 321 tons of titaniferous ore mined some years previously at Baie St. Paul, on the north shore of the St. Lawrence, several carloads from properties in Palmerston township, Frontenac county, and Bastard

township, Leeds county, Ontario; 1,200 tons of magnetite shipped from Dean channel, B.C., to Seattle, Wash., and the balance from the Moose Mountain magnetite mines and the Magpie siderite mine.

The Magpie siderite mine in the Michipicoten district of Ontario was operated throughout the year by the Algoma Steel Corporation, the siderite ore being roasted as usual in the rotary kiln plant at the mine. About 189,962 tons of roasted ore were produced and shipped to the blast furnace plant at Sault Ste. Marie. The raw ore averages about 34·3 per cent and the roasted ore about 50 per cent metallic iron.

Messrs. Moose Mountain, Limited, operating at Sellwood, Ont., were actively engaged throughout the year in the development of the milling and briquetting processes which are being employed in the treatment of these low grade magnetites. The raw ore averaged about 33·8 per cent iron, while the briquettes produced averaged about 63·8 per cent iron. Over 100,000 tons of raw ore were milled during the year, but only a comparatively small quantity, 5,483 short tons, of briquettes were marketed.

About 25 tons of magnetite were shipped by the British Columbia Department of Mines to Vancouver for an experiment in electric smelting by the Fleet process. In Bella Coola district several iron claims have been staked on Dean Channel by Filip Jacobson. About 1,200 tons were mined and shipped by the Smelters Steel Company of Seattle to an electric furnace plant which the company has erected near that point.

In the Great Lakes region ore prices from the 1st October, 1918, were: Old Range Bessemer, $6.65 per gross ton (basis 55 per cent iron); Messabi Bessemer, $6.40; Old Range Non-Bessemer, $5.90 (basis 51·5 per cent iron); Messabi Non-Bessemer, $5.75. From April 28, 1919, these prices were reduced by 20 cents per ton.

Of the total shipments in 1919 mine operators reported 7,083 tons as exported to the United States, and 190,087 tons shipped to Canadian blast furnaces. The Customs Department records show exports of iron ores to the United States during the year of 14,480 tons, valued at $78,490, and imports of iron ore amounting to 1,783,098 tons, valued at $4,706,440.

The quantity of iron ore charged to blast furnaces in 1919 was 1,752,585 tons, of which 78,391 tons were of domestic origin and 1,674,194 tons imported. The imported ore included 519,722 tons of Newfoundland ore and 1,154,472 tons of "Lake ore." Shipments of iron ore from Wabana Mines, Newfoundland, in 1919 by the two Canadian companies operating there were 499,972 short tons, as against 848,574 tons in 1918, all of which went to Sydney and North Sydney, in Cape Breton.

Pig-iron.—The total production of pig-iron in Canada in 1919, excluding the production of ferro-alloys, was 917,781 short tons (819,447 gross tons), having a value of $24,577,589, as compared with a total production in 1918 of 1,195,551 short tons (1,067,456 gross tons), valued at $33,495,171, showing a falling off of 277,770 tons, or 23 per cent. Of the 1919 total, 910,080 tons were made in blast furnaces and 7,701 tons were made in electric furnaces from scrap metal, chiefly shell turnings. In 1918 the blast furnace production was 1,163,510 tons and the electric furnace production from scrap steel was 32,031 tons.

The production of blast furnace pig-iron in Nova Scotia in 1919 was 285,087 tons, as against 415,870 tons in 1919, and with the exception of 1914 was the smallest production in that province since 1905. In Ontario the production of blast furnace pig-iron was 624,993 tons, as against 747,650 tons in 1918. Although less by 16 per cent than in the previous year, the 1919 production in Ontario was exceeded in only four previous years.

Less than one-quarter as much pig-iron was made from electric furnaces from scrap steel as in the previous year, the output being derived from six furnace plants in 1919 as compared with ten plants operated in 1918.

By grades the 1919 production included: Basic, 580,426 tons; Bessemer, 7,637 tons; foundry and malleable, etc., 322,017 tons; low phosphorus iron (electric furnace), 7,701 tons. The 1918 production included: Basic, 966,409 tons; Bessemer, 15,415 tons; foundry and malleable, etc., 181,696 tons; low phosphorus iron (electric furnace), 32,031 tons.

The blast furnace plants operated included those of the Dominion Iron and Steel Company at Sydney, N.S.; the Nova Scotia Steel and Coal Company at North Sydney; the Standard Iron Company at Deseronto, Ont.; the Steel Company of Canada at Hamilton, Ont.; the Canadian Furnace Company at Port Colborne, Ont.; the Algoma Steel Corporation, Limited, at Sault Ste. Marie, Ont.; the Midland Iron and Steel Company at Midland, Ont.; and the Parry Sound Iron Company, Limited, at Parry Sound, Ont.

Electric furnaces were operated for the production of pig-iron from scrap at Hull and Shawinigan Falls in Quebec, at Collingwood, Belleville and Welland in Ontario, and at Vancouver, British Columbia.

The production of ferro-alloys in Canada in 1919, including ferro-silicon, silico spiegel, spiegeleisen and ferro-phosphorus, all with the exception of the spiegeleisen being made in electric furnaces, was about 48,601 tons, valued at $2,000,809. In 1918 the production was 44,704 tons, valued at $4,731,521. Over one-half the tonnage made in 1919 was spiegeleisen made by the Algoma Steel Corporation for the company's own use.

The exports of pig-iron during 1919 were 63,605 tons, valued at $1,820,260, or an average of $28.62 per ton, and of ferro-alloys 22,449 tons, valued at $1,229,341, or an average of $54.76 per ton. The exports of pig-iron included 57,845 tons to the United States, 783 tons to Chili, 7 tons to Japan, and 4,970 tons to other countries. The ferro-alloys exports included 2,564 tons to United Kingdom, 15,371 tons to the United States, and 4,514 tons to other countries.

The imports during 1919 included 35,800 tons of pig-iron, valued at $1,022,871, or an average of $28.80 per ton, and 16,222 tons of ferro-alloys, valued at $901,678, or an average of $55.58 per ton, making a total import of pig-iron and ferro-alloys of 52,022 tons, valued at $1,924,549. The United States trade records show exports to Canada during 1919 of pig-iron and ferro-alloys amounting to 33,751 gross tons (37,801 short tons), valued at $1,052,103.

Steel.—The total production of steel ingots and direct steel castings in 1919 was 1,030,342 short tons (919,948 long tons), of which 993,039 tons were ingots and 37,303 tons direct steel castings.

The total production in 1918 was 1,873,708 short tons (1,672,946 long tons), of which 1,800,171 tons were ingots and 73,537 tons were castings.

The 1919 production included: open-hearth steel, 1,007,495 tons; electric steel, 15,502 tons; crucible and converter steels, 7,345 tons. The 1918 production included: open-hearth steel, 1,746,334 tons; electric steel, 119,130 tons; crucible and converter steels, 8,244 tons.

The total production of electric furnace steel in 1917 was 50,467 tons and in 1916, 19,639 tons.

The total production of pig-iron, ferro-alloys and steel in electric furnaces was about 41,683 tons in 1919, as compared with 191,869 tons in 1918, and 101,031 tons in 1917.

The exports of steel during 1919, as per Customs Department records, included billets, blooms and ingots, 28,087 tons, valued at $1,731,529, or an average of $61.65 per ton; bars and rods, 52,191 tons, valued at $3,394,894, or an average of 65.05 per ton; steel rails, 30,737 tons, valued at $1,297,836, or an average of $42.22 per ton; wire and wire nails valued at $5,745,773; structural steel, 5,515 tons, valued at $465,989, or an average of $84.49 per ton; scrap iron and steel, 245,214 tons, valued at $3,779,179,

or an average of $15.41 per ton, together with a large quantity of manufactured iron and steel goods.

The production of rolled iron and steel products in 1919 (including blooms, billets and axle blanks rolled for forging purposes, and blooms, billets and slabs rolled for export sale) was 804,407 tons, of which 62,136 tons were rolled iron and 742,271 tons rolled steel. The total production of rolled products included: steel rails, 316,304 short tons; plates and sheets, 25,408 short tons; wire rods, 153,723 short tons; merchant bars and structural shapes, 205,643 short tons; rolled blooms and billets for forging purposes and rolled blooms, billets or slabs sold for export, 25,090 tons. The total production in 1918 of finished rolled products was 1,146,610 short tons, which included steel rails, 162,747 tons; wire rods, 154,789 tons; merchant bars and rods and structural shapes, 415,017 tons; plates and sheets, 26,413 tons; rolled blooms and billets for forging purposes and rolled blooms, billets, or slabs sold for export, 395,644 tons.

Summary of Iron and Steel Statistics, 1916-1919.

		1916.	1917.	1918.	1919
	Short tons.				
Iron ore shipped from mines	"	275,176	215,302	211,608	197,170
Canadian iron ore charged to blast furnaces	"	221,773	92,065	96,745	78,391
Imported iron ore charged to blast furnaces	"	1,964,598	2,084,231	2,146,995	1,674,194
Iron ore charged to steel furnaces	"	55,059	39,793	48,599	32,409
Pig-iron made in blast furnaces	"	1,169,257	1,156,789	1,163,520	910,080
Pig-iron made in electric furnaces	"	.....	13,691	32,031	7,701
Pig-iron and ferro-alloys exported	"	46,106	45,293	25,911	86,054
Pig-iron imported	"	58,130	83,400	67,397	35,800
Ferro-alloys made	"	28,628	43,465	44,704	48,601
Ferro-alloys imported	"	14,777	12,829	35,284	16,221
Pig-iron and ferro-alloy consumption	"	1,255,218	1,264,870	1,316,025	932,349
Pig-iron used in steel furnaces	"	949,444	1,112,082	897,537	609,670
Steel ingots and castings made	"	1,428,249	1,745,734	1,873,708	1,030,342
Steel rails made	"	90,123	46,645	162,747	316,304
Canadian coke used in iron blast furnaces	"	712,715	634,962	561,135	372,203
Imported coke used in iron blast furnaces	"	645,488	723,657	861,522	689,548
Iron and steel imported	"	864,916	929,776	786,151	750,029
Number of completed blast furnaces	No.	20	.....	.....	.....
Number of men employed in blast furnaces	"	.....	.....	.....	.....
Wages paid in blast furnaces	$	.....	.....	.....	.....
Value of pig-iron produced	$	16,750,898	24,290,101	33,495,171	24,577,589
Value of iron and steel goods exported	$	63,837,681	46,791,681	61,772,613	84,058,924
Value of iron and steel goods imported	$	129,090,168	187,191,534	178,340,779	181,332,310

LEAD.

The production of lead in 1919 amounted to 21,914 tons, valued at $3,053,037, as compared with a production of 25,699 tons, valued at $4,754,315, in 1918, and is mainly derived from the lead-zinc mines of British Columbia.

The production in 1919 included: (*a*) 17,165·5 tons of refined lead produced at Trail, B.C., and pig-lead produced at Galetta, Ont., from Canadian ores; (*b*) 4,724 tons the estimated recovery from lead ores exported to the United States; and (*c*) 24·3 tons the estimated recoveries from the gold and silver ores of Ontario exported to the United States.

The 1918 production included: (*a*) 16,391 tons of lead in bullion produced at the smelters at Trail, B.C., and the pig-lead produced at Galetta, Ont., from Canadian ores; (*b*) 9,298 tons the estimated recovery from lead ores exported; and (*c*) 10 tons the estimated recovery from the gold and silver ores of Ontario, also exported to the United States.

The total shipments of lead ore and concentrates as reported by the operators were in 1919, 54,508 tons valued at $3,044,839, and containing 16,074 tons of lead, as against 75,256 tons valued at $4,705,573, and containing 23,422 tons of lead in 1918.

The total refined lead produced in Canada, including that produced from foreign ores and the pig-lead produced in Ontario smelters, amounted in 1919 to 17,165 tons, as against 15,786 tons in 1918.

The imports of lead, including the lead in pigments, salts, etc., in 1919 were 7,044 tons, valued at $883,536, with also manufactures of lead valued at $138,729.

The imports in 1918 were 7,853 tons, valued at $1,240,247, besides manufactures of lead valued at $110,442.

The exports of lead in ores, concentrates, etc., and as pig, amounted in 1919 to 12,235 tons, valued at $1,389,012, as against 15,073 tons, valued at $1,990,697, in 1918.

The average price of lead at Montreal, the main Canadian market, in 1919, was 6·966 cents per pound, as against 9·250 cents in 1918.

Summary of Lead Statistics.

—		1916.	1917.	1918.	1919.
Number of men employed		1,643	1,914	1,691	1,615
Wages paid		$1,803,633	$2,295,090	$1,980,351	$1,884,338
Ores and concentrates shipped (*a*)	Tons.	84,516	46,799	75,256	54,508
Ores and concentrates shipped (*a*)	Value.	$4,568,500	$3,866,862	$4,705,573	$3,044,839
Lead production	Tons.	20,749	16,288	25,699	21,914
Lead production	Value.	$3,532,692	$3,628,020	$4,754,315	$3,053,037
Imports of lead	Tons.	13,725	8,490	7,853	7,044
Imports of lead (*b*)	Value.	$2,077,896	$1,732,428	$1,350,689	$1,022,265
Exports of lead, in ores, concentrates and as pig	Tons.	4,580	7,208	15,073	12,235
Exports of lead, in ores, concentrates and as pig	Value.	$565,890	$987,509	$1,990,697	$1,389,012

(*a*) Does not include zinc ore shipments—See "Zinc."
(*b*) Includes manufactures of lead for which no quantities are given; in 1916, $124,833; in 1917, $165,764; in 1918, $110,442; and in 1919, $138,729.

MERCURY.

There has been no production of mercury recorded since 1897, although the Kerr Lake Mines, Ltd., of Cobalt, Ont., in their report to shareholders mention a small recovery for 1918 and 1919.

The imports of mercury in 1919 were 26,465 pounds, valued at $31,573, as against 56,936 pounds, valued at $68,703, in 1918.

The average price of mercury in New York in 1919 was $92.15 per flask of 75 pounds, as against $123.47 in 1918.

MOLYBDENUM.

The total production in 1919 representing the quantity of molybdenite (MoS_2) contents of the concentrates shipped for which payment was made, amounted to 83,002 pounds, valued at $69,203, as against 378,029 pounds, valued at $434,733, in 1918.

The total shipments of concentrates were in 1919, 46 tons, valued at $69,203, as against 461·3 tons, valued at $428,807, in 1918.

All the ore produced was concentrated in Canadian mills which treated 6,783 tons in 1919, as against 33,935 tons in 1918.

The exports of molybdenite in 1919 as shown by customs records were 113,500 pounds, valued at $84,226, or an average of 74 cents per pound, as against 351,600 pounds, valued at $402,435, or an average of $1.14 per pound, in 1918.

Summary of Molybdenum Statistics.

		1916.	1917.	1918.	1919.
Men employed	No.	262	501	119	105
Wages paid		$122,072	$260,692	$274,945	$35,536
Ore mined	Tons.	13,522	26,871	34,030	7,280
Ore treated	"	9,106	22,605	33,935	6,783
Ore or concentrates shipped	"	610	1,554	461	46
Ore or concentrates shipped	Value.	$188,316	$320,006	$428,807	$69,203
MoS_2 contents of shipments paid for	Pounds.	156,461	288,705	378,029	83,002
MoS_2 contents of shipments paid for	Value.	$156,461	$288,705	$434,733	$69,203
Exports of molybdenite	Pounds.	(a)	(b) 64,700	351,600	113,500
Exports of molybdenite	Value.	(a)	(b) $81,173	$402,435	$84,226

(a) No figures available for 1916.
(b) Cover 9 months only.

NICKEL.

The production of nickel in 1919 amounted to 22,272·4 tons, valued at $17,817,953, as against 46,253·6 tons, valued at $37,002,917, in 1918.

The nickel production of Canada includes: The nickel in the matte produced from the treatment of the Ontario nickel-copper ores partly refined in Canada at Port Colborne, Ont., and partly exported for refining; the refined nickel and the estimated contents of the nickel oxides and nickel salts produced from the treatment of the silver-cobalt-nickel ores of Cobalt district.

The refined nickel produced in 1919 amounted to 5,064 tons, as against 1,504·5 tons in 1918. The large increase is due to the production of the new refinery at Port Colborne.

The imports of nickel in ingots, bars, sheets, etc., were in 1919, 195·5 tons, valued at $135,959, besides manufactures of nickel valued at $343,063, as against 319·1 tons, valued at $238,895, and manufactures valued at $204,208, in 1918.

The exports of nickel in ore and matte and of nickel fine in 1919 amounted to 20,508·2 tons, valued at $8,077,593, as against 43,739·2 tons, valued at $11,263,246, in 1918.

The price of refined nickel in New York was around 45 cents per pound throughout 1919.

Summary of Nickel Statistics.

		1916.	1917.	1918.	1919.
Number of men employed in nickel-copper mines		2,712	2,644	2,424	1,022
Wages paid in nickel-copper mines		$2,824,818	$2,981,896	$3,186,909	$1,244,713
Nickel-copper ore shipped	Tons.	1,566,333	1,509,841	1,641,617	572,400
Nickel-copper ore shipped	Value.	$11,766,201	$11,323,808	$12,312,128	$4,579,200
Nickel-copper ore smelted	Tons.	1,521,689	1,453,661	1,559,892	754,567
Bessemer matte produced	Tons.	80,011	78,897	87,184	42,736
Nickel contents of matte	Tons.	41,298	41,887	48,886	22,035
Copper contents of matte	Tons.	22,430	21,196	23,482	12,099
Refined nickel produced from nickel-copper matte	Tons.			1,082	4,865
Refined nickel produced from cobalt-nickel ores	Tons.	40	133	122	199
Total nickel production from all sources	Tons.	41,479	42,165	46,254	22,272
Total nickel production from all sources	Value.	$29,035,497	$33,732,112	$37,002,917	$17,817,953
Imports of nickel	Tons.	446	427	319	195
Imports of nickel (a)	Value.	$414,410	$519,064	$443,103	$479,022
Exports of nickel in ore and matte, and nickel fine	Tons.	40,221	40,636	43,739	20,508
Exports of nickel in ore and matte, and nickel fine	Value.	$8,662,179	$8,708,650	$11,263,246	$8,077,593

(a) Includes manufactures of nickel for which no quantities are given: in 1916, $89,083; in 1917, $149,718 in 1918, $204,208, and in 1919, $343,063.

PLATINUM AND ALLIED METALS.

The most important sources of the metals of the platinum group in Canada are those of the nickel-copper ores, but no attempt to recover them in Canada has been made previous to 1919.

These metals have been recovered for several years past in the refineries in the United States and England. No data is available as to the recoveries in England and those reported in the United States are believed to be derived mostly from the treatment of the Canadian nickel-copper matte.

A small recovery is reported every year from the treatment of the alluvial sands of British Columbia.

The Royal Mint at Ottawa has also recovered a few ounces of platinum and palladium during the last few years from the treatment of the residues obtained in its refinery.

The Port Colborne refinery of the International Nickel Company of Canada reported for the first time in 1919 a production of metals of the platinum group in an impure state.

The production from alluvial sands in 1919 was 25 crude ounces of platinum, valued at $2,150, as against 39 ounces, valued at $2,560, in 1918.

The production at Port Colborne in 1919 was 87 crude ounces of platinum and palladium valued at $4,981.

The recovery at the Ottawa Royal Mint in 1919 was: platinum, 114·474 ounces, valued at $8,055.27, and palladium, 0·696 ounces, valued at $87 (also 20·782 ounces of iridium from treatment of South African gold bullion); the recovery in 1918 was: platinum, 15·936 ounces, valued at $1,455.66 (also 49·775 ounces of iridium from treatment of foreign bullion).

The total recovery of the metals of the platinum group at the New Jersey plant of the International Nickel Company, was 1,683 ounces, with an estimated value of $214,000. Gold and silver were also recovered from this source as well as the metals of the platinum group.

The recovery of platinum alone was in 1919, 616·716 ounces, as against 649·737 ounces in 1918.

The imports of platinum in 1919 were valued at $160,885, as against $31,140 in 1918.

The exports of platinum in concentrates, etc., and as "old and scrap" in 1919 amounted to 671 ounces, valued at $62,629, as against 197 ounces valued at $20,892 in 1918.

Summary of Platinum Statistics.

		1916.	1917.	1918.	1919.
Platinum production from alluvial sands	Ozs.	15	57	39	25
	Value.	$600	$3,823	$2,560	$2,150
Platinum recovered at the Ottawa Royal Mint	Ozs.	7½	18	16	23
	Value.	$532	$1,663	$1,456	$1,990
Platinum metals recovered in Canada from the treatment of Sudbury mattes, platinum and palladium	Ozs.	.....	.....	.....	87
	Value.	.....	.....	.....	$4,981
Platinum metals recovered in United States* from treatment of Sudbury mattes:—					
Platinum	Ozs.	1,017	971	650	617
Palladium	Ozs.	1,345	1,354	787	762
Rhodium	Ozs.	257	325	473	227
Osmium, iridium and ruthenium	Ozs.	.....	.....	.....	77
Imports of platinum as crucibles, wire, bars, etc.	Value.	$88,543	$114,279	$31,140	$160,885
Exports of platinum in concentrates and "old scrap"	Ozs.	532	331	197	671
Exports of platinum	Value.	$41,945	$29,599	$20,892	$62,629

*Other residues have occasionally been treated along with those derived from the Sudbury mattes but it is believed that the greater part of these recoveries may be credited to the Canadian source.

SILVER.

The silver production of Canada in 1919 amounted to 16,020,657 fine ounces valued at $17,802,474, as against 21,383,979 fine ounces valued at $20,693,704, in 1918, and included refined silver, or silver contained in silver and gold bullion, silver contained in blister copper and copper matte, and the silver estimated as recoverable from ores exported.

In 1919 Ontario produced 75·7 per cent of the total production; British Columbia, 23·1 per cent, and the balance of 2·2 per cent was derived from Quebec, Manitoba, and the Yukon.

The imports of silver in 1919 were: silver bullion valued at $3,458,097, as against $368,889 in 1918; and silver sterling and in coin valued at $131,766, as against $68,381 in 1918.

The exports of silver in 1919 were 15,405,161 fine ounces valued at $16,410,797, as against 19,357,076 ounces valued at $18,382,902 in 1918, and included silver as bullion and contained in ores, etc.

The average price of silver in 1919 was 111·122 cents per ounce, as against 96·772 cents in 1918.

Summary of Silver Statistics.

—		1916.	1917.	1918.	1919.
Number of men employed in Cobalt district		2,595	2,448	2,187	2,017
Wages paid		$2,450,614	$2,667,607	$2,918,474	$2,556,767
Shipments from the mines of Cobalt and adjacent districts:—					
Ores and concentrates	Tons.	77,453	72,719	73,646	62,045
	Value.	$9,736,490	$10,123,838	$9,763,737	$7,096,775
Silver bullion	Ozs.	4,982,702	9,248,717	6,675,863	4,293,887
	Value.	$3,444,736	$7,628,740	$6,821,528	$4,868,543
Total silver production of Canada (a)	Fine oz.	25,459,741	22,221,274	21,383,979	16,020,657
Total silver production of Canada	Value.	$16,717,121	$18,091,895	$20,693,704	$17,802,474
Production by Provinces:—					
Quebec	Ozs.	98,610	136,194	178,675	140,926
Ontario	Ozs.	21,608,158	19,301,835	17,198,737	12,117,878
Manitoba	Ozs.	.....	7,201	13,316	20,760
British Columbia	Ozs.	3,392,872	2,655,994	3,921,336	3,713,537
Yukon	Ozs.	360,101	119,605	71,915	27,356
Alberta and New Brunswick	Ozs.	.....	445	.....	.....
Imports of silver, as bullion, sterling and coins	Value.	$998,966	$1,063,418	$437,270	$3,589,863
Exports of silver, as bullion and in ores, etc	Ozs.	25,279,359	21,718,784	19,357,076	15,405,161
	Value.	$15,637,885	$17,621,398	$18,382,902	$16,410,797

(a) Includes silver from silver ores of Cobalt district, with also that derived from the treatment of the lead, zinc, gold, and copper ores.

TIN.

Tin ores have not yet been found in sufficient quantities in Canada to be of economic importance.

The imports of tin in 1919 were valued at $3,367,900, as against $4,204,532 in 1918, and included tin in blocks, pigs, etc., tin foil, bichloride of tin, tin ware and tin crystals.

There are also large imports of tin plates and sheets, the quantity in 1919 being 43,407 tons, valued at $6,436,047, as against 72,844 tons, valued at $11,403,887, in 1918.

TUNGSTEN.

There was no production of tungsten ore reported in 1919. The production in 1918 amounted to 13½ tons, valued at $11,700, with a metallic content of 19,915 pounds of WO_3. In 1917 only small test shipments were made, amounting in all to 580 pounds, running 69·41 per cent WO_3 and netting $234. Most of the 1918 production was from the property of Acadia Tungsten Mines, Ltd., operating at Burnt Hill, N.B.

The only important production previous to 1918 was that of 1912, being 14 tons of concentrates produced by the Scheelite Mines, Ltd., of Moose River, N.S.

ZINC.

The zinc production in Canada, including the actual recoveries of refined zinc at Trail, B.C., and the estimated recoveries from ores and concentrates shipped to American smelters amounted to 16,097·4 tons, valued at $2,362,448, as against 17,541·6 tons, valued at $2,862,436, in 1918.

The total shipments of zinc ores and concentrates from the mines were in 1919, 135,535 tons, valued at $1,049,493, and containing 59,959,709 pounds of zinc, as against 121,200 tons valued at $1,228,195 and containing 64,655,713 pounds in 1918.

The refined zinc which is produced at Trail, B.C., amounted in 1919 to 12,326 tons, as against 12,574 tons in 1918, 9,985 tons in 1917, and 2,974 tons in 1916, the first year production was reported.

The imports of zinc in 1919 amounted to 11,903 tons, valued at $1,822,376, with also manufactures valued at $43,155, as against 15,654·6 tons, valued at $2,718,850, with also manufactures valued at $85,177, in 1918.

The imports of brass which alloy contains about 30 per cent zinc, were valued in 1919 at $697,996, besides manufactures of brass, valued at $3,266,343, as against imports of brass valued at $993,574 and manufactures of brass valued at $3,654,298 in 1918.

The exports in 1919 were: zinc ores, 6,630 tons, valued at $296,212; and metallic zinc, 3,847 tons, valued at $701,249; while in 1918 the exports are given as ores only and amounted to 10,545 tons, valued at $476,791.

The average price of spelter in New York in 1919 was 7·338 cents per pound, as against 8·159 cents in 1918.

Summary of Zinc Statistics.

—		1916.	1917.	1918.	1919.
Ores and concentrates shipped	Tons.	82,077	116,489	121,200	135,535
	Value.	$1,086,249	$1,323,985	$1,228,195	$1,049,493
Zinc production	Tons.	11,682	14,834	17,542	16,097
	Value.	$2,991,623	$2,640,817	$2,862,436	$2,362,448
Refined zinc product	Tons.	2,974	9,985	12,574	12,326
Imports of zinc (a)	Tons.	15,000	18,566	15,655	11,903
	Value.	$3,690,577	$3,641,272	$2,804,027	$1,865,531
Imports of brass	Value.	$923,523	$1,277,249	$993,574	$697,996
Exports of brass manufactures	Value.	$3,752,851	$4,051,410	$3,654,298	$3,266,343
Exports of zinc ore	Tons.	(b)	(c) 5,972	10,545	6,630
	Value.	(b)	$320,296	$476,791	$296,212
Exports of metallic zinc	Tons.	(d)	(d)	(d)	3,847
	Value.	(d)	(d)	(d)	$701,249

(a) Includes manufactures of zinc valued at $21,711 in 1915; at $48,101 in 1916; at $79,044 in 1917; at $85,177 in 1918, and at $43,155 in 1919.
(b) Not separately classified previous to April, 1918.
(c) For nine months only.
(d) Previous to 1919 not separately classified.

NON-METALLIC PRODUCTS.

ABRASIVE MATERIALS.

Corundum.—There were no sales of grain corundum reported in 1919 from Canadian corundum ores.

Twenty-six tons of grain corundum were recovered in 1919 from 1,300 tons of rock or old mill tailings treated. In the earlier days of the industry from 6 to 10 per cent of the rock milled was recovered in the form of grain corundum. During recent years a much lower grade of rock has been milled.

Corundum is found in an area embracing several townships in Renfrew and Hastings counties, in the province of Ontario. The industry made its appearance there in 1900, the production reaching a maximum in 1906. From 1907 to 1913 the yearly production was smaller, but fairly uniform. Operations were indefinitely suspended during August, 1918, but were renewed again in 1919, when the old Craig mine was reopened in June by Corundum, Limited, of Craigmont, Ont. The principal work done was in rebuilding and construction.

Production.

(In Short Tons.)

Calendar Year.	Corundum-bearing rock treated.	Grain corundum graded.	% Recovery	Grain Corundum.				Average price, *cents per pound.*
				Sold in Canada.	Exported.	Total.	Total. value.	
1915	1,724	116	6·7	21	240	262	$33,138	6·33
1916	1,864	67	3·6	8	59	67	10,307	7·65
1917	4,659	188	4·0	16	172	188	32,153	8·55
1918	3,184	137	4·3	0	137	137	26,112	9·9
1919	1,300	26	2·0	0	0	0	0	

Grindstones, Pulpstones, etc.—The total production of grindstones, pulpstones, and scythestones in 1919 was 2,020 tons, valued at $60,516, as against a production in 1918 of 3,072 tons, valued at $83,005.

The production of abrasives has been a long-established industry in Nova Scotia and New Brunswick and in so far as output is concerned has remained practically stationary for many years.

The grindstones are shipped chiefly in a finished condition and are marketed in Canada, Newfoundland, and the United States, the prices ranging in 1919 from $30 to $50 per ton.

A number of pulpstones are usually made each year. Scythestones, both finished and in the rough, are also shipped, as well as occasionally small quantities of grit for marble polishing.

The greater proportion of the Canadian production of grindstones is exported. The value of the finished grindstones so exported during 1919 was $38,682.

To meet Canadian requirements, in Ontario and Quebec chiefly, there were imported during 1919 grindstones to the value of $281,066; burrstones, 1,106, valued

at $3,421; emery, $38,106; manufactures of emery, $316,322; pumice stone, $29,910; sandpaper, $362,069; iron sand for glass, or polishing, or for sawing stone, $10,247; artificial abrasives, valued at $82,866, or a total value of $1,124,007.

	1916.		1917.		1918.		1919.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		$		$		$		$
Production—								
Nova Scotia..... Tons.	273	5,800	375	9,875	256	8,000	283	9,000
New Brunswick... "	3,205	46,982	2,148	35,879	2,816	75,005	1,737	51,516
	3,478	52,782	2,523	45,754	3,072	83,005	2,020	60,516
Exports of grindstones (a)	.....	44,942	.....	31,304	.....	47,148	.....	38,682
Exports—Abrasives.								
Artificial,	.....	.....	.....	.....	.....		.....	(m)465,228
Artificial, crude	.....	.....	.....	.....	.....	2,028,839	.....	(n)1,040,132
Artificial, for wheels, etc.	.....	.....	.....	.....	.....		.....	(n) 14,858
Natural, n.o.p..... cwt.	.....	.....	.....	.....	.....	.....	8,529	10,743
Imports—Abrasives								
Grindstones.....	.....	122,291	.....	185,607	.....	297,287	.....	281,066
(b) Burrstones..... No.	406	648	519	910	733	1,571	1,106	3,421
(c) Emery.....	.....	50,666	.....	79,176	.....	89,020	.....	38,106
(d) Mfgs. emery.....	.....	317,053	.....	553,660	.....	570,892	.....	316,322
(e) Pumice stone.....	.....	34,554	.....	34,162	.....	36,938	.....	29,910
(f) Iron sand.....	.....	15,641	.....	36,737	.....	67,528	.....	10,247
(g) Sand paper.....	.....	247,317	.....	331,776	.....	317,048	.....	362,069
Artificial abrasives...	.....	79,315	.....	112,614	.....	134,328	.....	82,866
	.....	867,485	.....	1,334,642	.....	1,514,612	.....	1,124,007

(a) Including stone for the manufacture of grindstones. (b) Burrstones in blocks, rough or unmanufactured, not bound up or prepared by binding into millstone. (c) Emery in bulk, crushed or ground, duty free. (d) Emery and carborundum wheels and manufactures of emery or carborundum. (e) Pumice and pumice stone, ground or unground. Duty free. (f) Iron sand or globules for polishing glass or granite, or for sawing stone. Duty free. (g) Sandpaper, glass, flint, and emery paper or emery cloth. (m) 1st three months. (n) last nine months.

Tripolite (diatomaceous or infusorial earth).—The shipments of tripolite in 1919 were reported as 565 tons, valued at $11,300, as compared with shipments in 1918 of 500 tons, valued at $12,500.

The shipments from year to year have varied considerably and in some seasons the producing companies shipped from stock only, as was the case in 1919.

Since 1902 Nova Scotia has been the only province from which shipments of tripolite have been made. At the present time the principal operator is the Oxford Tripoli Company, operating in Colchester county. The crude product is dried and treated in a small mill.

A brief review of the uses of tripolite, together with a list of the principal known Canadian occurrences, was published in the Annual Report on Mineral Production for 1914.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production.....	620	12,139	600	18,000	500	12,500	565	11,300

ACTINOLITE.

No mining operations were carried on during 1919; shipments from stock were reported as 80 tons, valued at $880—the value of the material after having been milled and prepared for market.

Production of actinolite in Canada has been confined to Elzevir and Kaladar townships, in Hastings and Addington counties, province of Ontario, the centre of the industry being Actinolite. The earliest operations date back to about 1883. For a time deposits were worked only at intervals long apart, when sufficient rock was broken to meet the demand for several subsequent years.

Actinolite is used as an ingredient for a coal-tar roofing compound, the grinding of the crude material being done in such a way so as not to destroy the fibre.

The only shipper in recent years is the Actinolite Mining Company, of Bloomfield, New Jersey, U.S.A., which owns the deposits noted, and also a grinding mill at Actinolite.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production	250	2,750	120	1,320	228	2,508	80	880

ARSENIC.

The demand for arsenic has been particularly strong. The Canadian production includes arsenious oxide refined and crude produced in the smelting of the arsenical silver-cobalt-nickel ores of the Cobalt district; in addition to which arsenic has been recovered at Tacoma, Wash., from the arsenical gold concentrates shipped from the Hedley gold mine at Hedley, B.C.

The total production in 1919 was 2,859 tons of arsenious oxide and approximately 530 tons of arsenic in concentrates, having a total valuation of $509,924. The production in 1918 was 2,482 tons of arsenious oxide and approximately 1,078 tons of arsenic in concentrates, having a total valuation of $563,639.

The exports of white arsenic in 1919 were 2,506 tons, valued at $355,654. The imports of white arsenic were 4,706 pounds, valued at $1,325; imports of sulphide of arsenic, 304,694 pounds, valued at $26,613; and imports of arseniate, bi-arseniate, and stannate of soda, 5,566 pounds, valued at $1,661.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
Production:—		$		$		$		$
From arsenical concentrates			280	11,200	1,078	43,114	530	21,218
White arsenic	2,186	262,340	2,656	658,231	2,482	520,525	2,859	488,706
	2,186	262,340	2,936	669,431	3,560	563,639	3,389	509,924
Exports: White arsenic	1,975	197,458	4,286	507,898	2,672	393,883	2,506	355,654
Imports:	Pounds.		Pounds.		Pounds.		Pounds.	
White arsenic	41,090	7,086	247,610	32,083	995	222	4,706	1,325
Sulphide of arsenic	239,991	11,839	252,848	22,053	301,985	33,351	304,694	26,613
Arseniate of soda	15,779	1,228	4,469	588	121	34	5,566	1,661

ASBESTOS.

As usual the production has all been derived from Black Lake, Thetford, Robertsonville, Coleraine, East Broughton and Danville, in the Eastern Townships, province of Quebec.

There was a falling off in 1919 in the output but an increase in the sales of crude asbestos. The shipments of mill stock were slightly less than in 1919.

The total value of the shipments of asbestos and asbestic in 1919 was $10,975,369, as against $8,970,797 in 1918.

The average number of men employed in mining was 2,060 and in milling 1,507, or a total of 3,567, and the total wages paid were $3,954,407. The tonnage of rock mined and quarried was 3,082,384 and the tonnage milled 2,636,783.

Exports of asbestos during 1919 were 119,122 tons, valued at $9,625,695, or an average of $80.81 per ton, and of asbestic sand and waste, 25,306 tons, valued at $260,775, or an average of $10.30 per ton. There was also an export of manufactures of asbestos valued at $232,501. In 1919 there were 10,500 tons, valued at $942,796, exported to Great Britain; 95,176 tons, valued at $7,232,744, to United States; 2,932 tons, valued at $413,580, to France; 1,529 tons, valued at $245,210, to Italy; 8,985 tons, valued at $791,365, to other countries.

The imports of asbestos and manufactures of asbestos in 1919 were valued at $656,037.

Output, Sales, and Stocks of Asbestos.

	Output.	Sales.			Stocks on hand December 31		
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
1918.			$	$		$	$
Crude	4,313	3,692	2,478,363	671·28	1,686	1,109,402	658·00
Mill stock	139,143	137,770	6,458,441	46·88	12,560	941,612	74·97
	143,456	141,462	8,936,804	63·17	14,246	2,051,014	143·97
Asbestic		16,797	33,993	2·02			
1919.							
Crude	4,065	3,928	3,214,022	818·23	1,338	974,260	728·14
Mill stock	153,507	132,837	7,695,430	57·93	31,110	1,952,629	62·76
	157,572	136,765	10,909,452	79·77	32,448	2,926,889	90·20
Asbestic		22,471	65,917	2·93			

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Rock mined	2,291,132		2,635,010		2,462,381		3,082,384	
" milled	1,822,461		2,260,191		2,185,572		2,636,783	
Output—								
Milled	112,832		135,475		139,143		153,507	
Crude	5,415		6,268		4,313		4,065	
	118,247		141,743		143,456		157,572	
Mill recovery %	6·2		6·0		6·4		5·8	
Sales—								
Asbestos	133,439	5,199,797	135,502	7,183,099	141,462	8,936,804	136,765	10,909,452
Asbestic	20,710	29,072	18,279	47,284	16,797	33,993	22,471	65,917
	154,149	5,228,869	153,781	7,230,383	158,259	8,970,797	159,236	10,975,369
Exports—								
Asbestos	96,775	3,872,463	93,932	4,903,326	119,454	7,786,710	119,122	9,625,695
Sand and waste	33,564	241,272	52,088	430,956	22,144	228,059	25,306	260,775
Manufactures		4,741		55,666		40,763		232,501
		4,118,476		5,389,948		8,055,532		10,118,971
Imports—		334,670		537,431		604,703		656,037

BARYTES.

Shipments of ground barytes in 1919 were 468 tons, valued at $8,154, as compared with 640 tons, valued at $10,165, in 1918.

During recent years the only barytes deposit worked in Canada has been that at Lake Ainslie, Inverness county, N.S. In the province of Ontario, however, a deposit located in Langmuir township, south of Porcupine, has been under development during the past few years by the Premier Langmuir Mines, Ltd.

Imports of barytes are not separately shown in the Trade classification. The imports of barium peroxide for the manufacture of hydrogen peroxide amounted to 52 tons, valued at $23,788, in 1919, as compared with 53 tons, valued at $27,893, in 1918. There is also a small import of artificial sulphate of barium known as blanc fixé, the imports being included with satin white. These imports in 1919 were 3,718 tons, valued at $114,732.

Blanc fixé (barium sulphate) is artificially prepared by treating a solution of barium salt, generally the chloride with sulphuric acid, or aluminium sulphate. It is used for coating papers.

Satin white is an artificially prepared mineral for coating paper, consisting of precipitated calcium sulphate and alumina, prepared by grinding together the necessary proportions of alum and slaked lime with sufficient water.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Nova Scotia	1,368	19,393	3,490	54,027	580	9,145	468	8,154
Ontario	.....	.....	.....	.....	60	1,020	.....	.....
Imports—								
Barium peroxide	57	26,172	73	17,393	53	27,893	52	23,788
Blanc fixé and satin white	3,747	86,306	3,600	90,482	3,528	92,241	3,718	114,732

CHROMITE.

The total shipments in 1919 of ores and concentrates, all from the Eastern Townships, Quebec, were 8,541 short tons, valued at $228,898, or an average of $26.80 per ton, the total content of Cr_2O_3, being 3,764 tons.

The 1919 shipments included: Crude ore, 3,376 short tons, valued at $69,894, or an average of $20.70 per ton and with an average Cr_2O_3 content of 35·3 per cent; concentrates, 5,165 short tons, valued at $159,004, or an average of $30.78 per ton, and with an average Cr_2O_3 content of 49·8 per cent. The crude ore shipped included 371 tons sold for consumption in Canada and 3,005 tons sold for export. The concentrates with the exception of about 2 tons were sold for export.

The exports of chromite in 1919 as per Trade reports were 9,078 tons, valued at $198,733, or an average of $21.89 per ton, as compared with exports in 1918 of 15,831 tons, valued at $353,616, or an average of $22.32 per ton.

Ferro-chrome has been imported into Canada, but there is no separate record of the quantities thereof. The imports of bichromate of soda in 1919 were 1,003,836 pounds, valued at $113,478; and imports of bichromate of potash 58,072 pounds, valued at $19,525.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
Production (shipments)—		$		$		$		$
Crude ore	14,249	266,217	20,153	441,540	15,605	456,408	3,376	69,894
Concentrates	1,000	44,685	3,558	140,256	6,389	410,714	5,165	159,004
	a15,249	310,902	a23,711	581,796	21,994	867,122	8,541	228,898
Shipments by Provinces—								
Quebec	27,517	311,460	36,725	499,682	21,324	835,727	8,541	228,898
Br. Columbia	.....	.....	.....	.....	670	31,395	.....	.....
Exports	12,633	152,534	19,229	342,528	15,831	353,616	9,078	198,733
Imports—								
Bichromate of soda	711	362,571	667	248,621	523	208,669	502	113,478
" potash	15·5	13,381	10·1	6,697	10·4	10,686	29	19,525

a Shipments as reported directly by operators in 1916 were 27,517 tons, valued at $311,460; and in 1917, 36,725 tons valued at $499,682.

COAL AND COKE.

Coal.—The total production of marketable coal during 1919 (comprising sales, colliery consumption, and coal used in making coke, or used otherwise by colliery operators) was 13,681,218 short tons, valued at $54,413,349, or an average of $3.98 per ton.

The production in 1918 was 14,977,926 short tons, valued at $55,192,896, compared with which the 1919 production shows a decrease of 1,296,708 tons, or 8·66 per cent in quantity and $779,547, or 1·41 per cent in total value.

The total output of coal including waste and unmarketable slack in 1919 was 14,080,655 tons, as against 15,460,385 tons in 1918.

The 1919 production included 111,321 tons of anthracite, all from one mine in Alberta; 10,642,902 tons of bituminous coal and 2,926,992 tons of lignite.

Every province, with the exception of Saskatchewan, shows a decrease. The Nova Scotia production fell off 98,189 tons, as compared with 1918; New Brunswick, 89,104 tons; Saskatchewan increased by 33,322 tons; Alberta decreased 1,008,281 tons; British Columbia decreased 132,656 tons; and Yukon decreased 1,800 tons.

Output[1] and Production[2] of Coal by Provinces, 1919.

Province.	Average No. of men employed	Wages Paid.	Production of Coal.				Output.
			Short tons.	Per cent of total.	Value.	Average per ton.	Short tons.
		$		p.c.	$	$	
Nova Scotia	10,978	13,970,149	5,720,373	41·81	22,078,726	3·86	5,804,674
New Brunswick	565	503,268	179,108	1·31	794,761	4·42	178,438
Saskatchewan	487	467,436	380,169	2·78	820,522	2·16	384,117
Alberta	9,343	11,414,755	4,964,535	36·29	18,294,495	3·69	5,004,268
British Columbia	5,813	8,465,255	2,435,933	17·80	12,420,445	5·10	2,707,958
Yukon Territory	12	5,500	1,100	0·01	4,400	4·00	1,200
Total	27,198	34,826,363	13,681,218	100·00	54,413,349	3·98	14,080,655

[1] Output includes waste and unmarketable slack. [2] Production includes sales, colliery consumption and coal used by operators in making coke, or for other uses.

Monthly Production of Coal in Canada by Provinces, 1919, (in short tons).

Month.	Nova Scotia.	New Brunswick.	Saskatchewan.	Alberta.			British Columbia.	Total.
	(b)	(b)	(c)	(a)	(b)	(c)	(b)	
January	501,536	21,788	28,034	12,730	282,908	204,410	240,200	1,291,606
February	405,112	16,262	23,937	11,645	265,431	147,545	185,072	1,055,004
March	420,460	14,529	26,164	13,414	278,377	210,994	212,646	1,176,584
April	454,398	13,339	16,001	13,679	214,830	96,615	185,444	994,306
May	451,127	12,011	18,588	76	169,549	95,439	182,661	929,451
June	433,890	13,627	20,337	39	4,328	37,794	127,710	637,725
July	467,042	14,249	20,971	750	7,226	55,826	154,859	721,283
August	484,437	15,691	26,900	2,611	33,406	117,630	168,660	*850,435
September	489,369	13,821	35,327	12,278	208,657	286,584	213,780	1,260,156
October	569,790	17,376	48,153	14,673	279,096	390,475	252,794	1,572,357
November	508,957	16,026	55,367	13,907	284,578	433,345	256,413	1,568,593
December	534,255	10,389	60,390	15,522	278,402	470,166	255,694	1,624,818
Total	5,720,373	179,108	380,169	111,324	2,306,388	2,546,823	2,435,933	*13,681,218

* Includes 1,100 tons produced in the Yukon district. (a) Anthracite; (b) bituminous; (c) lignite.

	1916.		1917.		1918.		1919.	
	Short Tons.	Value.	Short Tons.	Value.	Short Tons.	Value.	Short Tons.	Value.
		$		$		$		$
Output	14,815,703		14,435,361		15,460,385		14,080,655	
Production: *by provinces*—								
Nova Scotia	6,912,140	18,514,662	6,327,091	19,410,737	5,818,582	21,005,470	5,720,373	22,078,726
N. Brunswick	143,540	386,016	189,095	708,010	268,212	1,331,710	179,108	794,761
Saskatchewan	281,300	441,836	355,445	662,451	346,847	722,148	380,169	820,522
Alberta	4,559,054	11,386,577	4,736,368	14,153,685	5,972,816	20,537,287	4,964,535	18,294,495
B. Columbia	2,584,061	8,075,100	2,433,888	8,235,716	2,568,589	11,494,681	2,435,933	12,420,445
Yukon	3,300	13,200	4,872	29,232	2,900	11,600	1,100	4,400
	14,483,395	38,817,481	14,046,759	43,199,831	14,977,926	55,192,896	13,681,218	54,413,349
Production: *by kinds*—								
Anthracite	12,212,071	33,121,789	108,225	35,350,920	115,405	44,967,894	111,324	44,357,443
Bituminous			11,154,251		11,636,190		10,642,902	
Lignite	2,271,324	5,695,692	2,784,283	7,839,911	3,226,331	10,225,002	2,926,992	10,055,906
Imports—								
Bituminous[1]	9,504,552	12,368,679	12,407,486	33,712,894	13,656,360	37,291,057	10,127,965	24,750,717
Bituminous[2]	3,505,236	3,704,624	3,120,776	8,739,877	3,237,067	8,351,639	2,228,197	4,814,388
Anthracite	4,570,815	22,216,363	5,320,198	28,109,586	4,785,160	26,007,888	4,952,675	31,595,694
	17,580,603	38,289,666	20,857,460	70,562,357	21,678,587	71,650,584	17,308,837	61,160,799
Exports—								
The produce of Canada	2,135,359	7,099,387	1,733,156	7,387,192	1,817,195	9,405,423	2,070,050	12,438,885
All other	62,783	150,799	47,328	173,170	67,486	205,389	56,988	157,202
Consumption	29,865,856	69,856,961	33,123,735	106,201,820	34,771,832	117,232,668	28,863,017	102,978,061

[1] Round and run-of-mine. [2] Slack such as will not pass through ¾" screen.

Coke.—The accompanying statistics cover only the production of coke in by-product and Beehive coke oven plants and do not include retort coke recovered by gas companies.

Both domestic and imported coal are used in the manufacture of coke in Canadian coke-oven plants.

The total output during 1919 was 1,160,470 short tons made from 1,880,541 tons of coal, of which 854,835 tons were of domestic origin and 1,025,706 tons imported. The output thus averaged 0·617 ton of coke per ton of coal charged. The total coke used, or sold by producers during the year was 1,133,680 tons, valued at $9,720,387, or an average of $8.58 per ton.

By provinces the output was: Nova Scotia, 394,744 tons; Ontario, 667,081 tons; and British Columbia, 98,645 tons.

The ovens operated during the year were those at Sydney, and Sydney Mines, N.S.; Sault Ste. Marie, and Hamilton, Ont.; and Fernie, Michel, Union Bay, and Anyox, B.C.

At the close of the year 587 ovens were in operation.

The exports of coke in 1919 were 14,709 tons, valued at $129,703, or an average of $8.82 per ton, as against exports in 1918 of 29,612 tons, valued at $223,629, or an average of $7.55 per ton. The imports of coke in 1919 were 383,374 tons, valued at $2,405,740, or an average of $6.27 per ton, as against imports in 1918 of 1,165,590 tons, valued at $8,975,445, or an average of $7.70 per ton.

The estimated consumption of oven coke in 1919 was 1,502,345 tons, as compared with 2,386,722 tons in 1918.

Of the total output of coke 1,036,229 tons, or 89 per cent were made in by-product recovery ovens and the recovery of by-products included: Ammonium sulphate, 11,765 tons, and tar, 12,394,249 gallons, as against 10,825 tons of ammonium sulphate and 8,009,327 gallons of tar in 1918.

		1916.		1917.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			$		$		$		$
Coal charged.—									
Domestic	Tons.	1,501,835		1,379,038		1,348,232		854,835	
Imported	"	633,076		549,885		635,010		1,025,706	
Total	"	2,134,911		1,928,923		1,983,242		1,880,541	
Output: coke	"	1,448,782		1,231,865		1,258,284		1,160,470	
Recovery	%	67·9		63·9		63·4		61·7	
Production—									
Nova Scotia	Tons.	654,433	2,617,732	643,757	3,218,785	580,433	5,966,609	383,253	3,939,906
Ontario	"	472,507	2,008,155	389,048	2,155,326	425,087	3,300,127	649,506	4,886,662
Alberta	"	41,950	167,800	31,649	181,982	32,564	213,884	565	3,602
Br. Columbia	"	300,851	1,255,725	181,408	1,106,488	212,570	1,554,575	100,356	890,217
Total	"	1,469,741	6,049,412	1,245,862	6,662,581	1,250,744	11,035,195	1,133,680	9,720,387
Exports	"	48,539	221,334	23,595	137,318	29,612	223,629	14,709	129,703
Imports	"	757,116	2,229,078	970,106	6,517,260	1,165,590	8,975,445	383,374	2,405,740
Consumption	"	2,178,318	8,057,156	2,192,373	13,042,523	2,386,722	19,787,011	1,502,345	11,996,424
By-products—									
Ammonium Sulphate—									
Production	"	11,040		9,941		10,825		11,765	
Imports	"	119·5	9,672	283·5	26,062	4·2	1,273	101·7	12,129
Exports (a)	"			8,047	693,377	8,696	1,027,558	18,488	1,821,880
Tar—									
Production	Gals.	9,012,202		8,277,078		8,009,327		12,391,249	
Exports	"		50,352		43,547		67,646	(b) 836,210	61,654
Tar, coal and pine—									
Imports	"	2,111,017	108,193	2,388,331	146,962	2,579,273	192,569	2,988,280	193,011
Tar, coal, base or salt (paranitraniline)—									
Imports	Lbs.	114,467	76,093	81,978	61,103	96,458	63,803	60,463	43,205
Gas	M. ft.	5,058,636		3,963,826		4,699,009		8,538,210	
Ovens in operation Dec. 31	No.	1,907		1,657		1,640		587	

(a) Not separately shown previous to April, 1917. (b) Quantity for 9 mos.

FELDSPAR.

The shipments of feldspar in 1919 were 14,679 tons, valued at $86,231, or an average of $5.87 per ton, as compared with shipments in 1918 of 18,782 tons, valued at $112,728, or an average of $6 per ton.

The greater part of the feldspar shipped from Canadian mines is marketed with the pottery manufacturers in the United States. The production comes chiefly from the counties of Frontenac and Lanark in Ontario and the counties of Ottawa and Labelle in Quebec.

The exports of feldspar during the year were valued at $104,285.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production (shipments)—								
Quebec	4,610	18,075	1,188	8,204	191	4,279	925	13,073
Ontario	14,878	53,332	18,274	81,622	18,591	108,449	13,754	73,158
	19,488	71,407	19,462	89,826	18,782	112,728	14,679	86,231
Exports (a)	.....	.....	.....	69,195	.....	101,187	.....	(b) 104,285

(a) Not separately stated prior to April, 1917. (b) Last 9 months' exports were 15,469 tons valued at $77,270.

FLUORSPAR.

The production of fluorspar shows a substantial decrease. The smaller production from Madoc, Ont., was supplemented by increased shipments from the recently opened deposit in Yale district of British Columbia.

The total shipments during 1919 were 5,063 tons, valued at $97,837, as compared with 7,362 tons, valued at $156,029, in 1918.

Only three companies in the Madoc district reported shipments during the year at an average value of $17.31, as compared with an average of $20.97 in 1918. Prices varied with the grade of the product from $16 to $27 per ton.

The Consolidated Mining and Smelting Company is operating the "Rock Candy" fluorspar deposit on Kennedy Creek, Kettle river, near Grand Forks, B.C. The company reports very favourable indications for a large tonnage in excess of their own requirements, for export.

Canadian steel companies use from 10,000 tons to 15,000 tons per annum.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Ontario	1,284	10,238	4,249	68,756	7,187	150,779	3,425	59,281
British Columbia	.....	.....	.....	.....	175	5,250	1,638	38,556
	1,284	10,238	4,249	68,756	7,362	156,029	5,063	97,837
Exports (9 months)	.....	.....	.....	.....	.....	.....	697	9,616
Imports—								
Hydro-fluo-silicic acid	448·2	28,611	0·2	97	0·5	80	2·8	747

GRAPHITE.

The production of graphite in 1919 showed a considerable falling off. The total shipments included 1,340 tons, valued at $99,821, from Ontario, and a small shipment of 20 tons, valued at $400, from Quebec.

By grades the shipments included 95 tons of No. 1 flake, valued at $22,100, or an average of $232.63 per ton; 103 tons of No. 2 flake, valued at $14,853, or an average of $144.20 per ton; and 1,162 tons of No. 3, and dusts, valued at $63,268, or an average of $54.45 per ton.

In 1918, Ontario contributed 2,934 tons, valued at $208,852, and Quebec and Baffin Land, 180 tons, valued at $40,018.

The quantity of ore milled during the year was 7,076 tons, from which were produced 1,648 tons of milled, or refined graphite.

The total quantity of ore milled during 1918 was 11,358 tons, from which were produced 3,225 tons of refined, or milled graphite. The Black Donald (Calabogie, Ont.) ore consists largely of amorphous graphite, from which a large mill recovery is made.

Graphite operators reported that of the total shipments 1,317 tons, valued at $95,357, were sold for export. Trade records show exports of graphite or plumbago, crude and refined, 1,003 tons, valued at $72,917, and manufactures of plumbago (probably chiefly refined graphite), valued at $23,970, a total export of $96,887. The Customs export classification was revised as from April 1, 1919, the class "plumbago, crude and concentrates" being replaced by "graphite, or plumbago, crude and refined."

—	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Ore milled	23,199	.....	19,614	.....	11,358	.....	7,076	.....
Output, milled graphite	4,133	.....	4,003	.....	3,225	.....	1,648	.....
Production (shipments)—								
No. 1 Flake	.....	.....	540	158,656	366	97,518	95	22,100
No. 2 Flake	.....	.....	650	99,621	73	13,780	103	14,853
No. 3 Flake and dust	.....	.....	2,524	144,615	2,675	137,572	1,162	63,268
	3,955	325,362	3,714	402,892	3,114	248,870	1,360	100,221
Exports—								
Crude ore and concentrates	311	13,114	112	7,455	664	32,710	.....	.....
Crude and refined	.....	.....	.....	.....	.....	.....	1,003	72,917
Manufactures (*a*)	.....	304,919	.....	384,505	.....	205,993	.....	(*b*) 23,970
Imports—								
Plumbago, not ground	.....	3,231	.....	47,218	.....	93,956	.....	6,604
Ground and manufactures	.....	99,919	.....	123,991	.....	132,821	.....	80,970
Crucibles: clay, or plumbago	.....	520,541	.....	798,044	.....	113,856	.....	59,239
	.....	623,491	.....	969,253	.....	340,633	.....	146,813

(*a*) The entries under this item are believed to be chiefly refined graphite.
(*b*) First three months only. No entries under this class during the last nine months of the year.

Artificial Graphite.—Artificial graphite is manufactured in electric furnaces at Niagara Falls, Ont., by the International Acheson Graphite Company. The annual production has been as follows:—

Calendar Year.	Pounds.	Calendar Year.	Pounds.	Calendar Year.	Pounds.
1906	445,047	1911	2,172,098	1916	525,048
1907	407,779	1912	2,302,625	1917	1,096,172
1908	428,540	1913	2,184,472	1918	1,808,698
1909	513,436	1914	1,234,239	1919	358,524
1910	2,442,166	1915	497,271		

GYPSUM.

The total quantity of gypsum rock quarried in 1919 was 303,998 tons, of which 121,496 tons were calcined. The shipments of all grades totalled 299,063 tons, valued at $1,215,287, and included: lump gypsum, 172,781 tons, valued at $206,858; crushed, 27,939 tons, valued at $68,002; fine ground, 3,842 tons, valued at $18,901, and calcined, 94,501 tons, valued at $921,526. By provinces the shipments were: Nova Scotia, 163,852 tons, valued at $250,174; New Brunswick, 42,409 tons, valued at $315,656; Ontario, 59,899 tons, valued at $278,120; Manitoba, 32,903 tons, valued at $371,337.

The average number of men employed in 1919 was 725 and wages paid $380,105, as compared with 435 men employed and $275,312 paid in wages in 1918.

Exports of crude gypsum were 148,394 tons, valued at $199,857, and of gypsum ground valued at $140,235.

The imports of gypsum of all grades during 1919 were valued at $47,455 and included: crude gypsum, 1,238 tons, valued at $22,556; ground gypsum, 85 tons, valued at $2,695, and plaster of Paris, 1,525 tons valued at $22,204.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Ore, mined	424,431	.....	365,659	.....	155,298	.....	303,998	.....
Ore, calcined	94,414	.....	97,667	.....	88,748	.....	121,496	.....
Production—								
Lump	249,893	263,050	223,760	246,774	43,728	47,727	172,781	206,858
Crushed	15,680	28,111	32,305	51,869	25,074	55,079	27,939	68,002
Fine ground	6,096	19,673	4,843	19,222	4,558	12,621	3,842	18,901
Calcined	71,246	427,759	75,424	564,119	78,927	707,579	94,501	921,526
	342,915	738,593	336,332	881,984	152,287	823,006	299,065	1,215,287
Production by Provinces—								
Nova Scotia	238,212	278,160	215,472	301,261	49,365	115,976	163,852	250,174
New Brunswick	39,546	153,064	38,556	191,631	27,225	214,114	42,409	315,656
Ontario	36,668	116,086	48,947	130,138	38,214	151,564	59,899	278,120
Manitoba	28,489	191,283	32,347	258,934	37,483	341,352	32,903	371,337
British Columbia	.....	.....	10	20	.....	.....	.....	.....
Exports—								
Crude	221,156	252,476	224,425	245,182	67,824	80,843	148,394	199,857
Ground	.....	154,630	.....	146,384	.....	101,618	.....	140,235
	.....	407,106	.....	391,566	.....	182,461	.....	340,092
Imports—								
Crude	3,022	14,358	64	999	112	2,015	1,238	22,556
Ground	282	3,404	282	5,355	79	1,836	85	2,695
Plaster of Paris	3,786	25,529	3,101	29,106	1,095	18,214	1,525	22,204
	7,090	43,291	3,447	35,460	1,286	22,065	2,848	47,455

MAGNESITE.

The production of magnesite obtained from the deposits in Argenteuil county, Quebec, is marketed as crude magnesite, calcined, and dead burnt clinker (the latter being sintered in rotary kilns after mixture with about 5 per cent of iron ore in the form of magnetite). The total shipments in 1919 were 11,273 tons, valued at $328,465, as compared with shipments in 1918 of 39,365 tons, valued at $1,016,765.

There were marketed about 1,638 tons of crude magnesite, valued at $14,664, averaging about $8.95 per ton. Calcined material sold at from $20 to $22 per ton and dead burnt clinker averaged $35 per ton.

In 1919 about 14,952 tons of magnesite rock were quarried and about 12,214 tons were calcined in lime kilns, or sintered in rotary cement kilns. The sintering was done at the plants of the Canada Cement Company at Hull and Montreal.

Exports of magnesite in 1919 were valued at $425,892. During the last nine months this included 5,638 tons, valued at $170,797.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Crude magnesite mined	57,300	.....	64,767	.....	57,799	.....	14,952	.....
Crude magnesite calcined	4,666	.....	11,401	.....	49,303	.....	12,214	.....
Production—								
Crude magnesite	53,080	491,947	52,711	528,260	16,697	158,380	1,638	14,664
Calcined and dead burnt	2,333	71,882	5,379	200,015	22,668	858,385	9,635	313,801
	(b) 55,413	563,829	58,090	728,275	39,365	1,016,765	11,273	328,465
Exports (a)	.....	.....	.....	72,228	.....	816,553	.....	425,892
Imports, magnesia	195	20,651	58	16,186	47	13,200	183	61,740

(a) Not separately shown prior to April, 1917.
(b) Includes shipments of 635 tons valued at $9,525 from Atlin, B.C.

Metallic Magnesium.—The manufacture in Canada of metallic magnesium was carried on for a few years during the war by the Shawinigan Electro Metals Company, Limited, at Shawinigan Falls, Que., the metal being made from imported magnesium chloride salts.

Magnesium Sulphate.—Sulphate of magnesium, epsomite, or crude Epsom salt has been found in several localities in southern British Columbia.

Commercial shipments were made during the past few years from a deposit near Kruger mountain, Osoyoos division, B.C., where the mineral is found in a flat depression known as Spotted lake, which is a partially dried-up lake containing alternate circles of water and dry places. The Stewart-Calvert Company, Inc., of Oroville, Washington, has been operating this deposit. The crude magnesium sulphate salt is hauled to the company's works at Oroville, where the crude salt is refined and prepared for the market. Shipments in 1916 were reported as 250 tons, and in 1915 about 300 tons. In addition to the Spotted Lake deposit the same company also made shipments during 1918 from a deposit near Clinton, in Lillooet, B.C.

Several lakes containing these salts have been observed on the Basque ranch, near Ashcroft. Following investigations of their probable commercial value shipments were made in 1919 by the Basque Chemical Production Company, Limited.

The greater part of the refined salt is used for industrial purposes, the tanning industry taking the largest proportion, though considerable amounts are also used in the textile industries and in the manufacture of dyes. About 20 per cent of the total shipments go to the drug trade.

	1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$
Quantity extracted	2,600	.....	4,500	.....	.....	.....
Quantity shipped	929	4,645	1,949	14,565	738	9,115
Exports	.....	.....	.....	.....	.....	15

MANGANESE ORE.

The production of manganese ore in Canada has been small and irregular. During 1919 operations were renewed at New Ross, in Nova Scotia, and shipments again reported from Kaslo, B.C. The bulk of the reported shipments for the year were, however, made from the Hill 60 group of claims near the village of Cowichan Lake, Vancouver island.

The manganese ores which have been mined in eastern Canada are pyrolusite, manganite, psilomelane, and bog manganese. These were mostly ores with a high manganese content, and fairly free from deleterious constituents. The largest part of the production was consequently put to those uses, where a high grade raw material is desired, e.g., as an oxidizing agent in the manufacture of chlorine, bromine, manganates, and permanganates; as a decolorizer of glass, porcelain, and enamels; as a colouring material in dyeing and pottery and paint manufacture; as a drier in paints and varnishes, and in the manufacture of dry and Leclanche cells, etc.

The first shipments of manganese ore from British Columbia were made in 1918 from deposits near Kaslo. These consist mainly of wad or bog manganese.

At the Cowichan Lake deposits, Vancouver island, "Manganese ore[1] of merchantable value is found as a mixture of secondary oxides, principally pyrolusite, psilomelane, and magnetite, derived from the alteration of rhodonite, the silicate of manganese, which occurs in strong outcrops throughout the manganiferous area. On Hill 60 claim oxidation of the silicate has taken place on a considerably larger scale than on some of the other claims, resulting in outcrops of hard and massive oxides containing from 15 to 57 per cent metallic manganese."

Shipments from both these deposits have been made to the Bilrowe Alloys Company of Tacoma, Wash., U.S.A.

No separate record of imports of manganese ore is kept in the Trade classification but statistics of oxide of manganese are given. In 1919 these imports were 2,082 tons, valued at $89,314. Imports of ferro-silicon, spiegeleisen and ferro-manganese in 1919 were 16,221 tons, valued at $901,678. The exports of manganese ore in 1919 were 603 tons, valued at $13,401.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Nova Scotia	646	70,371	158	14,836	.....	.....	45	3,600
New Brunswick	311	19,173	.....	.....	.....	.....	.....	.....
British Columbia	.....	.....	.....	.....	440	6,230	616	10,559
	957	89,544	158	14,836	440	6,230	661	14,159
Imports—								
Manganese oxide	1,170	63,786	1,769	92,616	1,068	93,477	2,082	89,314
Ferro-silicon, spiegeleisen and ferro-manganese	14,777	1,879,538	12,848	2,029,990	35,284	4,283,133	16,221	901,678
Exports—								
Manganese ore	957	89,544	185	16,031	784	29,208	603	13,401
Ferro-silicon and compounds	22,802	1,352,013	33,212	2,616,924	23,781	2,671,434	22,449	1,229,341

[1] Report of Munitions Resources Commission, 1920, p. 90.

MICA.

The total shipments of mica by mine operators in 1919 were 2,754 tons, valued at $273,788. By provinces the production was: from Quebec, 2,429 tons, valued at $218,437 (of this 2,158 tons, valued at $52,728, was rough-culled and scrap); Ontario, 325 tons, valued at $55,351, or an average of $170.31 per ton.

The statistics as to the value of production should be considered with due regard to the conditions under which the industry is conducted. The condition in which mica is shipped from the mines varies greatly; one operator may ship his output cleaned and trimmed, while the output of another is in a rough cobbed state, with consequent noteworthy difference in prices realized. And, further, companies operating trimming shops as well as mines may place only a nominal value on shipments from mines to trimming shops.

Canada's production of mica has come exclusively from two fields: one in the province of Quebec, a short distance north of the city of Ottawa, and the other embracing parts of the counties of Lanark, Leeds, and Frontenac, in the province of Ontario. The city of Ottawa (and the adjacent city of Hull), lying between these two fields, is the centre to which almost all the production of the various mines and numerous small prospects is shipped for trimming, grading, and marketing. In preparation for the market a considerable proportion of the tonnage received is cobbed out and the mica split, trimmed and otherwise manufactured, with the result that the exports, though of smaller tonnage than the shipments from the mines, usually exceed them in total value.

According to Trade records the exports of mica in 1919 were 2,741 tons, valued at $641,962.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production:—								
Quebec	844	192,343	774	286,730	481	229,119	2,429	218,437
Ontario	364	62,896	392	72,121	266	42,431	325	55,351
	1,208	255,239	1,166	358,851	747	271,550	2,754	273,788
Exports	654	379,720	636	451,345	433	410,000	(a) 100	100,942
Cobbed							(b) 108	214,227
Splittings							(b) 350	314,238
Scrap and waste							(b) 2,182	11,959
Plate and manufactures							(b)	596

(a) First 3 months.
(b) Last 9 months.

MINERAL PIGMENTS (IRON OXIDES).

For many years there has been an annual production in the province of Quebec of iron oxide from deposits situated between Champlain and Three Rivers, a short distance from the St. Lawrence river.

These oxides are marketed after calcining, as paint materials, and are also sold crude for use in the purification of illuminating gas. The mineral paint is calcined, washed, and fine ground before shipment.

There was a small production included in the totals for 1917 and 1919 of zinc oxide for use as a pigment, the production being obtained at the oxide plant of the Canadian Zinc Products Company, Limited, at Notre-Dame-des-Anges.

The total production of iron oxides in 1919 was 11,862 tons, valued at $113,427.

The exports of mineral pigments, iron oxides, ochres, etc., in 1919 are reported as 767 tons, valued at $25,229.

Imports of mineral pigments are included under two classifications: (1) ochres and ochrey earths, siennas and umbers, duty 20 per cent, and (2) oxides, roughstuffs, fillers, fireproofs and colours, dry, n.e.s., duty 25 per cent. During 1919 imports under the first classification were 1,297 tons,, valued at $65,744, and under the second classification 3,378 tons, valued at $518,780, or a total import of 4,675 tons, valued at $584,524.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production	8,811	58,711	9,409	87,605	17,317	112,440	11,862	113,427
Imports—								
Ochrey earths	2,082	51,771	1,956	59,864	1,560	66,011	1,297	65,744
Oxides	2,917	357,487	2,538	357,638	2,460	409,841	3,378	518,780
Exports: (a)	1,696	25,312	1,451	30,052	769	18,377	767	25,229

(a) Mineral pigments, iron oxides and ochres.

MINERAL WATER.

The statistics of production given herewith represent as usual, as closely as can be ascertained, the value of mineral water shipped from mineral springs in bottles, barrels, or other containers, and do not include any estimate of the value of mineral water used at springs for drinking or bathing purposes; nor are the natural pure spring waters included, of which a considerable quantity is sold in bottled form.

The value of the production in 1919 was $71,015, as compared with $154,468 in 1918; of the 1919 production, Quebec is credited with $13,257; Ontario, $55,958; and British Columbia, $1,800.

The imports of mineral and aerated waters during the calendar year 1919 were valued at $113,743, being 1,026 gallons of natural mineral water, valued at $430; and aerated water valued at $113,313. The exports of mineral water during the same year were valued at $59,669, of which 122 gallons, valued at $89, were for natural mineral water and $59,580 for bottled aerated water.

	1916.		1917.		1918.		1919.	
		Value.		Value.		Value.		Value.
		$		$		$		$
Production	.....	127,806	.....	145,814	.....	154,468	.....	71,015
Imports	.....	130,933	.....	108,444	.....	105,967	.....	113,743
Exports	.....	1,598	.....	10,765	.....	20,214	.....	59,669

NATURAL GAS.

The total production of natural gas in Canada in 1919 was 19,937,769 thousand cubic feet, valued at $4,176,037, of which Ontario contributed 11,024,041 thousand cubic feet, valued at $2,690,400; Alberta, 8,230,838 thousand cubic feet, valued at $1,365,127; and New Brunswick, 682,890 thousand cubic feet, valued at $120,510.

The value of the gas, as reported by producers, varies from 5 cents to 30 cents per thousand feet, but these prices do not represent what the consumer has to pay.

In some cases the producer also owns the distribution pipe line and receives the full price paid by the consumer. In other cases the producer may sell to a pipe line company who either sells directly to consumers, or may in turn resell to other pipe line companies for retail distribution; in such cases as these the producer receives only a fraction of the amount paid by the consumer, but he is saved the expense of distribution. The statistics given herewith represent, as far as possible, the value received by the producer, or owner, of the gas well, whether such producer be the owner of the distribution line or not.

Natural Gas Production, 1916-17-18.

	1916.		1917.		1918.	
	M cu. ft.	Value.	M cu. ft.	Value.	M cu. ft.	Value.
		$		$		$
Production—						
New Brunswick	610,118	79,628	795,775	103,735	792,393	107,842
Ontario	17,953,109	2,765,105	19,838,035	3,641,587	13,029,524	2,884,460
Alberta	6,904,231	1,113,296	6,744,130	1,299,976	6,318,389	1,358,638
	25,467,458	3,958,029	27,408,940	5,045,298	20,140,309	4,350,940

Natural Gas Production, 1919.

Province.	No. of operators.	No. Men.	Wages.	Wells, 1919.						Production.		
				(a)	(b)	(c)	(d)	(e)	(f)	M cu. ft.	Value.	Average.
			$								$	$
Manitoba	1			1				1		Small		
Quebec				6				*6				
New Brunswick	1	22	39,001	22	1	1		23		682,890	120,510	0·176
Ontario	79	499	442,892	1902	74	22	122	1894	13	11,024,044	2,690,400	0·244
Saskatchewan				1					1			
Alberta	18	160	149,674	66	1	2	2	67	8	8,230,838	1,365,127	0·166
Total	99	681	631,567	1998	76	25	124	1991	22	19,937,769	4,176,037	0·209

(*a*) Total number of productive wells at beginning of year.
(*b*) Number of productive wells drilled during year.
(*c*) Number of dry wells drilled during year.
(*d*) Number of wells abandoned during year.
(*e*) Number of productive wells at end of year.
(*f*) Number of wells on which drilling was in progress at end of year.
*Idle.

PEAT.

During the year two bogs were operated, one at Garneau, Que., and the other at Alfred, Ont. About 2,500 tons were manufactured, while shipments were reported as 986 tons, valued at $6,561.

These were the first shipments of peat since 1916. During the latter year about 300 tons, valued at $1,500, were shipped from a bog in Middlesex county, Ontario. In 1915 shipments were made from the Alfred bog, Prescott county, amounting to 300 tons, valued at $1,500.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production	300	1,500					986	6,561

PETROLEUM.

A bounty of 1½ cents per gallon is paid on the marketed production of crude oil from Canadian oil-fields, the administration of the "Petroleum Bounty Act" being under the Department of Trade and Commerce. According to the bounty record the production in 1919 in Ontario was 219,804 barrels (7,695,141 imperial gallons), which at the average price per barrel of $2.845 was worth $625,342. The New Brunswick production was 4,225 barrels, worth about $13,141, or an average value of $3.11. For five years there has been a small but growing production of crude petroleum in Alberta, the greater part of which, however, does not earn the bounty because of its lightness, or low specific gravity. The approximate production in 1919 was 16,437 barrels, valued at $97,841.

The total production in Canada from all sources was therefore 240,466 barrels (8,416,310 imperial gallons), valued at $736,324.

The price of crude oil at Petrolia was quoted at $2.78 on July 10, 1918, to September 8, 1919. Prices on this date were advanced ten cents per barrel and were in force to November 21, when they further advanced to $3.13 per barrel. On December 22, they were increased to $3.38 per barrel, remaining at this price to the end of the year. The average monthly price was, therefore, $2.845, as compared with $2.69¼ in 1918, $2.33¼ in 1917, and $1.98 in 1916.

The production (in barrels) of the various fields in the province of Ontario, as kindly furnished by the Supervisor of Petroleum Bounties at Petrolia, was as follows: Petrolia and Enniskillen, 70,087; Oil Springs, 45,245; Moore township, 4,029; Sarnia township, 4,259; Plympton township, 560; Bothwell, 29,425; Tilbury 18,365; Dutton, 1,272; Onondaga, 197; Mosa township, 45,860; Thamesville 801.

The production in New Brunswick is all obtained in the Stoney Creek district, Albert county. The Alberta production was obtained from six wells situated in the Turner Valley field, near Black Diamond, and about 35 miles southwest of Calgary.

In 1919 ten oil refineries in Canada used 299,986,199 gallons of crude oil, of which 292,281,146 gallons were imported, and 7,705,053 gallons were obtained from Canadian wells. The production of refined oils and petroleum products included: Gasoline and motor oils, 87,248,413 gallons; benzoline, benzene, and other light oils, 4,516,783 gallons; illuminating oils, 55,360,322 gallons; lubricating oils, 16,113,694 gallons; gas and fuel oils and tar, 95,216,183 gallons; wax and candles, 11,271,993 pounds; petroleum coke 113,514,982 pounds. There was also a production of asphalt and other products amounting to $901,029. The total value of the products of refineries was $42,856,074.

According to inspection returns of the Inland Revenue Department the total quantity of illuminating oils inspected during the calendar year 1919 was 63,480,214 gallons, and the quantity of naphtha or gasoline and other light oils was 97,519,950 gallons.

Exports of petroleum entered as crude mineral oil in 1919 were 603,748 gallons, valued at $40,648, and of refined oil 2,846,293 gallons, valued at $287,170. There was also an export of naphtha or gasoline of 1,566,707 gallons, valued at $428,754.

The total value of the imports of petroleum and petroleum products in 1919 was $29,560,023, as against a value of $30,749,570 in 1918.

The total quantity of petroleum oils, crude and refined, imported in 1919 was 451,261,646 gallons, as compared with 420,728,933 gallons in 1918. A detailed record will be found in the accompanying tables.

Oil Wells and Oil Shipments, 1919.

Province.	Men Employed.	Wages paid.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	Oil Shipped (h)		
										Barrels.	Value.	Average value.
		$									$	$
New Brunswick	*	*	7	1	1	1	.....	6	....	4,225	13,141	3·11
Ontario (not complete)	263	201,915	3,827	38	....	11	216	3,659	30	219,804	625,342	2·85
Alberta	11	9,021	7	....	....	....	1	6	13	16,437	97,841	5·95
Br. Columbia	....	.....	.....	3	....	....	1	.....	5	.....	.....	.....
Total	274	210,936	3,841	42	1	12	218	3,671	48	240,466	736,324	3·06

*Included with natural gas statistics.
(a) Number of productive wells at beginning of year.
(b) Number of oil wells drilled during year.
(c) Number of gas wells drilled during year.
(d) Number of dry wells drilled during year.
(e) Number of wells abandoned during year.
(f) Total number of productive wells at end of year.
(g) Number of wells on which drilling was still in progress at end of year.
(h) Record of oil shipments for New Brunswick and Ontario based on bounty payments.

Petroleum.

		1916.		1917.		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			$		$		$		$
Bounty paid			104,014		107,799		153,958		119,714
Production, crude—									
New Brunswick	Bbls.	1,345	2,663	2,341	5,460	3,009	7,402	4,225	13,141
Ontario	"	196,778	389,621	202,991	473,477	288,692	777,737	219,804	625,342
Alberta	"	small		8,500	63,302	13,040	100,004	16,437	97,841
		198,123	392,284	213,832	542,239	304,741	885,143	240,466	736,324
Production, refinery—									
Refined oils	Gals.			173,235,606	23,575,358	232,469,829	35,372,773	258,455,395	40,484,222
Other products (*n*)					1,561,785		1,915,088		2,371,852
					25,137,143		37,287,861		42,856,074
Refined oils inspected*—									
Petroleum	Gals.	34,155,473		41,366,586		55,443,056		63,480,214	
Naphtha	"	38,249,129		59,892,046		74,310,352		97,519,950	
		72,404,602		101,258,632		129,753,408		161,000,164	
Exports—									
Coal and kerosene, crude	Gals.	137,647	11,439	2,130	183	270,302	28,415	603,748	40,648
Coal and kerosene, refined	"	446,595	48,137	28,212	6,558	1,946,967	206,675	2,846,293	287,170
Gasoline and naphtha	"	54,806	14,194	24,304	7,419	91,229	28,778	1,566,707	428,754
		639,048	73,770	54,646	14,160	2,308,498	263,868	5,016,748	756,572
Imports—									
(*a*) Crude (1) for refining	Gals.	252,895,361	8,448,778	183,105,102	8,411,730	229,010,561	13,359,636	305,748,960	15,104,287
Crude (2) all other	"			142,524,473	5,958,930	148,537,043	8,355,387	99,559,068	4,702,771
(*b*) Crude gas oils	"	197,909	11,044	854,778	65,404	65,845	7,584	155,145	23,866
(*c*) Coal and kerosene, distilled	"	7,912,419	474,442	13,258,815	978,366	5,241,881	526,606	6,757,159	926,822
(*d*) Illuminating	"	167,688	68,451	198,281	115,194	205,839	152,825	156,126	119,565
(*e*) Lubricating	"	4,239,675	597,733	3,438,430	559,605	2,450,588	476,641	1,496,809	289,442
Lubricating, n.o.p.	"	1,226,401	375,520	1,877,381	650,325	2,849,051	1,203,130	3,480,183	1,467,593
Gasoline	"	18,321,891	3,624,931	15,369,172	3,293,760	3,121,982	798,387	4,391,607	1,142,855
(*f*) Products ,n.o.p.	"	7,464,777	1,003,577	18,521,574	2,708,395	29,246,143	5,595,425	29,516,589	5,615,622
		292,426,121	14,604,476	379,148,006	22,741,709	420,728,933	30,475,621	451,261,646	29,392,823

Petroleum—*Concluded.*

	1916.		1917.		1918.		1919.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		$		$		$		$
Paraffin wax..... Lbs.	1,061,112	70,308	1,620,634	140,722	1,755,422	209,916	844,838	108,049
Paraffin wax, candles..... "	220,264	30,539	513,337	75,257	327,657	64,033	297,419	59,151
	1,281,376	100,847	2,133,971	215,979	2,083,079	273,949	1,142,257	167,200

(*a*) (1) Crude petroleum in its natural state ·7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refineries to be refined in their own factories. (2) Petroleum (not including crude petroleum imported to be refined, or illuminating or lubricating oils) ·8235 specific gravity or heavier at 60 degrees temperature.

(*b*) Crude petroleum, gas oils (other than benzene, naphtha and gasoline.)

(*c*) Coal and kerosene, distilled, purified, or refined.

(*d*) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon.

(*e*) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon.

(*f*) Products of petroleum, n.o.p.

(*n*) Including wax, candles, and asphalt. In 1919, this included petroleum coke also. (See table following).

* Department of Inland Revenue returns.

Production by Oil Refineries.

		1918.		1919.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Number of men employed, wages		2,934	3,439,394	4,082	.....
Crude oil receipts—					
Canadian	Gal.	12,258,190	918,332	8,179,865	752,161
Imported	"	250,382,965	22,789,768	303,557,828	24,497,369
		262,641,155	23,708,100	311,737,693	25,249,530
Materials used—					
Crude oil, Canadian	Gal.	10,039,645	.....	7,705,053	.....
Crude oil, imported	"	250,170,254	.....	292,281,146	.....
Sulphuric acid	Lb.	37,866,316	.....	52,010,125	.....
Soda and alkali	"	2,179,620	.....	2,440,732	.....
Litharge	"	97,319	.....	87,195	.....
Sulphur	"	52,302	.....	32,303	.....
Other material	"	382,672	.....	392,976	.....
Output—					
Gasoline and motor oils	Gal.	72,175,768	19,249,169	87,248,413	23,162,889
Benzoline, benzene and other petrol spirits	"	1,530,592	384,927	4,516,783	883,194
Illuminating	"	65,268,598	7,130,517	55,360,322	8,301,042
Lubricating	"	14,402,523	2,571,691	16,113,694	3,174,318
Fuel and gas oils, tar	"	79,092,347	6,036,469	95,216,183	4,962,779
Wax and candles	Lb.	13,759,972	1,148,727	11,271,993	1,014,798
Other solids		.....	766,361	.....	(a) 1,327,054
Total		.....	37,287,891	.....	42,856,074
Crude equivalent of stocks on hand Dec. 31	Gals.	75,102,150	.....	68,883,671	.....

(a) In 1919 includes 113,514,982 pounds petroleum coke valued at $426,025.

PHOSPHATE.

The small production of phosphate, or apatite, which has been obtained in Canada since 1896 has been produced almost altogether as a by-product in connection with the mining of mica. Shipments during 1919 totalled 24 tons, valued at $331.

Phosphate is used at Buckingham, Que., in the manufacture of phosphorus and ferro-phosphorus, and the main supply of ore is obtained from Florida.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Quebec	190	2,340	123	1,230	140	1,200	22	300
Ontario	13	174	26	256	.....	.....	2	31
	203	2,514	149	1,486	140	1,200	24	331
Exports-Phosphate rock	103	1,543	14	200	.....	.....	48	741
Imports—								
Phosphate rock (fertilizer)	.....	16,182	.....	62,543	.....	90,363	.....	30,267
Acid phosphate (a)	1,376	146,910	1,440	209,298	1,558	302,424	1,423	295,387
Phosphorus	48	42,738	36	34,519	37	35,125	24	19,928
Phosphor, tin and bronze	.....	26,426	.....	50,709	.....	46,554	62	61,647
Manufactured fertilizers	.....	639,884	.....	1,045,140	.....	670,364	.....	651,832
Superphosphate (b)	.....	.....	.....	.....	.....	.....	.....	178,292

(a) Probably refined phosphate of lime and phosphate of soda.
(b) Separately classified as from April 1, 1919; formerly included under manufactured fertilizers.

PYRITES.

The shipments of pyrites as sulphur ore from Canadian mines were considerably smaller than in the previous year. The total shipments were 176,487 tons, valued at $522,704, and included 52,746 tons, valued at $203,222, from the province of Quebec; 117,011 tons, valued at $285,832, from the province of Ontario; and 6,730 tons, valued at $33,650, from the province of British Columbia. The total sulphur content of shipments was 65,674 tons, or an average of 37·2 per cent.

The principal shipments were obtained from the same sources as in the previous year with only half the tonnage. In Quebec, cupriferous ores were shipped from the Eustis and Weedon mines, in the Eastern Townships. In Ontario the largest shippers for export were the mines at Goudreau, on the Algoma Central railway, in Michipicoten district, and at North Pines, on the Canadian National railway, northwest of Port Arthur. Mines shipping for domestic consumption were the Helen, in Michipicoten, the Sulphide, the Queensboro, and the Clyde Lake. In British Columbia shipments were made from the Sullivan mine at Kimberley to the sulphuric acid plant at Trail, and from Anyox to the acid plant at Barnet, B.C.

Customs records show exports of pyrites during 1919 as 89,089 tons, valued at $388,508. These figures are much less than those reported directly by the operators, and it is possible that some of the exports from Quebec may be entered as a copper ore. The imports of brimstone, or sulphur in roll or flour were 56,062 tons, valued at $1,015,223.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Quebec	130,639	523,272	122,882	501,351	124,871	507,802	52,746	203,222
Ontario	177,552	555,523	288,058	1,080,866	268,507	1,133,963	117,011	285,832
British Columbia	1,060	5,300	5,709	28,545	18,238	63,454	6,730	33,650
	309,251	1,084,095	416,649	1,610,762	411,616	1,705,219	176,487	522,704
Sulphur content	116,975	.....	155,453	.....	154,269	.....	65,674	.....
Exports	156,722	557,024	279,646	974,200	240,453	949,067	89,089	388,508
Imports—								
Brimstone or sulphur in roll or flour	73,467	1,186,618	82,445	1,515,309	92,062	2,058,811	56,062	1,015,223

Sulphuric Acid.—Sulphuric acid is manufactured in different grades or strengths, and in recording statistics of production it is desirable for purposes of comparison that the quantities of the several grades should be reduced as far as possible to a uniform standard.

Production records have been obtained in terms of the standard grades 50° Bé., 60° Bé., 66° Bé., and stronger acids. The quantities of the first two grades have, however, in the following statistics been reduced to their equivalent in 66° Bé., acid.

The total production of sulphuric acid in Canada during the twelve months ending December 31, 1919, derived from seven producing plants expressed in terms of 66° Bé. acid was 63,596 short tons. The production during the first six months of 1919 was 30,030 tons and during the last six months of the year 33,566 tons.

The ores used in the manufacture of sulphuric acid in 1919 included 2,245 tons of imported sulphur, or brimstone, and 54,879 tons of pyrites, chiefly from Canadian mines but including 1,266 tons imported.

The production during the first six months of 1920 was 38,891 tons from seven plants, the quantity of imported sulphur used being 4,848 tons, and of Canadian pyrites 24,458 tons, averaging 37·3 per cent sulphur.

Exports of sulphuric acid during 1919 were 10,894,200 pounds, valued at $108,392. Imports of sulphuric acid in 1919 were 1,437 tons, valued at $38,759.

	1916.		1917.		1918.		1919.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		$		$		$		$
Ore used—								
Sulphur..... Tons.	20,566	.....	25,994	.....	25,552	.....	2,245	.....
Pyrites..... "	62,681	.....	66,128	.....	75,941	.....	54,879	.....
Production.....† "	124,920	.....	153,530	.....	190,621	.....	63,596	.....
Imports..... "	2,403	115,173	216	15,680	5,954	208,288	1,437	38,759
Exports..... "	1,576	74,527	9,478	197,888	5,600	165,579	5,447	108,392

*Record includes a small production of oleum and other grades, the strength of which is not specified. An approximate estimate of production in terms of 50° acid will be obtained by increasing these figures by 50 per cent.

†Tons of 66° Bé acid.

QUARTZ (SILICA).

The statistics of quartz, or silica production given in the tabulated statement herewith include chiefly the quartz or quartzite used in the smelting of nickel and copper ores, in the manufacture of ferro-silicon, and in the manufacture of sanitary ware, or earthenware. Production of silica in the form of infusorial earth has already been included under tripolite, and a small production of silica in the form of crushed sandstone used in the manufacture of glass and for foundry work in steel plants is included in the statistics of sandstone production.

The total shipments of quartz, or quartzite, in 1919 was 94,991 tons, valued at $527,635.

Imports of silex, a finely ground quartz, in 1919 were 641 tons, valued at $13,825, and the imports of flint were 5,411 tons, valued at $100,902.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Quebec.....	1,149	1,436	550	1,788	1,730	5,383	2,221	7,773
Ontario.....	94,519	167,636	177,983	362,251	216,539	474,772	60,055	179,549
British Columbia.....	41,077	82,154	37,755	132,143	49,886	149,658	32,715	340,313
	136,745	251,226	216,288	496,182	268,155	629,813	94,991	527,635
Imports—								
Silex.....	1,677	18,297	851	12,812	607	12,054	641	13,825
Flint.....	5,349	71,983	3,774	64,292	5,749	109,825	5,411	100,902

SALT.

The total sales of salt in 1919, including the salt equivalent of brine used for chemical manufacturing, were 148,301 tons, valued at $1,397,929. These values as far as possible exclude the value of packages which amounted to $573,795. By grades the production included: table and dairy, 34,396 tons; common fine, 47,571 tons; common coarse, 64,426 tons; and land salt, 1,908 tons.

The number of men employed in 1919 was 329; wages paid, $350,141.

The Canadian production was obtained almost entirely from the salt field in southern Ontario. Some years ago there was a small production from brines near Sussex, New Brunswick, and at lake Winnipegosis in Manitoba. The deposit of rock salt opened up in the neighbourhood of Malagash, Cumberland county, Nova Scotia, continued development work during 1917 and shipped about 174 tons in 1919. This is the first known discovery of rock salt in the Maritime Provinces, and the first in Canada to be discovered at a depth sufficiently shallow to allow it to be won economically by actual mining. A small shipment was also reported from Senlac, Sask.

The exports of salt in 1919 were 617 tons, valued at $14,573. The imports of salt were 147,406 tons, valued at $1,310,129, and included: 51,941 tons of fine salt in bulk, valued at $289,109; 33,173 tons of salt in packages, valued at $467,581; and 62,292 tons of salt imported from Great Britain, or any British possession for the use of fisheries, valued at $553,439.

The calculated consumption of salt in 1919 was 295,090 tons, valued at $2,693,485 (the value of the imported salt being that at point of origin.)

Caustic soda and chloride of lime are manufactured by the Canadian Salt Company at their chemical works at Sandwich, Ont. The Brunner-Mond Canada, Ltd., Amherstburg, Ont., manufacture soda ash.

The imports of salt cake (sodium sulphate) in 1919 were 23,953 tons, valued at $343,007; soda ash (sodium carbonate) 31,319 tons, valued at $1,305,348; sal soda, 5,439 tons, valued at $164,259, and chloride and hypochloride of lime, 8,909 tons, valued at $304,691.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Table and dairy	35,045	247,456	34,252	.....	34,324	.....	34,396	.....
Common, fine	54,596	262,660	65,117	.....	54,210	.....	47,571	.....
Common, coarse	41,259	200,479	37,398	.....	41,152	.....	64,426	.....
Land salt	2,003	7,058	2,142	.....	2,041	.....	1,908	.....
Total*	132,903	717,653	138,909	1,047,792	131,727	1,285,039	148,301	1,397,929
Value packages	.....	309,603	.....	403,879	.....	574,033	.....	573,795
Stocks on hand, Dec. 31	1,970	.....	2,024	.....	2,775	.....	2,974	.....
Exports	153	2,223	(a)	.....	893	16,743	617	14,573
Imports—								
Fine, in bulk[1]	34,035	111,130	44,973	184,792	51,450	294,676	51,941	289,109
In bags, barrels[2]	7,680	59,980	12,293	120,665	13,941	156,736	33,173	467,581
All other[3]	109,493	523,725	113,550	782,748	100,103	815,757	62,292	553,439
	151,208	694,835	130,816	1,088,205	165,494	1,267,169	147,406	1,310,129
Consumption of salt	283,958	1,410,265	(e)269,725	2,135,997	296,328	2,535,465	295,090	2,693,485

*Quantity sold or used; value excludes packages. (e) Estimated.
[1]Duty 5c. per 100 pounds; [2]Duty 7½c. per 100 pounds; [3]Free—Imported for use of fisheries.
(a) Correct figures not available.

TALC.

The total shipment of crude and ground talc by mine operators during 1919 were 18,642 tons, valued at $116,295. A considerable portion of the shipment of crude mineral included above is ground at Madoc, and the total shipments of ground talc during 1919 were 15,927 tons of varying grades having an average value of about $14.75 per ton, as compared with 15,903 tons averaging about $14 in 1918. Crude talc sold at from $4 to $5 per ton.

The Henderson mine has been operated for some years, the greater part of the output being sold to Geo. H. Gillespie & Co., who operate a grinding mill at Madoc, the balance being exported to United States. The Connolly Mine, of the Anglo-American Talc Corporation, was also operating, as well as the Eldorado mine of the Eldorado Mining & Milling Co. Small shipments of talc were reported from British Columbia in 1916, 1917, and 1919.

Exports of talc for the twelve months ending December 31, 1919, were valued at $210,150, being: crude talc, 805 tons, valued at $4,740; refined talc, 9,624 tons, valued at $158,863, for the last nine months of the year; crude and refined for the first three months were valued at $46,547.

Imports of talc have not been separately recorded since 1915.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production (*a*)—								
Crude	13,051	48,575	13,184	51,856	12,772	47,494	12,243	49,074
Refined	53	848	2,619	24,683	5,397	71,703	6,399	67,221
	13,104	49,423	15,803	76,539	18,169	119,197	18,642	116,295
Exports**	.....	.....	.....	131,637	.....	208,301	.....	210,150
Total refined sold (*b*)	8,198	98,588	13,703	171,788	15,903	222,167	15,927	235,000

Imports not separately recorded. ** Not recorded prior to April, 1917.
(*a*) Mine operators' returns. (*b*) Product Canadian plants.

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

INTRODUCTORY.

The subjects included under this heading comprise cement, clay products of various kinds, such as brick, sewerpipe and tile, pottery, etc., lime, sand-lime brick, sand and gravel, slate, and stone for building and other purposes, including granite, marble, limestone, sandstone, etc.

The total value of the production of these structural products in 1919 was $27,421,510, as compared with $19,130,799 in 1918, $19,837,311 in 1917, and $17,467,186 in 1916, the increase in 1919 being $8,290,711, or 43·3 per cent, as compared with the previous year.

The total value of this class of imports in 1919 was $6,691,291, as against $8,117,394 in 1918, $7,901,398 in 1917, and $5,562,220 in 1916.

The total exports were valued at $944,273, as against $608,886 in 1918, $647,369 in 1917, and $681,239 in 1916.

The apparent total consumption based upon the record of production, imports and exports, was, therefore, in 1919, valued at $33,168,528, as compared with $26,639,307 in 1918, $27,091,340 in 1917; and $22,348,167 in 1916, the increase in value of consumption in 1919 being $6,529,221.

A summary of the production, imports, exports, and consumption of structural materials and clay products in 1919 follows.

Structural Materials, Calendar Year 1919.

—	Production.	Imports.	Exports.	Consumption.
	$	$	$	$
Cement, portland	9,802,433	64,443	465,954	9,400,922
Clay products	7,906,366	5,269,328	164,254	13,011,440
Lime	2,310,607	53,190	128,810	2,234,987
Sand-lime brick	484,854	.....	.....	484,854
Sand and gravel	2,680,460	200,428	131,140	2,749,748
Slate	10,853	142,977	.....	153,830
Stone	4,225,937	960,925	54,115	5,132,747
	27,421,510	6,691,291	944,273	33,168,528

CEMENT.

The total quantity of cement sold from Canadian cement mills in 1919 was 4,995,257 barrels, valued at $9,802,433, or an average of $1.96 per barrel—an increase in quantity sold of 1,403,776 barrels, or 39 per cent, and an increase in total value of $2,725,930 or 38½ per cent.

Sales of cement from mills in Quebec in 1919 were 2,260,422 barrels, valued at $4,340,010; in Ontario, 2,023,280 barrels, valued at $3,650,585; and from Manitoba, Alberta, and British Columbia, 711,555 barrels valued at $1,811,838.

The total quantity of cement made in 1919 was 4,613,588 barrels, as compared with 3,417,600 barrels in 1918, an increase of 1,195,928 barrels, or 35 per cent.

Stocks of cement on hand January 1, 1919, were 1,471,865, and at the end of December had been reduced to 1,089,970 barrels.

The total imports of cement in 1919 were 49,232 hundredweight, equivalent to 14,066 barrels of 350 pounds each, valued at $51,314, or an average of $3.65 per barrel.

The total consumption of cement, therefore, was 4,831,817 barrels, an increase of 1,234,423 barrels, or 34·3 per cent.

	1916.		1917.		1918.		1919.	
	Brl.	Value.	Brl.	Value.	Brl.	Value.	Brl.	Value.
		$		$		$		$
Plants—								
Active—No.								
Capacity	15—38,475		9—28,340		10—29,275		10—30,025	
Idle—No.								
Capacity	14—14,940		17—21,890		13—18,940		11—19,000	
Output—								
Marl	164,436		96,755		86,532		110,899	
Limestone	4,588,597		4,890,500		3,331,128		4,512,689	
	4,753,033		4,987,255		3,417,660		4,613,588	
Sold or used	5,369,560	6,547,728	4,768,488	7,724,246	3,591,481	7,076,503	4,995,257	9,802,433
Stocks Dec. 31	1,444,875		1,660,406		1,480,565		1,089,970	
Imports—								
Portland	20,596	31,621	8,580	19,646	5,913	19,851	14,066	51,314
Manufactures		12,126		8,710		8,509		13,129
Exports		2,424		16,857		13,752	(a) 177,506	465,954
Consumption	5,390,156		4,777,068		3,597,394		4,831,817	

(a) Quantity not recorded but estimated at the rate of 75 cents per cwt. or $2.62½ per barrel.

CLAYS AND CLAY PRODUCTS.

For a number of years a small quantity of fireclay has been produced and sold as such, and during the past few years there has been a small production of kaolin, or china-clay, from a deposit in the province of Quebec. With these exceptions, the clay production in Canada consists almost altogether of the manufactured product.

The clay products made in Canada comprise brick of various kinds, including common and pressed, ornamental and fancy building brick, paving brick, firebrick, porous fireproofing brick and blocks, sewerpipe and drain tile, pottery and sanitary ware, the last two products chiefly from imported clays.

The total value of the clay products sold or marketed in 1919 was $7,906,366, as compared with a value of $4,583,489 in 1918, $4,779,038 in 1917, and $4,120,805 in 1916. The value of the production in 1919 shows an increase of $3,322,877 as compared with the previous year.

The average number of men employed in 1919 was 4,613, as compared with 3,423 in the previous year, and the total wages paid were $3,356,464, as against $2,131,614.

Of the total value of the sales in 1919, building brick and fireproofing contributed $5,627,138, or about 71·2 per cent. Sewerpipe and tile production, $1,690,656, or 21·3 per cent. The total value of the production of pottery was $890,320, of which $185,474 only is estimated as attributable to Canadian clays, the balance being credited to imported clays.

The value of the production of fireclays and firebrick from domestic clays was $389,354, and the production of kaolin was 759 tons, valued at $13,744.

Detailed statistics of production of the several classes of clay products by provinces in 1919, are shown in the following table:—

Production of Clay Products by Provinces, 1919.

Province.	Per cent of total value.	No. of active firms reporting.	No. of men employed	Wages.	Common brick.				Pressed brick.			
					No. manufactured.	No. sold.	Value of sales.	Per M	No. manufactured.	No. sold.	Value of sales.	Per M
				$			$	$			$	$
Nova Scotia	5·48	8	281	154,966	18,060,000	20,246,000	216,123	10·67	50,000	50,000	1,000	20·00
New Brunswick	0·67	3	55	25,748	1,300,000	1,070,000	14,433	13·49	.....	.....	.....	.....
Quebec	19·95	15	961	647,334	94,123,320	83,450,360	1,020,779	12·23	13,548,720	10,815,879	165,591	15·31
Ontario	57·86	154	2,380	1,953,700	152,171,986	145,037,954	2,139,687	14·75	56,083,725	52,512,553	917,648	17·47
Manitoba	1·67	5	190	54,823	7,576,000	8,617,000	131,737	15·29	.....	.....	.....	.....
Saskatchewan	3·43	7	129	78,589	6,059,000	6,214,300	65,092	10·48	2,081,000	2,152,000	49,507	23·01
Alberta	7·23	9	445	292,396	20,321,932	24,141,932	228,730	9·47	7,944,510	7,955,235	142,190	17·87
British Columbia	3·71	8	172	148,908	2,665,450	2,692,450	33,638	12·50	1,438,036	938,036	28,226	30·09
Total	100·00	221	4,613	3,356,464	302,277,688	291,469,996	3,850,219	13·21	81,145,991	74,423,703	1,304,162	17·52

Province.	Fireproofing.		Ornamental and terra-cotta.		Refractories	Hollow building blocks.		Pottery.	Sewerpipe.		Tiles, drain.		Kaolin.	Total.
	Tons.	Value.	No. sold.	Value.	Value.	No. sold	Value.	Value.	Tons.	Value.	M	Value.	Value.	Value.
		$		$	$		$	$		$		$	$	$
Nova Scotia	.....	.....	.....	.....	60,605	32,000	4,800	.....	6,415	147,555	125	2,817	.....	432,900
New Brunswick	.....	.....	.....	.....	2,172	.....	.....	36,336	.....	.....	.....	.....	.....	52,941
Quebec	13,499	80,996	.....	8,861	42,665	.....	.....	10,478	12,665	227,974	121	6,488	13,744	1,577,576
Ontario	16,023	170,296	.....	41,841	69,565	1,072,115	28,656	44,820	39,678	609,099	19,047	553,184	.....	4,574,796
Manitoba	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	131,737
Saskatchewan	.....	.....	.....	.....	41,086	.....	.....	.....	3,617	76,804	385	38,500	.....	270,989
Alberta	11,884	94,090	.....	.....	.....	586,733	9,226	93,840	.....	.....	88	3,873	.....	571,949
British Columbia	.....	.....	.....	.....	173,261	294,000	33,991	.....	446	12,714	312	11,648	.....	293,478
Total	41,406	345,382	.....	(c) 50,702	(b) 389,354	1,984,848	76,673	(a)185,474	62,821	1,074,146	20,078	616,510	13,744	7,906,366

(a) There was also a production of $704,846 from imported clays. (b) There was also a production of $64,133 from imported clays. (c) of which $40,527 is credited to terra-cotta.

Clay Paving Brick.—Paving brick has been made in Canada, chiefly at West Toronto, Ont., from shale obtained from the banks of the Humber river, and more recently during the years 1915 and 1916 there was a small production reported from Clayburn, B.C. There was no production reported for the past three years. The annual production for a number of years varied from 3,000,000 to over 5,000,000 per season.

Drain Tile.—The total sales of drain tile in Canada as reported to this branch were 20,078 thousand, valued at $616,510. The greater part of this production is from Ontario, the sales in this province as reported by the producers being 19,047 thousand, valued at $553,184.

Kaolin.—The shipments of kaolin in 1919 were 759 tons, valued at $13,744, as compared with 863 tons, valued at $19,299, in 1918.

The production was obtained from the deposits in the township of Amherst, Ottawa county, Quebec, operated by the Canadian China Clay Company, of Toronto.

The plant for refining the clay is situated 2 miles from St. Remi d'Amherst, and 7 miles from Huberdeau, the terminus of the Montfort branch of the Canadian National Railway, 46 miles northwest of Montreal.

Pottery.—Sanitary porcelain is made at St. Johns, Que., and electrical porcelain is made at Hamilton and Peterborough, Ont. These are the only firms in Canada at present making white wares. The raw materials, including clays, ground quartz and feldspar are all imported.

Stoneware pottery, such as crocks, jars, churns, and jardinieres, is made at Medicine Hat, Alta., from Saskatchewan clay; at Hamilton, Ont., from imported clays; and at St. John, N.B., partly from Nova Scotia clay.

Flower pots are made at a few localities from the red burning and tile clays of the vicinity.

Refractories.—The total value of the sales of fireclay, firebrick, fireclay brick and magnesite brick in 1919 was $389,354. There was in addition a production of fireclay products, valued at $64,133, reported as being made from imported clays. The production in 1919 included: Fireclay, or refractory clay sold as such, 4,600 tons, valued at $24,163; firebrick, including silica brick and magnesite brick in addition to fireclay brick, 5,610 thousand, valued at $268,756; and other fireclay products valued at $96,435.

Sewerpipe.—The total sales of sewerpipe in 1919 were 62,821 tons, valued at $1,074,146. About 56·7 per cent of the value of the production is credited to Ontario.

		1916.		1917.		1918.		1919.	
		Quant'y	Value.	Quant'y	Value.	Quant'y	Value.	Quant'y	Value.
			$		$		$		$
Manufactured—									
Common brick	M	241,521		216,590		163,960		302,278	
Pressed brick	M	43,361		51,472		38,171		81,146	
Stocks, Dec. 31—									
Common	M	85,879		57,596		57,419		51,110	
Pressed	M	15,778		17,273		11,665		18,458	
Production—									
Common	M	237,035	1,826,844	210,631	1,999,465	164,970	1,879,811	291,470	3,850,219
Pressed	M	44,947	492,355	46,409	653,153	40,147	639,083	74,424	1,304,162
Fire proofing	Tons.				299,645	28,087	226,798	41,406	345,382
Hollow building blocks	M		361,555		95,088	1,402	40,876	1,985	76,673
Kaolin	Tons.	1,750	17,500	533	9,594	863	19,299	759	13,744
Ornamental	M		21,102		32,854	358	28,296	365	10,175
Terra-cotta	M				21,380	175	15,146		40,527
Paving	M	1,590	30,144						
Pottery			61,069		122,878		130,242		185,474
Refractories:—									
Fireclay	Tons.	9,206	30,767	10,534	49,455	8,732	44,351	4,600	24,163
Firebrick	M	5,689	147,757	8,192	199,171	7,192	248,884	5,610	268,756
Other products	Tons.		56,038		77,885		111,589	2,946	96,435
Sewerpipe	Tons.		716,287		783,762	36,574	699,774	62,821	1,074,146
Tile, drain	M		359,387		434,708	19,762	490,340	20,078	616,510
			4,120,805		4,779,038		4,583,489		7,906,366
Imports—									
Bath brick			902		2,299		2,134		1,135
Building brick	M	10,083	118,687	4,111	61,511	3,232	55,976	7,394	128,876
Bldg. blocks			69,353		151,765		64,622		102,107
Clays—									
China	Tons.	19,062	114,110	11,596	97,856	10,538	116,699	8,643	129,652
Fire			187,124		283,746		401,357	30,777	385,156
Pipe			2,440		2,427		2,167		922
Other clays			21,820		32,180		34,430		46,420
Drain tile, unglazed			2,072		2,289		481		481
Drain and sewerpipe			40,233		42,864		24,763		66,727
Earthen and chinaware			2,180,414		2,595,582		2,163,455		2,925,295
a Firebrick			1,162,679		1,994,212		2,852,233		906,481
Firebrick, n.o.p.			495,113		691,578		650,341		434,505
b Magnesite brick					470,801		210,103		120,189
Paving brick	M	5,667	70,268	2,190	37,814	798	17,534	3,552	77,374
Other clay mfrs.			88,952		143,913		138,086		144,008
			4,554,167		6,610,837		6,734,081		5,269,328
Exports—									
Bldg. brick	M	1,746	13,942	4,464	40,039	3,277	34,593	4,770	52,050
Clay—									
Unmanufactured	Cwt.		58,550		83,600		129,691	5,901	3,672
Manufactures									84,953
Earthenware			7,620		14,504		10,633		23,579
			80,112		138,143		174,917		164,254
Consumption			8,594,860		11,251,732		11,142,653		13,011,440

(*a*) Duty free; of a kind not made in Canada.
(*b*) Not separately shown prior to April, 1917.

LIME.

The production of lime in 1919 is reported as 7,147,504 bushels, valued at $2,310,607, or an average of 32·3 cents per bushel. Fifty-eight firms reported with 868 men employed, and wages $829,459.

The average price per bushel of lime sold in 1919 varied from a minimum of 20 cents in Nova Scotia to a maximum of 53½ cents in British Columbia. About 87 per cent of the total reduction was derived from Ontario, Quebec, and the Maritime Provinces. The production of hydrated lime was 27,950 tons, valued at $295,164.

The exports during 1919 were 9,654 tons, valued at $128,810, while the imports were 3,977 tons, valued at $53,190.

	1916.		1917.		1918.		1919.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bush.	$	Bush.	$	Bush.	$	Bush.	$
Production—								
Nova Scotia	909,800	181,960	985,286	197,057	748,314	149,663	366,543	73,309
P. E. Island	1,734	546	820	287	.....	.....	.....	.....
New Brunswick	424,113	104,635	532,251	171,248	482,548	221,935	468,533	223,193
Quebec	1,498,845	267,119	1,470,486	335,012	1,527,784	418,888	1,796,822	493,762
Ontario	2,031,396	367,115	2,846,850	668,368	2,660,791	762,976	3,578,834	1,143,973
Manitoba	355,301	83,754	393,982	92,932	462,544	134,725	476,452	147,131
Alberta	78,019	20,033	104,540	35,516	80,408	44,141	109,067	41,276
Br. Columbia	194,042	66,301	232,955	58,067	401,562	143,697	351,253	187,963
	5,493,250	1,091,463	6,567,170	1,558,487	6,363,951	1,876,025	7,147,504	2,310,607
Hydrated lime produced[1]	Tons. 9,137	56,775	Tons. 16,339	126,268	Tons. 18,133	167,250	Tons. 27,950	295,164
Imports	21,178	96,332	12,150	78,254	4,987	53,745	3,977	53,190
Exports	.....	66,406	.....	74,523	7,483	70,930	9,654	128,810

[1]Included in total production of lime.

SAND-LIME BRICK.

The first record of the production of sand-lime brick in Canada was obtained for the year 1907, when there was a production by ten firms amounting to 16,492,971 brick, valued at $167,795.

In 1919 the sales were reported at 33,553,699 brick, valued at $484,854, or an average of $14.75 per thousand, as compared with sales in 1918 of 14,589,324 brick, valued at $186,066.

	1916.		1917.		1918.		1919.	
	M.	Value.	M.	Value.	M.	Value.	M.	Value.
		$		$		$		$
Manufactured	13,884	.....	17,080	.....	15,256	.....	36,111	.....
Sold or used	16,541	126,235	18,002	201,355	14,589	186,066	33,554	484,854
Stocks, Dec. 31	5,178	.....	3,259	.....	2,610	.....	2,244	.....

SAND AND GRAVEL.

The total sales of sand and gravel produced in Canada during 1919 amounted to 10,364,481 tons, valued at $2,680,460. This production included: building sand and gravel for concrete and road building, 1,100,827 tons, valued at $602,138; gravel, including sand and gravel and crushed gravel, 1,039,104 tons, valued at $606,486; railway ballast, 8,119,387 tons, valued at $1,373,704; moulding sand, 55,451 tons, valued at $71,249; and other sands, core sands, engine sands, etc., 49,712 tons, valued at $26,883.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Sand	1,379,319	475,811	1,505,907	614,272	1,019,770	412,357	1,100,827	602,138
Sand and gravel	2,058,900	767,530	2,214,369	904,584	1,477,851	750,010	1,039,104	606,486
Ballast	4,559,686	521,189	5,312,218	718,801	8,633,917	1,087,207	8,119,387	1,373,704
Moulding sand	19,251	16,726	46,790	46,018	62,835	71,488	55,451	71,249
All other	139,051	57,064	103,133	42,574	67,909	45,956	49,712	26,883
	8,156,207	1,838,320	9,182,417	2,326,249	11,262,282	2,367,018	10,364,481	2,680,460
Imports	233,777	183,894	328,520	312,403	310,610	435,992	200,830	200,428
Exports	1,114,913	388,309	1,075,374	290,964	902,750	229,957	1,074,341	131,140

SLATE.

There is a small annual production of slate in Canada, obtained from the New Rockland quarries, Melbourne township, Richmond county, Quebec, operated by the New Rockland Slate Co., Ltd.

The production in 1919 was 1,632 squares, valued at $10,853, as compared with the production in 1918 of 933 squares, valued at $5,124.

Exports have not been reported since 1909. The imports of slate during the past twelve years have ranged in value from $90,000 to over $200,000 per annum. During the calendar year 1919, they were valued at $142,977.

	1916.		1917.		1918.		1919.	
	Squares	Value.	Squares	Value.	Squares	Value.	Squares	Value.
		$		$		$		$
Production	1,262	6,223	1,422	7,789	933	5,124	1,632	10,853
Imports—								
Roofing	4,412	21,335	3,909	20,785	8,296	47,975	4,036	27,623
School-writing	.....	35,887	.....	40,603	.....	41,122	.....	46,342
Pencils	.....	11,309	.....	8,717	.....	10,361	.....	10,059
All other	.....	28,245	.....	36,788	.....	33,596	.....	58,953
	.....	96,776	.....	106,893	.....	133,054	.....	142,977

STONE.

Statistics of stone production given herewith include the sales of all classes of stone used for building, monumental, and ornamental purposes, stone for paving purposes, curbstone and flagstone, rubble, riprap and crushed stone, limestone for furnace flux, sugar factories, etc., but stone used for burning lime or manufacturing cement is not included.

The kinds of stone quarried have been classed as granite (including trap rock, syenite, and other igneous rocks), limestone, sandstone, and marble.

The records are practically confined to quarry operations, and to the production of sawn or polished stone when these operations are carried on by quarry operators. In addition to this production of stone by regular operators, there is no doubt a large stone production by individuals, such as farmers and others, for house or barn foundations, concrete work, etc., of which it would be impracticable to obtain any satisfactory record. Much stone is also used in railway construction work and in road building, of which the record is probably very incomplete.

The total value of the production of stone during 1919, according to returns received, was $4,225,937, as compared with a value of $3,036,574 in 1918, showing an increase of $1,189,363.

The number of active firms reporting in 1919 was 159, the total number of men employed 2,999, and total wages paid $2,060,870.

Production of Stone by Kinds and by Provinces, Showing Purposes for which Used, 1919.

By kinds.	Building	Ornamental and monumental	Paving and curbstone.	Rubble.		Crushed.		Furnace Flux.		Total Value.	Per cent of Total.
				Short Tons.	Value.	Short Tons.	Value.	Short Tons.	Value.		
	$	$	$		$		$		$	$	%
Granite	89,894	281,112	97,299	30,981	27,366	343,578	354,892	.....	.....	850,563	20·13
Limestone	318,143	14,047	3,069	456,437	358,709	1,928,447	1,846,861	533,535	533,986	3,074,815	72·76
Marble	188,490	19,692	.....	80	200	1,760	5,600	.....	.....	213,982	5·06
Sandstone	17,524	.....	3,503	13,741	16,463	15,481	49,087	.....	.....	86,577	2·05
By Provinces.											
Nova Scotia	8,222	18,657	2,000	4,491	7,685	18,161	41,438	311,620	335,192	413,194	9·78
New Brunswick	3,000	(1) 68,398	14,143	150	724	11,858	29,511	3,461	9,518	125,294	2·96
Quebec	489,321	190,832	55,737	16,060	14,569	636,370	685,052	7,317	6,408	1,441,919	34·12
Ontario	71,104	34,632	16,241	443,985	324,636	1,505,691	1,327,966	183,527	161,689	1,936,268	45·82
Manitoba	39,304	.....	.....	5,288	25,859	16,456	18,661	3,495	5,243	89,067	2·11
Alberta	1,500	.....	.....	.....	.....	1,014	1,166	455	523	3,189	0·07
British Columbia	1,000	2,332	15,750	31,265	29,265	99,716	152,646	23,660	15,413	217,006	5·14
Total	614,051	314,851	(a) 103,871	501,239	402,738	2,289,266	2,256,440	533,535	533,986	4,225,937	.....
Per cent	14·5	7·5	2·5	.....	9·5	.....	53·4	.....	12·6	.....	100·00

(1) Finished stone valued at $172,745. (a) 12,755 tons, subdivided as follows: granite, 11,810 tons; limestone, 390 tons; sandstone, 555 tons.

	1916.		1917.		1918.		1919.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
Production—								
Granite		1,247,267		639,412		590,871		850,563
Limestone		2,224,091		2,283,659		2,342,403		3,074,815
Marble		118,810		55,820		550		213,982
Sandstone		146,244		261,256		102,750		86,577
Production—								
Nova Scotia		459,298		569,521		478,721		413,194
New Brunswick		112,257		111,150		99,044		125,294
Quebec		1,370,465		991,593		952,402		1,441,919
Ontario		857,023		992,455		1,079,745		1,936,268
Manitoba		372,894		301,968		238,251		89,067
Alberta		257		7,482		569		3,189
British Columbia		564,218		265,978		187,842		217,006
		3,736,412		3,240,147		3,036,574		4,225,937
Exports—								
Crushed	26,754	27,611	2,308	2,277	1,526	1,983	13,176	12,960
Ornamental, rough (*a*)	15,967	7,989	330	359	1,042	5,059	846	7,148
Building, rough (*b*)	128,453	103,796	139,153	122,430	62,683	107,690	16,859	23,899
Dressed		4,592		1,816		4,598		10,108
		143,988		126,882		119,330		54,115
Imports—								
Building stone		112,349		176,134		125,132		212,191
Granite		133,229		132,615		85,652		110,583
Marble		171,849		199,697		284,862		438,623
Refuse stone		169,877		256,182		236,516	416,220	199,528
		587,304		764,658		732,162		960,925

(*a*) Granite, marble, etc., unwrought. (*b*) Freestone, limestone, etc., unwrought.