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CANADA
DEPARTMENT OF MINES
MINES BRANCH

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ANNUAL REPORT

ON THE

MINERAL PRODUCTION OF CANADA

During the Calendar Year

1911

JOHN McLEISH, B.A.

Chief of the Division of Mineral Resources and Statistics



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LETTER OF TRANSMITTAL.

Dr. EUGENE HAANEL,
Director of Mines,
Department of Mines, Ottawa.

SIR,—I beg to hand you herewith, 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, 1911.

A preliminary report on the mineral production during 1911 was sent to press February 27, 1912, and issued within the following week.

Parts of the present report—including a "General Summary of the Mineral Production in Canada during 1911," "Report on the Production of Iron and Steel in Canada during 1911," "Report on the Production of Copper, Gold, Lead, Nickel, Silver, Zinc, and Other Metals in Canada during 1911," "Report on the Production of Coal and Coke in Canada during 1911," and "Report on the Production of Cement, Lime, Clay Products, Stone, and Other Structural Materials in Canada during 1911"—have already been published as separate bulletins.

In the preparation of this report Mr. Cosmo T. Cartwright has again devoted special attention to the metalliferous subjects, having prepared the special chapters on gold, silver, copper, lead, nickel, zinc, and miscellaneous metallic minerals, and Mr. J. Casey has given particular care to the compilation of the statistics.

Free use has been made of the reports published by the Provincial Bureaus of Mines; and grateful acknowledgment is made of the hearty co-operation of mine and smelter operators who have, with few exceptions, cheerfully complied with our requests, and furnished the department with statistics and information regarding their operations.

I have the honour to be, Sir,

Your obedient servant,

(Signed) **John McLeish.**

Division of Mineral Resources and Statistics,

October 15, 1912.

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EXPLANATORY NOTES.

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 of June; but now terminates on the 31st of 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 Trade and Navigation published by the Customs Department.

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. In the case of lead, however, the New York price is so much higher than that of London, that the Montreal price—about midway between these two—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

1911

General Summary.

The total value of the mineral production in Canada in 1911, according to revised statistics now complete, was \$103,220,994, which although less than the production of 1910 by \$3,602,629 was nevertheless much greater than the output of any other previous year. The total value of the production in 1910 was \$106,823,623, the decrease in 1911 being equivalent to a little over 3 per cent. The largest production per capita was made in 1910 when the output averaged \$14.93 per head of population; the year 1911 was next with an average output per capita of \$14.42.

The year 1886 was the first year for which complete statistics of mineral production for the whole of Canada were collected by this Department, and the production that year was reported as \$10,221,255, or about \$2.23 per capita. In ten years the production had increased over 100 per cent, to \$22,474,256, or \$4.38 per capita, in 1896. At this time, the Yukon began to contribute largely to the gold production, and, during the next five years, an increase of nearly 200 per cent is shown, the total reaching a value of \$65,797,911, or \$12.16 per capita in 1901. The next three years witnessed a slight falling off; but from 1904 the production again rapidly increased to its present high record due to the general development of a wide variety of mineral products.

Annual Mineral Production in Canada since 1886.

Year.	Value of production.	Value per capita.	Year.	Value of production.	Value per capita.
	\$	\$ cts.		\$	\$ cts.
1886	10,221,255	2 23	1899	49,234,005	9 27
1887	10,321,331	2 23	1900	64,420,877	12 04
1888	12,518,894	2 67	1901	65,797,911	12 16
1889	14,013,113	2 96	1902	63,231,836	11 36
1890	16,763,353	3 50	1903	61,740,513	10 83
1891	18,976,616	3 92	1904	60,082,771	10 27
1892	16,623,415	3 39	1905	69,078,999	11 49
1893	20,035,082	4 04	1906	79,286,697	12 81
1894	19,931,158	3 98	1907	86,865,202	13 75
1895	20,505,917	4 05	1908	85,557,101	13 16
1896	22,474,256	4 38	1909	91,831,441	13 70
1897	28,485,023	5 49	1910	106,823,623	14 93
1898	38,412,431	7 32	1911	103,220,994	14 42

Comparative Statement of Mineral Production for Years 1910 and 1911.

Product.	1910.			1911.			Increase (+) or Decrease (-).		Increase (+) or Decrease (-).	
	Quantity.	Value. (a)	Per cent of total.	Quantity.	Value. (a)	Per cent of total.	Quantity.	%	Value.	%
<i>Metallie.</i>										
Antimony ore.....	*Tons.	364	\$ 13,906	0	0				\$ 13,906	
Cobalt (i).....	Lbs.		51,986						51,986	
Cobalt oxide and nickel oxide.....	"			154,174						
Cobalt material, mixed cobalt and nickel oxides.....	"			1,260,832	221,690	0.22			221,690	
Copper (b).....	"	55,692,369	7,094,094	55,648,011	6,886,998	6.67	-	44,358	0.08	207,096
Gold.....	Ozs.	493,707	10,205,835	473,159	9,781,077	9.48	-	20,548	4.16	424,758
Pig iron from Canadian ore (c).....	Tons.	104,906	1,650,849	42,186	613,404	0.59	-	62,720	59.79	1,037,445
Iron ore sold for export (k).....	"	114,449	324,186	40,137	88,570	0.09	-	74,312	64.93	235,616
Lead (d).....	Lbs.	32,987,508	1,216,249	23,784,969	827,717	0.80	-	9,202,539	27.90	388,532
Nickel (e).....	"	37,271,033	11,181,810	34,098,744	10,229,623	9.91	-	3,172,239	8.51	951,687
Silver (f).....	Ozs.	32,869,264	17,580,455	32,559,044	17,355,272	16.81	-	310,220	0.94	225,183
Zinc ore.....	Tons.	5,063	120,003	2,590	101,072	0.10	-	2,473	48.84	18,931
Total.....			49,438,873		46,105,423	44.67			3,333,450	6.74
<i>Non-Metallie.</i>										
Actinolite.....	Tons.	30	330	67	736		+	37	123.00	406
Arsenious oxide.....	"	(j) 2,049	(j) 81,044	2,097	76,237		+	48	2.34	4,807
Asbestos.....	"	77,508	2,555,974	101,393	2,922,062	2.83	+	23,885	30.82	366,088
Asbestic.....	"	24,707	17,629	26,021	21,046		+	1,314	5.32	3,417
Chromite.....	"	299	3,784	157	2,587		-	142	47.49	1,147
Coal.....	"	12,909,152	30,909,779	11,323,388	26,467,646	25.64	-	1,585,764	12.28	4,442,133
Corundum.....	"	1,870	198,680	1,472	161,873	0.15	-	398	21.28	36,807
Feldspar.....	"	15,809	47,667	17,723	51,939		+	1,914	12.11	4,272
Fluorspar.....	"	2	15	34	238		+	32		223
Graphite.....	"	1,392	74,087	1,269	69,576		-	123	8.84	4,511
" artificial.....	"	1,221		1,086			-	135	11.06	
Grindstones.....	"	3,973	47,196	4,566	52,942		+	593	14.92	5,746
Gypsum.....	"	525,246	934,446	518,383	993,394	0.96	+	6,863	1.31	58,948
Magnesite.....	"	323	2,160	991	5,531		+	668	206.00	3,371
Manganese.....	"			5½	300		+	5½		300
Mica.....	"		190,385	0.17	128,677	0.12	-			61,708

Mineral pigments —											
Barytes	Tons.	0	0	50	400	.....	+	50	.....	+	400
Ochres	"	4,813	33,185	3,622	28,333	.....	-	1,191	24.75	-	4,852
Mineral water			199,563	0.18	223,758	.....	0.21			+	24,195
Natural gas (g)			1,346,471	1.26		.....	1.85			+	571,207
Peat	Tons.	841	2,604	1,463	3,817	.....	+	622	73.96	+	1,213
Petroleum (h)	Bis.	315,895	338,550	0.36	291,092	.....	0.34	24,803	7.85	-	31,477
Phosphate	Tons.	1,478	12,578		621	.....	-	857	57.98	-	7,372
Pyrites	"	53,870	137,064	0.17	82,666	.....	+	28,796	53.45	+	173,756
Quartz	"	88,205	91,951		60,526	.....	-	27,679	31.38	-	8,086
Salt	"	84,092	409,624	0.38	91,582	.....	0.42	7,490	8.91	+	33,380
Talc	"	7,112	22,308		7,300	.....	+	188	5.64	-	208
Tripolite	"	22	134		20	.....	-	2	9.09	-	12
Total			37,757,158	35.34						-	3,351,198
					34,405,960		33.33				8.88

* Short tons throughout. (a) The metals copper, lead, nickel, and silver are for statistical and comparative purposes valued at the final average value of the refined metal. Pig iron, zinc ore, and cobalt oxides are 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 12.376 cents per pound, in 1911; and 12.738 cents per pound in 1910. (c) The total production of pig iron in Canada in 1911 was 917,535 tons valued at \$12,307,125, of which it is estimated \$75,349 tons valued at \$11,693,721 should be credited to imported ores; in 1910, the total production was 800,797 tons valued at \$11,245,622, of which 695,891 tons valued at \$9,594,773 are credited to imported ores. (d) Refined lead and lead contained in base bullion exported at 3.480 cents per pound, in 1911; and 3.687 cents in 1910, the average prices in Montreal and Toronto respectively. (e) Nickel content of matte produced valued at 30 cents in 1910 and 1911. (Increasing quantities of nickel-copper matte are now being used in making monel metal which is sold at a price much below that of refined nickel.) The value of the nickel contained in matte, as returned by the operators, was about 10 cents per pound for both years. (f) Estimated recoverable silver at 53.304 cents per ounce in 1911, and at 53.486 cents in 1910. (g) Gross returns for sale of gas. (h) Quantity on which bounty was paid and valued at \$1.22½ per barrel in 1911 and at \$1.23 in 1910. (i) Value received in 1910 by shippers of silver cobalt ores for cobalt content. Cobalt not paid for in 1911. (j) In 1910 includes 547 tons arsenical ore valued at \$5,716. (k) In 1911, figures as reported by the producers, which differ slightly from those of the Trade and Navigation reports.

Comparative Statement of Mineral Production for Years 1910 and 1911—Continued.

Product.	1910.			1911.			Increase (+) or Decrease (-).		Increase (+) or Decrease (-).	
	Quantity.	Value.	Per cent of total.	Quantity.	Value. (a)	Per cent of total.	Quantity.	%	Value.	%
<i>Structural Materials and Clay Products.</i>										
Cement, Portland..... Bls.	4,753,975	\$ 6,412,215	6·00	5,692,915	\$ 7,644,537	7·41	+ 938,940	19·75	+ 1,232,322	19·22
Clay products—										
Brick, common..... No.	627,715,319	5,105,354	4·77	645,550,517	5,420,890	5·25	+ 17,835,198	2·34	+ 315,536	6·18
Brick, pressed..... "	67,895,034	807,294	0·75	87,350,539	1,094,582	1·06	+ 19,455,505	23·65	+ 287,283	35·59
Brick, paving..... "	4,214,917	78,980		5,220,400	79,444		+ 1,005,483	23·86	+ 464	0·59
Brick, moulded and ornamental.....	703,345	16,092		605,643	11,281		- 97,702	13·89	- 4,811	29·89
Fireclay, and fireclay products.....		50,215			89,130				+ 38,915	77·50
Fireproofing and architectural terra-cotta.....		176,979	0·16		409,585	0·39			+ 232,606	131·00
Pottery.....		250,924	0·23		102,493	0·10			+ 148,431	59·15
Sewer-pipe.....		774,110	0·72		812,716	0·79			+ 38,606	4·99
Tile, drain..... No.	24,562,648	370,008	0·34		339,812	0·32			- 30,196	8·16
Lime..... Bus.	5,848,146	1,137,079	1·06	7,533,525	1,517,599	1·47	+ 1,685,379	23·82	+ 380,520	33·46
Sand-lime brick..... No.	44,593,541	371,857	0·34	51,535,243	442,427	0·43	+ 6,941,702	15·57	+ 70,570	18·98
Sand and gravel (exports)..... Tons.	624,824	407,974	0·38	573,494	408,110	0·39	- 51,330	8·22	+ 136	0·03
Slate..... Squares.	3,959	18,492		1,833	8,248		- 2,126	53·70	- 10,244	55·39
Stone—										
Granite.....		739,516	0·69		1,119,865	1·08			+ 380,349	51·43
Limestone.....		2,249,576	2·10		2,594,926	2·51			+ 345,350	15·35
Marble.....		158,779	0·14		162,783	0·15			+ 4,004	2·52
Sandstone.....		502,148	0·47		451,183	0·43			- 50,965	10·15
Total.....		19,627,592	18·37		22,709,611	22·00			+ 3,082,019	13·57
Grand total.....		106,823,623	100·00		103,220,994	100·00			- 3,602,629	3·37

The production of metalliferous products in 1911 was valued at \$46,105,423, being 44.67 per cent of the total mineral output and a decrease in value from the previous year of \$3,333,450, or about 6½ per cent. The value of the production of non-metalliferous products (excluding structural material and clays) in 1911 was \$34,405,960, being 33.33 per cent of the total mineral output and a decrease of \$3,351,198, or 8.8 per cent from the value of the production in 1910. The value of the production of clay, lime and stone, and other structural materials in 1911 was \$22,709,611, or 22 per cent of the total production; and an increase of \$3,082,019, or 13.5 per cent, over the 1910 output.

The most important product in point of value was coal which contributed over 25½ per cent of the total production; silver, next in importance, contributed over 16½ per cent, nickel nearly 10 per cent; gold almost 9½ per cent; clay products 8 per cent; cement 7½ per cent; copper 6½ per cent.

The falling off in production in 1911, while apparently quite general among the metals, is to be ascribed in large part to the long continued strike of coal miners in the Province of Alberta and the Crownsnest district of British Columbia. The scarcity of coal and coke in these Provinces seriously interfered with the smelting industry of British Columbia and undoubtedly resulted in a smaller production of copper, silver, and gold than would otherwise have been made. In the case of iron, while a decrease is shown in the quantity of pig iron attributable to Canadian ore, the total production of pig iron from domestic and imported ores showed a very large increase over the 1910 output.

The prices of metals upon which the value of the production directly depends did not vary greatly during the year, in fact the averages have been fairly stationary during the past three years. The prices of copper, lead, and silver on the New York market were fractionally lower in 1911. Spelter was fractionally higher and nickel showed no change. On the London market and in Montreal which follows London, lead showed an increased average price.

	1907.	1908.	1909.	1910.	1911.
	Cts.	Cts.	Cts.	Cts.	Cts.
Copper, New York.....	20·004	13·208	12·982	12·733	12·376
Lead "	5·325	4·200	4·273	4·446	4·420
" London	4·143	2·935	2·839	2·807	3·035
" Montreal*	4·701	3·364	3·268	3·246	3·480
Nickel, New York.....	45·000	43·000	40·000	40·000	40·000
Silver "	65·327	52·864	51·503	53·486	53·304
Spelter "	5·962	4·720	5·503	5·520	5·758
Tin "	38·106	29·465	29·725	34·123	42·281

* Quotations furnished by Messrs. Thomas Robertson & Company, Montreal, Que.

Amongst the non-metallic products the most serious falling off was in coal, due as already intimated to labour difficulties; smaller decreases are shown in

corundum, mica, and petroleum, while on the other hand substantial increases were made in the sales of asbestos, gypsum, natural gas, pyrites, and salt. The structural materials and clay products nearly all show an increased production.

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 subjected 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 1911, was \$52,546,593, as compared with \$51,856,862 in 1910. This value includes for 1911 mine products to the value of \$41,121,688 and manufactures valued at \$11,424,905. Practically the whole of the Canadian production of copper, nickel, and silver is exported, also a very large proportion of the production of gold, asbestos, and mica. There are also considerable exports of coal. These items alone contribute about 74.4 per cent of the value of the mine products exported. Manufactures of mine products exported consist chiefly of iron and steel goods, aluminium, calcium carbide, lime, acetate of lime, and coke.

The United States is the chief destination of Canada's mine exports, about 77.4 per cent having been exported to that country during the fiscal year 1910-1911, and about 15.7 per cent to Great Britain.

A great variety of mineral products, chiefly in a manufactured or semi-manufactured condition, are annually imported into Canada. The total value of these imports during the calendar year 1911 was \$181,839,077, as compared with imports valued at \$147,305,012 in 1910. Of the total imports in 1911, nearly \$48,000,000 in value consisted of the cruder forms of mineral products such as coal, ores of metals, diamonds unset and bort, asphaltum, alumina, clays, etc., whilst iron and steel and manufactures thereof were imported to the value of over \$93,000,000. Imports of the metals copper, gold, silver, lead, platinum, tin, and zinc, and manufactures thereof, reached a total value of over \$18,750,000, and imports of petroleum and clay products exceeded \$11,000,000 in value.

The great excess of imports over exports would seem to indicate the existence of large opportunities for the development not only of Canada's mineral production but also of many manufacturing industries which utilize mine products as raw materials. The fact, however, must not be overlooked that the geographical situation of Canada and the United States, separated by an imaginary barrier 3,000 miles in length, evidently results, notwithstanding the tariffs on both sides, in a mutually advantageous interchange of trade. Then we find large exports as well as imports of coal and of agricultural implements. The continued large export of crude unrefined ores and metal products and the cor-

responding imports of refined and manufactured metal products still point to opportunities for the development of metallurgical industries as well as industries for the treatment, refinement, and manufacture of non-metallic products.

**Exports of the Products of the Mine and of Manufactures of Mine Products—
Calendar Years 1910 and 1911.**

	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
MINE PRODUCTS.				
		\$		\$
Arsenic.....	Lbs. 4,512,673	173,932	4,125,558	81,761
Asbestos.....	Tons. 71,485	2,108,632	75,120	2,067,259
Barytes.....	Cwt. 5	150		
Chromite.....	Tons. 15	150		
Coal.....	" 2,377,049	6,077,350	1,500,639	4,357,074
Copper, fine in ore, etc.	Lbs. 56,964,127	5,840,553	55,208,054	5,459,770
" black or coarse and in pigs.	"		79,656	7,955
Feldspar.....	Tons. 15,601	47,962	16,150	56,085
Gold.....	" 5,491,051	5,491,051		7,493,523
Gypsum.....	Tons. 346,081	416,725	362,102	425,161
Lead, in ore, etc.	Lbs. 46,800	1,308	65,100	1,826
" in pig, etc.	" 7,712,253	248,174	71,961	2,806
Mica.....	" 937,263	330,903	693,940	242,548
Mineral pigments.....	" 3,491,737	29,839	3,999,925	27,070
Mineral water.....	Gals. 16,136	7,169	26,495	12,952
Nickel, in ore, etc.	Lbs. 36,014,782	4,039,040	32,619,971	3,076,396
Oil, refined.....	Gals. 2,818	462	489	73
Ores—				
Antimony.....	Tons. 239	14,095	57	4,946
Corundum.....	"		742	77,777
Iron.....	" 114,499	324,186	37,686	133,411
Manganese.....	" 4	160	4	225
Other ores.....	" 9,534	641,425	6,919	375,690
Phosphates.....	"		3	100
Platinum.....	Ozs. 2,254	62,776	39	1,961
Plumbago.....	Cwt. 15,768	53,008	16,263	43,249
Pyrites.....	Tons. 30,434	110,071	32,102	120,585
Salt.....	Lbs. 275,200	2,618	454,600	5,055
Sand and gravel.....	Tons. 624,824	407,974	573,494	408,110
Silver.....	Ozs. 30,699,770	15,649,537	31,216,725	15,807,366
Stone, building.....	Tons. 63,407	18,867	83,767	25,103
" ornamental.....	" 446	3,352	168	1,796
" for manufacture of grindstones..	" 308	338	15	22
Other products of the mine.....		134,462		204,028
Total mine products.....		42,236,270		41,121,688
MANUFACTURES.				
Acetate of lime.....	Lbs.		7,428,157	117,904
Agricultural implements—				
Cultivators.....	No.		5,923	138,377
Harrows.....	" 8,924	115,068	5,412	95,904
Harvesters.....	" 11,382	1,234,794	14,355	1,432,911
Hay rakes.....	" 6,344	205,342	11,085	317,842
Mowing machines.....	" 18,745	634,326	22,859	773,274
Parts of.....		575,848		796,246
Ploughs.....	No. 16,888	540,677	20,437	508,095

Exports of the Products of the Mine and of Manufactures of Mine Products—
Calendar Years 1910 and 1911—Continued.

	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
MANUFACTURES.—Continued.		\$		\$
Reapers..... No.	3,411	220,517	9,385	574,315
Seeders..... "	256	13,727	174	13,795
Threshing machines..... "	29	3,576	339	92,442
All other..... "		1,163,722		1,533,728
Aluminium, in bars..... Cwt.	77,224	1,160,242	49,901	747,587
" manufactures of..... "		3,741		1,555
Bricks..... M	390	2,762	394	3,977
Calcium carbide..... Lbs.			4,888,975	142,402
Cement..... "		12,914		4,067
Clay, manufactures of..... "		9,061		2,071
Coke..... Tons.	57,971	250,715	9,852	39,323
Earthenware, and all manufactures of..... "				6,101
Grindstones, manufactured..... "		23,164		29,184
Gypsum and plaster ground..... "		12,306		4,429
Iron and steel:—				
Castings, N. E. S..... "		51,958		33,441
Gas buoys and parts of..... "				68,485
Hardware, tools, etc..... "		38,844		94,513
" N. E. S..... "		43,472		44,199
Machinery (Linotype machines)..... "		39,433		12,239
" N. E. S..... "		301,961		431,493
Pig iron..... Tons.	9,763	296,310	5,870	271,968
Scrap iron and steel..... Cwt.	233,264	171,603	84,153	54,618
Sewing machines..... No.	17,834	188,196	18,619	213,075
Steel and manufactures of..... "		1,110,925		769,692
Stoves..... No.	1,058	15,832	1,176	20,626
Typewriters..... "	5,970	409,326	4,771	318,935
Vehicles—				
Automobiles..... "	337	433,663	1,509	1,184,506
" parts of..... "				45,798
Bicycles..... No.	72	2,710	90	5,936
" parts of..... "		28,654		50,323
Lime..... "		44,762		39,536
Metals, N. O. P..... "		133,426		175,716
Naphtha and gasoline..... Gals.			23,959	4,427
Plumbago, manufactures of..... "		66,658		33,956
Stone, building..... "		80		456
" ornamental..... "		5,272		980
Tar..... "				56,669
Tin, manufactures of..... "				30,176
Total manufactures.....		9,620,592		11,424,905
Grand total.....		51,856,862		52,546,593

EXPORTS.

Showing Destination of Mine Products during the Fiscal Years
1909-10 and 1910-11.

Destination.	1909-10 Value.	1910-11 Value.
	\$	\$
United States	33,488,464	33,129,505
United Kingdom	3,820,574	6,726,015
Newfoundland and Labrador	528,031	580,632
Alaska . . . . .	.....	392,715
Hong Kong	216,514	376,553
Mexico	325,153	302,055
Chinese Empire	777,147	301,870
Germany in Europe	43,975	239,596
Belgium	177,675	220,244
Australia and Tasmania	212,950	161,017
France	110,222	116,326
Japan	202,071	85,247
Bermuda	53,071	66,525
St. Pierre and Miquelon Islands	28,460	24,941
Holland and Netherlands	17,218	21,609
British West Indies	13,552	11,904
Cuba	14,946	10,161
Italy	10,956	8,000
British Possessions (All other)	10,903	2,768
Central American States and Costa Rica	66	2,376
Uruguay . . . . .	.....	1,742
New Zealand	8,518	2,309
Argentina	4,516	1,383
San Domingo . . . . .	.....	1,000
Austria-Hungary	1,030	720
Switzerland	73	300
Dutch Guiana . . . . .	.....	48
Other countries	20,942	.....
	40,087,017	42,787,561

IMPORTS.

Imports of Products of the Mine and Manufactures of Mine Products—
Calendar Years 1910 and 1911.

Products.	1910	1911
	Value.	Value.
	\$	\$
Alumina.....	403,283	372,009
Alum, alum cake, and chloralum	26,145	88,516
Aluminium and manufactures	756,550	648,046
Antimony.....	23,296	36,405
Antimony salts.....	9,152	2,418
Arsenic, oxide and sulphide of.....	15,837	6,823
Asbestos.....	230,489	319,815
Asphaltum.....	441,945	558,784
Bells and gongs.....	111,185	104,965
Bismuth.....	6,996	7,012
Blanc fixe and satin white.....	22,726	29,796
Blast furnace slag.....	105,574	141,136
Borax.....	103,177	120,313
Brick and tile.....	943,846	1,555,347
Brick, fire, of a kind not made in Canada.....	811,927	814,414
Bromine.....	323	40
Burrstones.....	854	1,642
Cement, hydraulic, Portland and manufactures.....	476,113	848,416
Chalk, Cornwall stone, feldspar, fluorspar, etc.....	121,959	147,640
Clays.....	292,508	270,247
Coal: anthracite, bituminous, slack, and run of mine.....	28,450,001	30,292,591
Coal tar and coal pitch.....	74,852	81,555
Coke.....	1,908,725	1,843,248
Coke, ground, for electric batteries.....		6,840
Copper and manufactures of.....	4,369,773	4,936,769
Cryolite.....	54,561	29,602
Crucibles, clay or plumbago.....	52,896	56,814
Chloride of lime.....	116,923	118,501
Cyanides, of potassium, sodium, cyanogen, or cpd of bromine.....	90,639	94,397
Diamonds, unset, and bort.....	2,231,824	2,612,150
Earthenware.....	2,283,116	2,516,536
Earths, crude.....	8,228	9,398
Electric carbons.....	56,704	56,529
Emery.....	133,290	150,444
Fertilizers, compound or manufactured.....	388,467	386,645
Flint, quartz, silic, etc.....	46,942	56,624
Foundry facings.....	23,441	21,816
Fullers earth.....	6,015	7,024
Fossils.....	3,171	1,130
Gannister.....	2,344	2,821
Gold and silver and manufactures of.....	2,393,860	2,480,017
Graphite and manufactures of.....	59,957	56,132
Grindstones.....	71,394	123,356
Gypsum and plaster of Paris.....	169,798	205,782
Iron and steel.—Total* 1910: \$75,753,594; 1911: \$93,165,437		
Agricultural implements.....	3,816,505	4,508,094
Bar iron or steel, rolled, whether in coils, bundles, rods or bars.....	2,901,814	3,017,349
Castings, iron or steel, N. O. P.....	547,731	794,953
Cutlery.....	1,013,065	1,041,412
Engines, locomotive and others.....	2,415,497	3,221,249
Iron, pig.....	3,400,183	2,681,795
Iron or steel blooms, billets, puddled bars and loops, ingots, clogged ingots, slabs, or other forms, N. O. P., etc.....	790,195	1,671,207
" " rolled, angles, tees, beams, channels, girders, etc.....	4,843,429	5,091,695
" " rolled, not less than 30" wide nor less than 1/2" thick.....	1,771,330	1,593,123
" " skelp, sheared or rolled in grooves, etc.....	1,813,131	1,914,819
" " sheets, flat galvanized, Canada plates, etc.....	4,446,505	4,487,900
Machines and machinery.....	19,979,850	28,250,006
Steel rails.....	756,531	2,583,486

IMPORTS.

Imports of Products of the Mine and Manufactures of Mine Products—
Calendar Years 1910 and 1911—Continued.

Products.	1910. Value.	1911. Value.
	\$	\$
Iron and steel— <i>Con.</i>		
Tubing.....	2,025,021	2,372,182
Wire.....	3,572,046	3,622,766
All other iron and steel and manufactures of.....	21,660,761	26,403,401
Iron sand.....	6,647	8,340
Kainite.....	4,905	9,262
Lead and manufactures of.....	833,743	1,049,276
Lime.....	138,847	161,985
Litharge.....	56,049	65,743
Lithographic stone.....	10,441	12,344
Manganese, oxide of.....	17,133	22,612
Magnesia.....	10,847	11,012
Meerschbaum.....	26	150
Mercury or quicksilver.....	63,460	67,416
Metallic alloys:		
Babbitt metal.....	24,931	35,073
Brass and manufactures of.....	2,862,686	3,218,942
Britannia metal.....	45,132	32,430
German silver, nickel, and nickel silver.....	123,521	147,315
Type metal.....	159	321
Mineral and bituminous substances.....	76,327	168,577
Mineral water, including aerated water.....	202,306	229,367
Nickel anodes.....	23,317	34,199
Ochres, etc.....	55,393	53,092
Ores of metals, N.O.P.....	4,302,801	4,014,748
Paraffin wax.....	58,673	76,661
Paraffin candles.....	21,433	30,763
Petroleum and products of.....	4,826,763	6,009,730
Phosphate (fertilizer).....	72,950	46,217
Platinum and manufactures of.....	102,318	176,101
Potash and manufactures of.....	191,912	203,989
Precious stones.....	306,984	344,659
Pumice.....	14,829	18,779
Salt.....	462,061	436,118
Saltpetre.....	90,488	101,082
Sand and gravel.....	196,766	240,613
Slate and manufactures of.....	142,285	169,685
Sand paper.....	148,384	164,474
Soda products: barilla, bichromate, caustic, salt, and salt cake.....	767,846	800,805
Stone and manufactures of (including marble).....	845,123	1,140,852
Soda, nitrate of.....	767,562	867,778
Sulphate of iron.....	10,094	4,773
Sulphur and phosphorus.....	476,684	450,875
Sulphuric acid.....	21,702	9,281
Talc.....		6,413
Tin and manufactures of (including tinware).....	4,045,256	5,442,551
Whiting and prepared chalk.....	129,599	136,022
Zinc and manufactures of.....	1,086,829	1,227,660
	147,305,012	181,839,077

METALLIC ORES AND PRODUCTS.

Antimony.—The production of antimony in 1911 was limited to a few pounds of refined antimony recovered at the lead refinery at Trail, B.C. Shipments of antimony ore in 1910 were reported as 364 tons valued at \$13,906. There was no production of refined antimony in 1910, but 61,207 pounds valued at \$4,285 were produced in 1909. An export of antimony ore in 1911 is reported of 57 tons valued at \$4,946, as against exports of 239 tons valued at \$14,095 in 1910. The imports of antimony or regulus thereof, in 1911, were 561,046 pounds valued at \$36,405, and of antimony salts 18,420 pounds valued at \$2,418 or a total value of imports of \$38,823. In 1910, the imports were antimony and regulus of 388,952 pounds valued at \$25,296, and antimony salts 94,330 pounds valued at \$9,152, or a total value of \$34,448.

Cobalt.—The mine owners received no payment on account of cobalt contents of ores shipped in 1911, as against \$51,986 received in 1910. Cobalt oxide and cobalt material are being produced in Canadian smelters, the production, in 1911, of cobalt oxide and nickel oxide being 154,174 pounds and of cobalt material and mixed cobalt and nickel oxides 1,260,832 pounds, the value being \$221,690. During 1910, the shipments as reported by the Ontario Bureau of Mines included 13,508 pounds of cobalt oxide valued at \$9,630, and 108,173 pounds of mixed oxides of nickel and cobalt valued at \$18,760.

Copper.—The production of copper contained in blister, matte or ore which was practically all exported was 55,648,011 pounds in 1911, valued at \$6,886,998, as compared with 55,692,369 pounds, valued at \$7,094,094, in 1910.

The exports in 1911 were reported as 55,287,710 pounds, valued at \$5,467,725, as against exports of 56,964,127 pounds, valued at \$5,840,553, in 1910. The total imports of copper in 1911 were valued at \$4,936,769; and included crude and manufactured copper to the extent of 37,352,237 pounds valued at \$4,721,480, together with other manufactures of copper of which the quantity is not recorded, valued at \$215,289. The copper imports in 1910 were valued at \$4,369,773, including 30,237,106 pounds of crude and manufactured copper, valued at \$4,219,451, and other copper manufactures of which the quantity is not recorded, valued at \$150,322.

Gold.—The total value of the production of gold in 1911 was \$9,781,077, representing 473,159 fine ounces of metal and showing a decrease of \$424,758 or over 4 per cent from the production of 1910, which was valued at \$10,205,835, representing 493,707 fine ounces.

The Yukon placer production in 1911 was \$4,580,000, as against \$4,550,000 in 1910.

Of the total production in 1911 about \$5,014,207 were derived from alluvial workings; \$513,991 as bullion from milling ores, and \$4,252,879 from ores and concentrates sent to smelters. In 1910, \$5,091,850 were derived from alluvial

workings; \$680,349 as bullion from milling ores, and \$4,433,628 obtained from ores and concentrates sent to smelters.

The exports of gold bearing dust, quartz, nuggets, and gold in ore, etc., in 1911, were valued at \$7,493,523, as against \$5,491,051 in 1910.

The imports of gold coin during the calendar year 1911 were \$20,437,799, and of gold bullion \$924,233.

Pig Iron.—The total production of pig iron in Canadian blast furnaces in 1911 was 917,535 tons valued at \$12,307,125, of which it is estimated 875,349 tons valued at \$11,693,721 should be credited to imported ores and 42,186 tons valued at \$613,404 to domestic ores. In 1910 the total production was 800,797 tons valued at \$11,245,622, of which 404,906 tons valued at \$1,650,849 were credited to Canadian ore.

The exports of pig iron, including ferro-products, in 1911, were 5,870 tons, valued at \$271,968, as against 9,763 tons valued at \$296,310 in 1910. The imports of pig iron in 1911 were 208,487 tons valued at \$2,610,939, and ferro-manganese, etc., 17,226 tons valued at \$429,465, as compared with imports in 1910 of pig iron 227,753 tons valued at \$3,122,695; charcoal pig iron 16,106 tons valued at \$242,152; and ferro-manganese 18,900 tons valued at \$464,741.

The total exports of iron and steel and manufactures thereof, in 1911, were valued at \$9,907,281, as against \$7,895,489 in 1910. The imports of iron and steel and manufactures thereof during the calendar year 1911 were valued at \$93,165,437, as compared with \$75,753,594 during the calendar year 1910.

Iron Ore.—The total shipments of iron ore from Canadian mines in 1911 were 210,344 tons, valued at \$522,319, as compared with 259,418 tons valued at \$574,362 in 1910. The exports of iron ore in 1911 were 37,686 tons, valued at \$133,411; as against 114,499 tons valued at \$324,186 exported in 1910. The quantity of imported iron ore used in Canada in 1911 was about 1,628,368 tons, as compared with 1,377,035 tons of imported ore used in 1910.

Lead.—The production of lead in 1911 was 23,784,969 pounds valued at \$827,717, as against 32,987,508 pounds, valued at \$1,216,249, in 1910. The exports of lead in 1911 were: lead in ore, etc., 65,100 pounds; pig lead 71,961 pounds—total 137,061 pounds; while in 1910 the exports were: lead in ore, etc., 46,800 pounds; pig lead 7,712,253 pounds—total 7,759,053 pounds. The total value of the imports of lead and manufactures of, in 1911, was \$1,049,276, as compared with imports in 1910 valued at \$833,743.

Nickel.—The production of nickel contained in nickel-copper matte produced in Canada and exported for refinement was, in 1911, 34,098,744 pounds, as compared with a production of 37,271,033 pounds in 1910. During 1911 there were smelted 610,834 tons of ore producing 32,607 tons of matte, as against 628,947 tons of ore smelted in 1910, producing 35,033 tons of matte. Small quantities of nickel oxide are also produced in connexion with the treatment of the Cobalt District silver ores. The exports of nickel contained in ore, matte,

etc., during 1911, were 32,619,971 pounds valued at \$3,676,396: being 5,023,393 pounds to Great Britain and 27,596,578 pounds to the United States. In 1910 the exports were 36,014,782 pounds valued at \$4,039,040: being 5,335,331 pounds to Great Britain and 30,679,451 pounds to the United States. The imports of nickel and nickel anodes in 1911 were valued at \$34,199, as against a value of \$23,317 imported in 1910.

Silver.—The production of silver contained in bullion, or estimated as recovered from mattes and ore, etc., exported was, in 1911, 32,559,044 fine ounces valued at \$17,355,272, as compared with a production of 32,869,264 fine ounces valued at \$17,530,455 in 1910. About 93.8 per cent of the production in 1911 was derived from "Cobalt District" of Ontario. The production of silver in 1905 was only 6,000,023 ounces, and in 1900, 4,468,225 ounces. The exports of silver contained in ores, mattes, etc., in 1911, were 31,216,725 ounces valued at \$15,807,366; as against exports of 30,699,770 ounces valued at \$15,649,537 in 1910. The imports of silver bullion during the calendar year 1911 were valued at \$847,645, as compared with bullion imports of \$502,772 in 1910.

Zinc.—The shipments of zinc ore in 1911 were 2,590 tons valued at \$101,072, as compared with shipments of 5,063 tons valued at \$120,003 in 1910. The total value of the imports of zinc and manufactures of zinc, in 1911, was \$1,227,660, as compared with imports valued at \$1,086,829 in 1910.

NON-METALLIC PRODUCTS.

Actinolite.—A production of 67 tons valued at \$736 was reported in 1911, as compared with 30 tons valued at \$330 in 1910.

Arsenic.—Smelter returns show a production in 1911 of 2,097 tons of arsenious oxide valued at \$76,237, as compared with a production in 1910 of 1,502 tons valued at \$75,328. There was also a production, in 1910, of 547 tons of arsenical ore valued at \$5,716.

The exports of arsenic in 1911 were 2,063 tons valued at \$81,761, as against 2,256 tons valued at \$173,932 exported in 1910. The imports of arsenious oxide in 1911 were 7,338 pounds valued at \$158, as compared with 260,415 pounds valued at \$6,891 in 1910. The imports of sulphate of arsenic in 1911 were 330,170 pounds, valued at \$6,665, and in 1910, 257,451 pounds valued at \$8,946.

Asbestos.—The shipments of asbestos in 1911 were 101,393 tons valued at \$2,922,062, and of asbestic 26,021 tons valued at \$21,046. The shipments in 1910 were 77,508 tons of asbestos valued at \$2,555,974, and 24,707 tons of asbestic valued at \$17,629. The shipments in 1911 consisted of 4,864.1 tons of crude asbestos valued at \$744,962, and 96,529 tons of mill stock valued at \$2,177,100. Considerable quantities both of crude and of mill stock were held in manufacturers' hands at the close of the year.

Exports in 1911 were 75,120 tons valued at \$2,067,259, as against 71,485 tons valued at \$2,108,632 in 1910.

Imports and manufactures of asbestos in 1911 were valued at \$319,815, and in 1910, \$230,489.

Chromite.—Shipments of chromite in 1911 were reported as 157 tons valued at \$2,587, as compared with shipments of 299 tons valued at \$3,734 in 1910.

Coal.—The production of coal in 1911 was 11,323,388 tons valued at \$26,467,646, as against 12,909,152 tons valued at \$30,909,779 in 1910. The exports of coal in 1911 were 1,500,639 tons valued at \$4,357,074, as compared with 2,377,049 tons valued at \$6,077,350 exported in 1910. The total imports of coal in 1911 were 14,558,892 tons valued at \$39,292,591, as against imports in 1910 of 10,597,982 tons valued at \$28,450,001.

The 1911 imports included 8,905,815 tons of bituminous round and run of mine coal, valued at \$18,407,603; 4,020,577 tons of anthracite and anthracite dust, valued at \$18,794,192; and 1,632,500 tons of bituminous slack, such as will pass through a $\frac{3}{4}$ " screen, valued at \$2,090,796.

In 1910 the imports included 5,966,466 tons of bituminous round and run of mine valued at \$11,919,341; 3,266,235 tons of anthracite and anthracite dust valued at \$14,735,062; and 1,365,281 tons of bituminous slack, such as will pass through a $\frac{3}{4}$ " screen, valued at \$1,795,598. The consumption of coal in 1911 was approximately 24,247,698 tons, as against 20,970,226 tons in 1910.

Coke.—The total quantity of oven coke made in 1911 was 954,388 tons, the quantity sold or used was 935,651 tons, valued at \$3,630,410; as compared with 901,269 tons made and 902,715 tons sold or used, valued at \$3,462,872, in 1910. The quantity of coal charged to coke ovens, in 1911, was 1,409,844 tons, as against 1,373,793 tons in 1910. The exports of coke in 1911 were 9,852 tons valued at \$39,323, and in 1910, 57,971 tons valued at \$250,715. The imports of coke in 1911 were 751,389 tons valued at \$1,843,248, as compared with imports of 737,088 tons valued at \$1,908,725 in 1910.

Corundum.—The total sales of grain corundum in 1911 were 1,472 tons valued at \$161,373, as compared with sales in 1910 of 1,370 tons valued at \$198,680.

Feldspar.—Shipments of feldspar in 1911 were 17,723 tons valued at \$51,939, as compared with 15,809 tons valued at \$47,667 shipped in 1910. The exports are recorded as 16,150 tons valued at \$56,085 in 1911 and 15,601 tons valued at \$47,962 in 1910.

Fluorspar.—About 34 tons valued at \$238 were shipped from the mine in 1911 and 2 tons valued at \$15 in 1910. Canadian steel furnaces in 1911 used 8,067 tons of fluorspar.

Graphite.—Shipments of crude and milled graphite during 1911 totalled 1,269 tons valued at \$69,576, as against 1,392 tons valued at \$74,087 shipped in

1910. The production of artificial graphite in 1911 was reported as 1,086 tons, as compared with 1,221 tons in 1910.

Exports of plumbago in 1911 are reported as 813 tons valued at \$43,249, and manufactures of plumbago valued at \$33,956. Exports in 1910 were: plumbago 788 tons valued at \$53,008, and manufactures of plumbago valued at \$66,658. Imports of graphite in 1911 were valued at \$112,946 and included: plumbago not ground, \$4,940; blacklead, \$14,172; plumbago ground and manufactures of, \$37,020; and crucibles of clay or plumbago, \$56,814. In 1910 the imports were valued at \$112,853, including: plumbago not ground, \$4,867; blacklead, \$10,048; plumbago ground and manufactures of, \$45,042; and crucibles of clay or plumbago, \$52,896.

Grindstones.—The production of grindstones, scythestones, and wood pulpstones, in 1911, was 4,566 tons valued at \$52,942, as compared with 3,973 tons valued at \$47,196 in 1910. The exports in 1911 included: stone for the manufacture of grindstones, 15 tons valued at \$22; and manufactured grindstones valued at \$29,184; the exports in 1910 were: stone for the manufacture of grindstones, 308 tons valued at \$338; and manufactured grindstones valued at \$23,164. The imports of abrasives in 1911 included: grindstones valued at \$123,356; burrstones, \$1,642; emery in bulk crushed or ground, \$46,274; manufactures of emery, carborundum, etc., \$104,170; pumice stone, \$18,779; also iron sand, \$8,340; sandpaper, \$164,474. The 1910 imports comprised: grindstones, valued at \$71,394; burrstones, \$354; emery in bulk crushed or ground, \$40,400; manufactures of emery, carborundum, etc., \$92,890, and pumice stone, \$14,829.

Gypsum.—The total shipments of gypsum crude and calcined, in 1911, were 518,383 tons valued at \$993,394, as compared with shipments of 525,246 tons valued at \$934,446 in 1910. The tonnage of gypsum mined or quarried in 1911 was 495,979 tons, and the quantity calcined 76,718 tons. In 1910, 548,019 tons of gypsum were mined or quarried and 69,889 tons calcined. The shipments in 1911 included: crude gypsum, 449,823 tons valued at \$481,077; ground gypsum, 7,149 tons valued at \$23,125, and calcined gypsum, 61,411 tons valued at \$489,192. In 1910 shipments comprised: crude gypsum, 469,573 tons valued at \$508,686; ground gypsum, 6,121 tons valued at \$17,390, and calcined gypsum, 49,552 tons valued at \$408,370. The exports of gypsum in 1911 were: 362,102 tons of crude gypsum valued at \$425,161, and gypsum ground or calcined valued at \$4,429. The 1910 exports were: 346,081 tons of crude gypsum valued at \$416,725, and gypsum ground or calcined valued at \$12,306.

The imports of gypsum in 1911 were valued at \$205,782, including: crude gypsum, 2,035 tons valued at \$11,792; ground gypsum, 11,208 tons valued at \$3,619, and plaster of Paris, 28,518 tons valued at \$190,371. The total value of imports in 1910 was \$169,798, made up of: crude gypsum, 12,271 tons valued at \$21,073; ground gypsum, 6,690 tons valued at \$13,242, and plaster of Paris, 19,045 tons valued at \$135,483.

Magnesite.—Shipments of magnesite in 1911 were 991 tons valued at \$5,531, and in 1910, 323 tons valued at \$2,160.

Manganese.—There was a shipment of 5½ tons valued at \$300 in 1911—no shipment reported in 1910. The exports in 1911 were 4 tons valued at \$225, as against 4 tons valued at \$160 in 1910. The 1911 imports included 962 tons manganese oxide valued at \$22,612, as compared with 649 tons valued at \$17,133 in 1910.

Mica.—The value of the mica production in 1911 as reported by mine operators was \$128,677, as compared with \$190,385 in 1910. The exports of mica in 1911 were 693,940 pounds valued at \$242,548, as against 937,263 pounds valued at \$330,903 in 1910.

Mineral Pigments.—Shipments of barytes in 1911 were 50 tons valued at \$400—no production was reported in 1910. The production of iron ochres in 1911 was 3,622 tons valued at \$28,333, as compared with 4,813 tons valued at \$33,185 in 1910.

The exports of iron oxides in 1911 were 2,000 tons valued at \$27,070, as against 1,746 tons valued at \$29,839 in 1910. The imports in 1911 were: ochres and ochrey earth and raw siennas, 1,477 tons valued at \$32,032; and oxides, dry fillers, fireproof umbers, and burnt siennas, 722 tons valued at \$21,060, as compared with imports in 1910, comprising: ochres and ochrey earth and raw siennas, 1,246 tons valued at \$31,926; and oxides, dry fillers, fireproof umbers, and burnt siennas, 868 tons valued at \$23,467.

Mineral Water.—The value of the production of mineral water in 1911 for which returns were received was \$223,758, as compared with a value of \$199,563 in 1910. The imports of mineral and aerated waters in 1911 were valued at \$229,367, as against a value of \$202,306 in 1910.

Natural Gas.—The value of the production of natural gas in 1911 was \$1,917,678, as compared with a value of \$1,346,471 in 1910.

Peat.—Shipments of peat for fuel purposes in 1911 were 1,463 tons valued at \$3,817, as compared with 841 tons valued at \$2,604 in 1910.

Petroleum.—The production of crude petroleum shows a further falling off in 1911, the production being 291,092 barrels or 10,188,219 gallons valued at \$357,073; as compared with 315,895 barrels or 11,056,337 gallons valued at \$388,550, in 1910.

Exports of refined oil in 1911 were 23,959 gallons valued at \$4,427, and 2,818 gallons valued at \$462 in 1910. There was an export in 1911 of naphtha and gasoline of 23,959 gallons valued at \$4,427, and also an export of other oils, N.E.S. of 745,318 gallons valued at \$85,634, which may have included products of petroleum.

While the production has been decreasing the imports have been increasing; the total import of petroleum oils, crude and refined, in 1911, was 116,892,689

gallons valued at \$6,009,730, in addition to 1,959,787 pounds of paraffin wax and candles valued at \$106,424. The oil imports included: crude oil, 71,653,251 gallons valued at \$2,188,870; refined and illuminating oils, 13,690,962 gallons valued at \$722,403; gasoline, 23,338,773 gallons valued at \$1,976,032; lubricating oils, 5,308,917 gallons valued at \$806,452, and other petroleum products, 2,900,786 gallons valued at \$315,973.

The total imports in 1910 were 84,629,334 gallons valued at \$4,826,763, in addition to 1,362,235 pounds of paraffin wax and candles valued at \$80,106. The oil imports in 1910 included: crude oil, 53,604,053 gallons valued at \$1,639,358; refined and illuminating oils, 7,656,727 gallons valued at \$502,364; gasoline, 16,679,691 gallons valued at \$1,693,296; lubricating oils, 4,081,257 gallons valued at \$718,381, and other petroleum products, 2,607,606 gallons valued at \$273,364.

Phosphate.—Shipments of phosphate or apatite in 1911 were 621 tons valued at \$5,206, as compared with 1,478 tons valued at \$12,578 shipped in 1910. The exports in 1911 were 3 tons valued at \$100 and no exports reported for 1910. There was also an export of phosphorus, in 1911, of 524,370 pounds valued at \$76,608. The imports of phosphate rock (fertilizer) in 1911 were valued at \$46,217; phosphorus, 14,818 pounds valued at \$4,384, and manufactured fertilizers valued at \$386,645. The imports in 1910 included phosphate rock (fertilizer), valued at \$72,950; phosphorus, 6,752 pounds valued at \$2,065, and manufactured fertilizers valued at \$388,467.

Pyrites.—The production of pyrites in 1911 was 82,666 tons valued at \$365,820, as compared with 53,870 tons valued at \$187,064 in 1910. The exports of pyrites in 1911 were 32,102 tons valued at \$120,585, as against exports of 30,434 tons valued at \$110,071 in 1910. The imports of brimstone or sulphur in 1911 were 21,931 tons valued at \$446,491, as against 22,835 tons valued at \$474,619 in 1910.

Quartz.—The production of quartz in 1911 was reported as 60,526 tons valued at \$83,865, compared with a production in 1910, of 88,205 tons valued at \$91,951. There were imported during 1911, 394 tons of silex or crystallized quartz, valued at \$7,518, and 3,766 tons flint valued at \$49,106; and in 1910, 628 tons of silex, valued at \$11,996.

Salt.—The total sales of salt in 1911 were 91,582 tons valued at \$443,004 (exclusive of packages). The value of the packages used was \$198,789. In 1910 the sales were 84,092 tons valued at \$409,624, and value of packages used, \$173,446.

Exports of salt in 1911 were 454,600 pounds, valued at \$5,055, and in 1910, 275,200 pounds, valued at \$2,618. The total imports of salt in 1911 were valued at \$436,118, and included: 23,176 tons valued at \$109,793, subject to duty; and 101,174 tons valued at \$326,325, duty free. The 1910 imports were valued at \$462,061 and comprised 20,174 tons valued at \$97,326 subject to duty; and 108,794 tons duty free valued at \$364,735.

Among the imports of soda products in 1911 are included: soda ash or barilla, 44,682,937 pounds valued at \$375,132; soda bichromate, 327,307 pounds valued at \$19,193; caustic soda in packages of 25 pounds or more, 13,708,922 pounds valued at \$253,612; sal soda, 10,202,422 pounds, valued at \$64,107; nitrate of, 58,808,637 pounds, valued at \$367,778, and sulphate of soda, 13,782,241 pounds, valued at \$88,761.

Talc.—The production of talc in 1911 was 7,300 tons valued at \$22,100, as against 7,112 tons valued at \$22,308, in 1910. Imports of talc for the nine months ending December, 1911, were 263 tons valued at \$6,413.

Tripolite.—Twenty tons of tripolite valued at \$122 were shipped in 1911, and 22 tons valued at \$134 in 1910.

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

Cement.—The total sales of cement in 1911 were 5,692,915 barrels, valued at \$7,644,537, as against 4,753,975 barrels, valued at \$6,412,215, sold in 1910, showing an increase of 938,940 barrels. The exports of cement in 1911 were valued at \$4,067, as compared with exports valued at \$12,914 in 1910.

The imports of cement in 1911 included: manufactures of cement valued at \$7,430; hydraulic cement, 26,655 hundredweight, valued at \$6,107; and Portland cement, 2,316,707 hundredweight (661,916 barrels), valued at \$834,879. The imports in 1910 were: manufactures of cement, valued at \$7,718; hydraulic cement, 365 hundredweight, valued at \$349; and Portland cement, 1,222,586 hundredweight (349,310 barrels), valued at \$468,046.

The consumption of Portland cement in Canada in 1911 was approximately 6,354,831 barrels, as compared with 5,103,285 barrels in 1910.

Clay Products.—The total value of the production of clay products in Canada in 1911 was \$8,359,933, as compared with a total value of \$7,629,956 in 1910. Brick and tile products alone were valued in 1911 at \$6,946,009, as against \$6,377,728 in 1910. The value of sewerpipe production in 1911 was \$812,716, as compared with \$774,110 in 1910. The only clay products exported in 1911 were 394,000 building brick, valued at \$3,977, and manufactures of clay valued at \$2,071; against 390,000, valued at \$2,762, in 1910, and manufactures valued at \$9,061. The total imports of clay products in 1911 were valued at \$5,156,544, and included: brick and tile valued at \$2,369,761; earthenware and chinaware, \$2,516,536, and clays valued at \$270,247. The total imports in 1910 were valued at \$4,331,397, comprising: brick and tile, \$1,755,773; earthenware and chinaware, \$2,283,116, and clays, \$292,508.

Lime.—The total production of lime in 1911 was 7,533,525 bushels, valued at \$1,517,756, as compared with 5,848,146 bushels, valued at \$1,137,079, in 1910.

The exports of lime in 1911 were valued at \$39,536, as against exports valued at \$44,762, in 1910. The imports of lime in 1911 were 228,538 barrels, valued at \$161,985, and in 1910, 212,502 barrels valued at \$138,847.

Sand-Lime Brick.—The total sales of sand-lime brick in 1911 by 16 firms reporting were 51,535,243, valued at \$442,427, an average value of \$8.58 per thousand. The sales in 1910 by 13 firms reporting were 44,593,541 brick, valued at \$371,857, an average of \$8.34 per thousand.

Slate.—The production of slate in 1911 was 1,833 squares valued at \$8,248, and 3,959 squares valued at \$18,492, in 1910.

The imports of slate in 1911 were valued at \$169,685, and included: roofing slate valued at \$83,075; school writing slate, \$35,049; slate pencils, \$6,036, and manufactures of slate, \$45,525. The imports in 1910 were valued at \$142,285, comprising: roofing slate, \$67,063; school writing slate, \$31,397; slate pencils, \$6,948, and manufactures of slate, \$36,877.

Stone.—The total value of the production of stone of all kinds in 1911 was \$4,328,757, as compared with a value of \$3,650,019 in 1910. The value of stone exports in 1911 was \$28,335, as against \$27,571 in 1910; and the total value of stone imported in 1911 was \$1,140,846, as against imports valued at \$845,123, in 1910.

The production in 1911 included: granite, valued at \$1,119,865; limestone, \$2,594,926; marble, \$162,783; and sandstone, \$451,183. In 1910 the production of granite was valued at \$739,516; limestone, \$2,249,576; marble, \$158,779, and sandstone, \$502,148.

Classifying the output according to the purposes for which the stone was used, the production in 1911 comprised: building stone, valued at \$1,368,693; ornamental and monumental stone, \$303,050; paving and curbstone, \$233,723; rubble, \$460,803; crushed stone, \$1,509,495; and furnace flux, \$452,990; while in 1910 the production included: building stone, valued at \$1,504,001; ornamental and monumental stone, \$147,421; paving and curbstone, \$239,668; rubble, \$352,000; crushed stone, \$975,379, and furnace flux, \$431,550.

PRODUCTION BY PROVINCES.

A summary of the mineral production by provinces in 1910 and 1911 is shown in the accompanying tables, in the first of which the total production in the several provinces, and the percentage of each, are given for the past three years. It will be observed that the largest production during each year has been from the Province of Ontario, British Columbia occupying second place. These two Provinces together contributed about 62 per cent of the total production in 1911. The Province of Alberta occupied fourth place in mineral production in 1910 but was again displaced by Quebec in 1911.

The last table shows the total mineral production of Canada by provinces for the years 1899 to 1911 inclusive.

Mineral Production by Provinces, 1909, 1910, and 1911.

Province.	1909.		1910.		1911.	
	Value of production.	Per cent of total.	Value of production.	Per cent of total.	Value of production.	Per cent of total.
	\$	%	\$	%	\$	%
*Nova Scotia.....	12,504,810	13·62	14,195,730	13·29	15,409,397	14·93
New Brunswick.....	657,635	0·71	581,942	0·54	612,830	0·59
Quebec.....	7,086,265	7·72	8,270,136	7·74	9,304,717	9·01
Ontario.....	37,374,577	40·70	43,538,078	40·76	42,796,162	41·46
Manitoba.....	1,193,377	1·30	1,500,359	1·40	1,791,772	1·74
Saskatchewan.....	456,246	0·50	498,122	0·47	636,706	0·62
Alberta.....	6,047,447	6·58	8,996,210	8·42	6,662,673	6·46
British Columbia.....	22,479,006	24·48	24,478,672	22·92	21,299,305	20·63
North West Territories..	4,032,678	4·39	4,764,474	4·46	4,707,432	4·56
Dominion.....	91,831,441	100·00	106,823,623	100·00	103,220,994	100·00

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

Mineral Production of Nova Scotia, 1910 and 1911.

Product.	1910.		1911.		
	Quantity.	Value.	Quantity.	Value.	
		\$		\$	
Gold.....	Ozs.	7,928	163,891	7,761	160,854
Iron ore sold for export.....	Tons.	18,134	51,330	22	50
Pig iron from Canadian ore (a).....	"	4,787	57,444	.....	.....
Coal.....	"	6,431,142	12,919,705	7,004,420	14,071,379
Grindstones.....	"	3,586	43,700	380	3,382
Gypsum.....	"	400,455	458,638	353,999	406,457
Barytes.....	"	.....	.....	50	400
Manganese.....	"	.....	.....	5½	300
Tripolite.....	"	22	134	20	122
Clay products.....	.....	.....	.....	.....	274,249
Stone.....	.....	.....	.....	.....	292,914
Lime.....	Bus.	55,750	13,490	639,200	130,555
Other products.....	.....	.....	.....	.....	68,735
Total.....	.....	.....	14,195,730	.....	15,409,397

(a) The total production of pig iron in Nova Scotia in 1910 was 350,287 tons valued at \$4,203,444, and in 1911, 390,242 tons valued at \$4,682,904.

Mineral Production of New Brunswick, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Iron ore sold for export..... Tons.	5,336	15,075	31,120	69,464
Coal..... "	55,455	110,910	55,781	111,562
Grindstones..... "	387	3,496	4,186	49,560
Gypsum..... "	90,236	213,579	93,205	115,044
Mineral water..... "		16,000		19,843
Petroleum..... Bls.	1,485	1,826	2,461	3,019
Clay products..... "		56,475		38,000
Lime..... Bus.	470,050	105,593	613,728	132,897
Stone..... "		58,988		73,441
Total.....		581,492		612,830

Mineral Production of Quebec, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Iron ore sold for export..... Tons.			3,616	6,479
Gold..... Ozs.	124	2,565	613	12,672
Copper..... Lbs.	877,347	111,757	2,436,190	301,503
Pig iron from Canadian ore (a)..... Tons.	2,474	65,156	379	9,949
Silver..... Ozs.	7,593	4,061	18,435	9,827
Asbestos and asbestic..... Tons.	102,215	2,573,603	127,414	2,943,108
Chromite..... "	299	3,734	157	2,587
Feldspar..... "	90	1,800	17	255
Magnesite..... "	323	2,160	991	5,631
Mica..... "		87,295		69,465
Ochres..... "	4,813	33,185	3,612	28,173
Mineral water..... "		68,194		63,637
Peat..... "	70	2-0	200	800
Phosphate..... "	1,456	12,386	586	4,909
Pyrites..... "	24,242	102,162	39,122	247,555
Quartz..... "	805	1,006	548	684
Graphite..... "	155	16,000	374	33,084
Cement..... Bls.	1,563,714	1,951,646	1,614,730	1,963,439
Clay products..... "		1,442,842		1,341,467
Lime..... Bus.	1,227,555	299,126	1,428,392	356,453
Slate..... Squares.	3,959	18,492	1,833	8,248
Stone..... "		1,469,686		1,894,892
Total.....		8,270,136		9,304,717

(a) The total production of pig iron in Quebec in 1910 was 3,237 tons valued at \$85,255; in 1911, 658 tons valued at \$17,282.

There was also in this Province an important production of aluminium from imported ores.

Mineral Production of Ontario, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Copper..... Lbs.	12,259,016	2,453,213	17,932,263	2,219,297
Gold..... Ozs.	3,089	63,849	2,062	42,625
Pig iron from Canadian ore (b)..... Tons.	97,645	1,528,249	41,807	603,455
Iron ore sold for export..... "	90,979	257,781	5,379	12,577
Nickel..... Lbs.	37,271,033	11,181,310	34,098,744	10,229,623
Cobalt..... "		51,986		
Cobalt oxide and nickel oxide..... Lbs.			154,174	
Cobalt mineral and mixed cobalt and nickel oxide..... "			1,260,832	221,690
Silver..... Ozs.	30,366,366	16,241,755	30,540,754	16,279,443
Zinc ore..... Tons.	576	5,760		
Actinolite..... "	30	330	67	736
Arsenious oxide..... "	1,502	75,328	2,097	76,237
Corundum..... "	1,870	198,680	1,472	161,873
Feldspar..... "	15,719	45,867	17,706	51,634
Fluorspar..... "	2	15	34	238
Graphite..... "	1,237	58,087	895	36,492
Gypsum..... "	15,055	67,229	27,399	98,018
Mica..... "		103,090		59,212
Mineral water..... "		111,369		136,778
Natural gas..... "		1,271,303		1,807,513
Ochres..... Tons.			10	160
Peat..... "	771	2,324	1,263	3,017
Petroleum..... Bls.	314,410	386,724	288,631	354,054
Phosphate..... Tons.	22	192	35	297
Pyrites..... "	29,628	84,902	43,544	118,265
Quartz..... "	87,400	90,945	59,978	83,181
Salt..... "	84,092	409,624	91,582	443,004
Talc..... "	7,112	22,308	7,300	22,100
Cement..... Bls.	2,504,650	3,150,479	3,090,786	3,741,039
Clay products..... "		3,667,810		3,916,575
Lime..... Bus.	2,988,020	476,137	3,360,265	538,902
Stone..... "		898,788		892,305
Other products (a)..... "		632,644		645,772
Total.....		43,538,078		42,796,162

(a) Includes in 1911 and 1910, sand-lime brick; sand and gravel (exports). (b) The total production of pig iron in Ontario in 1910 was 447,273 tons valued at \$6,956,923; in 1911, 526,635 tons valued at \$7,606,939.

Mineral Production in Manitoba, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Gypsum..... Tons.	19,500	195,000	43,000	372,000
Clay products.....		781,605		834,428
Lime..... Bus.	606,679	100,808	706,888	140,629
Cement..... Bls.	18,561	21,995	21,350	28,289
Sand-lime brick..... No.	7,817,785	69,279	9,679,985	98,376
Other products (a).....		331,672		318,050
Total.....		1,500,359		1,791,772

(a) Includes building stone, etc.

Mineral Production in Saskatchewan, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Coal..... Tons.	181,156	293,923	206,779	347,248
Brick..... No.	14,733,340	160,850	21,071,660	224,758
Other products (a).....		43,349		64,700
Total.....		498,122		636,706

(a) Includes in 1911, sand-lime brick, fireclay, etc.; in 1910, sand-lime brick.

Mineral Production in Alberta, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Gold..... Ozs.	89	1,850	10	207
Coal..... Tons.	2,894,469	7,065,736	1,511,036	3,979,264
Natural gas.....		75,168		110,165
Cement..... Bls.	323,009	774,473	512,176	1,241,535
Clay products.....		753,232		1,052,751
Lime..... Bus.	303,214	69,268	434,038	100,407
Other products (a).....		256,483		178,344
Total.....		8,996,210		6,662,673

(a) Includes sand-lime brick and stone, 1910 and 1911.

Mineral Production in British Columbia, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Copper (a)..... Lbs.	35,270,006	4,492,693	35,279,558	4,366,198
Gold..... Ozs.	261,386	5,408,318	238,496	4,980,145
Lead..... Lbs.	32,987,508	1,216,249	23,784,969	827,717
Silver..... Ozs.	2,407,887	1,287,883	1,887,147	1,005,924
Zinc ore..... "	4,487	114,243	2,590	101,072
Coal..... Tons.	3,330,745	10,408,580	2,542,532	7,945,413
Gypsum..... "			780	1,875
Mineral water..... "		4,000		3,500
Clay products..... "		562,360		675,505
Lime..... Bus.	196,878	72,657	351,014	117,756
Stone..... "		422,392		698,811
Other products (c)..... "		494,197		625,389
Total.....		24,478,572		21,299,805

(a) Smelter recoveries of copper. (c) Includes cement, sand-lime brick, etc.

Mineral Production in Yukon, 1910 and 1911.

Product.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Copper..... Lbs.	286,000	36,431		
Gold..... Ozs.	221,091	4,570,362	224,197	4,634,574
Silver..... "	87,418	46,756	112,708	60,078
Coal..... Tons.	16,185	110,925	2,840	12,780
Total.....		4,764,474		4,707,432

Mineral Production by Provinces, 1899-1911.

Calendar Year.	Nova Scotia.	New Brunswick.	Quebec.	Ontario.	Manitoba.	Alberta.	Saskatche- wan.	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	530,495	3,585,938	14,160,033	14,082,986				17,399,147	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	558,035	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	664,647	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	23,704,055	85,557,101
1909.....	12,504,810	637,035	7,086,265	37,374,577	1,193,377	6,047,447	456,246	4,032,673	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

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

MINE PRODUCTION.

The statistics of metalliferous production published in the tables preceding show in most cases the quantities of metals recovered or probably recoverable.

A general consideration of mine operations from the viewpoint of the actual tonnage of ore mined, the quantities concentrated, and the tonnage shipped to smelters is also of much interest.

The Mines Branch has with considerable success been endeavouring to obtain from every mine operator in Canada an annual return with respect to:—

- (1) The number of men employed and wages paid.
- (2) The total tonnage of ores mined, the tonnage concentrated, and the quantities of concentrates produced.
- (3) The tonnage of ores or concentrates shipped and the net value thereof.
- (4) The quantities of metals as determined by settlement assays contained in the ores shipped, and the quantities of metals for which payment was made by the purchasing smelter or recovered by the operators' smelter.

There are unfortunately two industries in which it has not as yet been feasible to obtain a complete record. These are the production of placer gold on the one hand and of petroleum on the other. In both cases, while a record of production is available, there is no record as to the number of men employed or the amount paid in wages. With respect to the other industries, while it has not been possible to obtain returns from every mine operator, the missing returns usually represent comparatively small productions and sufficient information is available to give a fairly close estimate of results.

The metalliferous ores mined in Canada fall naturally into a number of more or less broad groups, of which iron ores constitute a distinct class.

Milling gold ores, including certain dry ores shipped to smelters, may be considered as a second group.

The silver and silver-cobalt-nickel ores of Ontario fall naturally into a separate class, as do also the nickel-copper ores of the same Province. The silver-lead, and zinc ores chiefly of British Columbia may also be considered as a separate group.

A broad class of ores mined in British Columbia chiefly may be grouped under a general class as copper-gold-silver ores.

Statistics covering the years 1910 and 1911 are shown in tabular form herewith. The number of metalliferous mines shipping in 1911 was about 160, the number of men employed 9,622, wages paid \$7,857,580, tons of ore mined 3,195,330; tons of ore concentrates or metal shipped, 2,431,188; and total net value of shipments, including placer gold, \$34,760,513.

In non-metalliferous mining exclusive of stone quarries and clay pits, there were employed an average of 34,952 men earning in wages \$19,382,816. The total tonnage mined, chiefly coal, was 13,890,468, tons shipped 12,247,348, having a net value of \$34,405,960. In the manufacture of cement, clay products and

lime, and quarrying of stone, etc., there were employed an average of 19,004 men to whom were paid \$8,827,508 in wages, the net value of products shipped being \$22,709,611.

The total number of men engaged in the mining industry in 1911 was, therefore, over 63,000, and wages paid over \$36,000,000. These figures, as already explained, do not include the labour employed in placer gold mining nor in the production of petroleum.

Mine Production, 1910.

	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.	Sur-face.				
METALLIFEROUS ORES.	No.	No.		\$	Tons.	Tons.	\$
Iron ores.....	8	971		443,998	335,768	259,418	574,362
Milling gold ores—							
Bullion shipped.....							659,987
Concentrate.....	47	969		725,989	138,021	8,997	565,340
Silver-cobalt ores—							
Mine bullion shipped.....						35	542,084
Ore and concentrate.....	38	1,632	1,322	2,642,133	274,780	35,627	15,344,470
Nickel-copper ores.....	7	660	236	719,237	652,392	652,392	2,609,568
Copper ores.....	3	118	97	105,366	54,220	36,714	172,162
Silver-lead and zinc ores.....	48	592	282	850,416	180,079	58,418	1,668,415
Copper-gold-silver ores.....	19	1,432	487	1,872,242	1,958,591	1,924,405	7,888,306
Shipping mines not reporting:							
Silver-lead.....	12						
Copper-gold.....	9				1,994	1,994	
Placer mining—							
Yukon.....							4,550,000
British Columbia.....							540,000
Other provinces.....							1,850
Total metallic.....	191	8,839		7,359,381	3,595,836	2,978,000	35,116,494
Total non-metallic.....		36,210		22,698,000	16,148,993	13,800,989	37,757,158
Total structural material.....		17,259		7,547,000			19,627,592
Total.....		62,308		37,604,381			92,501,244

Mine Production, 1911.

	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.	Sur-face.				
METALLIFEROUS ORES.	No.	No.		\$	Tons.	Tons.	\$
Iron ores.....	8	943		449,468	421,113	210,344	522,319
Milling gold ores— Bullion shipped.....							513,991
Concentrates.....	45	1,085		954,659	118,758	8,026	663,213
Silver-cobalt ores— Mine bullion shipped.....						130	2,007,440
Ore and concentrate.....	36	1,794	1,448	2,722,228	254,290	25,539	14,400,245
Nickel-copper ores.....	7	853	425	889,894	612,511	612,511	2,450,044
Copper ores.....	2	119	67	98,084	66,088	39,047	247,555
Silver-lead and zinc ores.....	40	528	297	809,862	120,323	48,660	1,186,996
Gold-copper-silver ores.....	22	1,495	563	1,933,385	1,602,247	1,486,931	7,727,696
Placer mining— Yukon.....							4,606,812
British Columbia.....							426,000
Other provinces.....							8,202
Total metalliferous.....	160	9,622		7,857,580	3,195,330	2,431,188	34,760,513
" non-metalliferous.....		34,952		19,382,816	13,890,468	12,247,348	34,405,960
" structural materials.....		19,004		8,827,608			22,709,611
		63,578		36,067,904			91,876,084

SMELTER PRODUCTION.

Statistics of the production of copper and lead smelters, showing the tonnage of ore treated, the matte, blister, base bullion, or refined metal produced, etc., were collected for the first time by the Mines Branch in 1908 and were published in the report for that year. Similar returns covering each succeeding year have also been received through the courtesy of the various operating companies, a list of which follows:—

The Mond Nickel Company,	Victoria Mines, Ont.
The Canadian Copper Company,	Copper Cliff, Ont.
The Coniagas Reduction Company,	Thorold, Ont.
The Deloro Mining and Reduction Company,	Deloro, Ont.
The Canada Refining & Smelting Company, Ltd.,	Orillia, Ont.
The Consolidated Mining and Smelting Company of Canada,	Trail, B.C.
The Granby Consolidated Mining, Smelting and Power Company,	Grand Forks, B.C.
The British Columbia Copper Company, Ltd.,	Greenwood, B.C.
The Tye Copper Company, Ltd.,	Ladysmith, B.C.
The Canadian Antimony Company,	St. George, N.B.

The aggregate quantity of ore and concentrates treated in these works during 1911 was 2,193,553 tons, as compared with 2,683,714 tons in 1910, and 2,376,148 tons in 1909.

The ores may be conveniently classified as shown in the following table:—

	1909.	1910.	1911.
	Tons.	Tons.	Tons.
Nickel-copper ores.....	462,336	628,947	610,834
Silver-cobalt-nickel-arsenic ores.....	8,384	9,466	9,330
Lead and other ores treated in lead furnaces..	54,539	57,549	55,408
Copper-gold-silver ores.....	1,850,889	1,987,752	1,517,981
Total.....	2,376,148	2,683,714	2,193,553

The products obtained in Canada from the treatment of these ores include: refined lead produced at Trail, B.C., and fine gold, fine silver, copper sulphate, and antimony produced from the residues of the lead refinery; silver bullion, white arsenic, nickel oxide, and cobalt oxide produced in Ontario, from the Cobalt District ores. Refined antimony was produced in New Brunswick in 1909. In addition to these refined products, blister copper, copper matte, nickel-copper matte, cobalt material or mixed nickel and cobalt oxides are produced and exported for refining outside of Canada.

The aggregate results of smelting and refining operations may be summarized as shown in the next table. Unfortunately the figures cannot be taken to represent the total production from smelting ores mined in Canada, since considerable quantities of copper and silver ores are still shipped to other smelters outside of Canada for smelting.

It should also be explained that the figures include the results of the treatment in British Columbia of a small quantity of imported ores.

Smelter and Refinery Production in Canada, 1909-1910-1911.

	1909.		1910.		1911.	
	Refined products.	Metals contained in matte, blister, base bullion, and speiss.	Refined products.	Metals contained in matte, blister, and base bullion.	Refined products.	Metals contained in matte, blister, and base bullion.
Antimony.....Lbs.	61,207					
Gold.....Ozs.	13,241	200,129	13,298	197,181	15,270	175,189
Silver.....	14,242,545	4,845,920	16,373,799	2,136,414	19,073,768	585,896
Lead.....Lbs.	41,883,614	3,973,810	32,987,503		23,525,050	
Copper.....		53,328,533		56,149,299		29,855,868
Copper sulphate.....	51,405		163,228		197,187	
Nickel.....		27,041,957		37,587,676		34,098,744
Cobalt.....		1,321,083				
White arsenic.....	2,258,037		3,903,467		4,194,209	
Arsenic.....		1,074,516				

Smelter products shipped outside of Canada for refining were: blister copper, carrying gold and silver values, 10,710 tons in 1911, as compared with 13,918

tons in 1910, and 14,239 tons in 1909; copper matte carrying gold and silver values, 11,320 tons in 1911, as against 11,519 tons in 1910, and 11,597 tons in 1909; Bessemer nickel-copper matte carrying small gold and silver values as well as metals of the platinum group, 32,607 tons in 1911, as compared with 35,033 tons in 1910, and 25,845 tons in 1909; lead bullion carrying gold and silver values, 2,010 tons in 1909.

Nickel-Copper Ores.—The smelters of the Canadian Copper Company at Copper Cliff and the Mond Nickel Company at Victoria Mines treat the nickel-copper ores of the district. These ores consist of pyrrhotite and chalcopyrite, the nickel being chiefly contained in the mineral pentlandite disseminated through the ore. The greater part of the ore is roasted in open heaps.

In 1909 the quantity of ore mined was 451,892 tons, while the quantity smelted was 462,336 tons. The quantity of Bessemer matte produced was 25,845 tons, containing 7,873 tons of copper and 13,141 tons of nickel.

In 1910 the total quantity of ore mined was 652,392 tons, while the quantity smelted was 628,947 tons. The quantity of Bessemer matte produced was 35,033 tons, containing 9,630 tons of copper and 18,636 tons of nickel.

In 1911 the total quantity of ore mined was 612,511 tons, while the quantity smelted was 610,334 tons. The quantity of Bessemer matte produced was 32,607 tons, containing 8,966 tons of copper and 17,049 tons of nickel.

Statistics of smelter production from these ores are available since the commencement of the industry and are shown in the following table:—

Smelter Production of the Nickel-Copper Ores of the Sudbury District.

Calendar Year.	Ore mined.	Ore smelted.	Matte shipped.	Value matte.	Nickel content of matte.	Copper content of matte.
	Tons.	Tons.	Tons.	\$	Tons.	Tons.
1886.....	3,307	30,000	.....	.....	900	1,500
1887.....	567					
1888.....	.....				
1889.....	44,990	40,146	3,274	.....	432	733
1890.....	.....	.....	.....	.....	718	651
1891.....	33,300	72,558	10,336	.....	2,018	2,064
1892.....	74,381	57,022	.....	.....	1,207	1,102
1893.....	.....	.....	9,425	.....	1,991	1,821
1894.....	103,223	96,038	11,681	766,422	2,454	2,604
1895.....	74,135	68,618	10,188	890,331	1,944	2,288
1896.....	94,966	71,027	10,759	416,594	1,699	1,584
1897.....	93,154	96,370	13,968	.....	1,999	2,750
1898.....	123,820	121,924	.....	.....	2,759	4,187
1899.....	159,957	172,761	.....	702,341	2,872	2,334
1900.....	196,420	.....	23,336	1,076,306	3,540	3,364
1901.....	315,692	255,958	.....	1,661,339	4,594	4,318
1902.....	269,538	211,847	25,311	1,327,448	5,347	3,553
1903.....	136,033	207,030	13,832	2,686,469	6,253	3,576
1904.....	203,388	118,470	10,154	2,193,198	5,274	2,455
1905.....	277,766	251,421	17,405	4,019,314	9,438	4,336
1906.....	343,814	340,059	20,310	4,628,011	10,745	5,264
1907.....	351,916	359,076	22,025	3,289,382	10,595	6,996
1908.....	409,551	360,180	21,210	2,930,989	9,572	7,503
1909.....	451,892	462,336	25,845	3,913,012	13,141	7,873
1910.....	652,392	628,947	35,033	5,380,064	18,636	9,630
1911.....	612,511	610,334	32,607	4,945,593	17,049	8,966

Silver-Cobalt-Nickel-Arsenic Ores.—The rich silver ores of the Cobalt district, the first shipments of which were made in 1904, are still to a large extent shipped out of Canada, even for first treatment.

Four Canadian smelters are treating these ores, and silver bullion, white arsenic, and nickel and cobalt oxides and mixed oxides or cobalt material are being recovered.

The Canadian Copper Company in 1906 established works for the treatment of these ores at Copper Cliff at which silver bullion, white arsenic, and cobalt material are recovered. The Coniagas Reduction Company built a plant at Thorold, Ont., in 1908, for the treatment of the ores of the Coniagas mine and also custom ore, the Deloro Mining and Reduction Company established works at Deloro, Ont., and in 1911 the Canada Refining and Smelting Company, Ltd., completed and placed in operation a plant at Orillia, Ont., for the treatment of cobalt silver ores. At each of these plants, nickel and cobalt oxides are recovered in addition to silver bullion and white arsenic.

The treatment of these ores in Ontario in 1909, 1910, and 1911 gives the following results:—

		1909.	1910.	1911.
Ore treated.....	Tons.	8,384	9,466	9,330
Products recovered:—				
Silver produced†.....	Ozs.	12,239,542	14,574,839	17,753,167
White arsenic.....	Lbs.	2,258,087	3,003,467	4,194,209
Speiss or residues.....	Tons.	2,660	3,074	.....
Cobalt oxide and nickel oxide.....	Lbs.	.....	13,508	154,174
Mixed cobalt and nickel oxides and cobalt material.....	"	.....	108,178	1,260,832

† Fine ounces contained in silver bullion, fineness ranging from 850 to 998.

Lead Ores.—There was only one lead smelting plant in operation in Canada in 1911, viz.: that at Trail, B.C., operated by the Consolidated Mining and Smelting Company of Canada, Limited. This smelter is supplemented by a lead refinery employing the Betts Electrolytic Process and having a capacity of 100 tons per day. The main ore supply has come from the St. Eugene and Sullivan mines owned by the same Company, though practically all the lead ore produced in the Slocan district is smelted as customs ore. Supplementing the lead ores is a small tonnage of gold and silver ores, with some gold concentrates from stamp mills.

In the refinery, the bullion from the smelter is cast into anodes and re-deposited electrolytically upon cathode starting sheets of refined lead. The refined lead is cast into pigs of 100 pounds and 180 pounds weight, the latter being a special form for the Chinese trade.

The slimes from the tank room carry gold, silver, antimony, arsenic, and copper. The first two are recovered as fine metals, and the copper as copper sulphate.

Antimony is recovered, though not regularly, and bearing metal is manufactured.

The annual production of refined lead, fine gold and silver, and of copper sulphate has been as follows:—

Calendar Year.	Refined lead.	Fine gold.	Fine silver.	Copper sulphate.
	Lbs.	Ozs.	Lbs.	Lbs.
1904.....	7,519,440	4,336	551,450	56,000
1905.....	15,804,509	8,602	1,088,328	77,175
1906.....	20,471,314	9,993	1,263,809	143,135
1907.....	26,607,461	10,395	1,631,422	97,751
1908.....	36,549,274	15,346	1,956,039	203,379
1909.....	41,883,614	18,241	2,003,003	51,405
1910.....	32,987,508	13,298	1,798,960	163,228
1911.....	23,525,050	15,270	1,325,601	197,187

Gold-Silver-Copper Ores of British Columbia.—There are four copper smelters in British Columbia and one smelter at Tacoma, Wash., U.S.A., treating these complex ores.

The ores of the Rossland camp, of which gold is the chief constituent value, are smelted in the Trail copper furnace of the Consolidated Mining and Smelting Company. The low grade copper ores of the Boundary district are smelted locally at Grand Forks and Greenwood, some also going to Trail.

On the coast the ores of this class are smelted at Ladysmith, but a considerable tonnage is also shipped to the United States for treatment, while the local smelters are receiving some foreign ores. The Crofton smelter, which has not been in operation during the past four years, is owned by the Britannia Copper Syndicate, Limited. The Boundary Falls smelter has been largely dismantled.

The aggregate production of the Canadian smelters in 1909, 1910, and 1911, including the foreign ores treated, was as follows:—

	1909.	1910.	1911.
Ore smelted..... Tons.	1,850,889	1,987,752	1,517,981
Smelter products—			
Matte..... "	11,597	11,519	11,320
Blister..... "	14,239	13,918	10,710
Metallic content of matte and blister—			
Gold..... Ozs.	198,898	197,181	175,189
Silver..... "	612,164	636,140	585,896
Copper..... Lbs.	37,581,884	36,890,233	29,855,868

Trail Smelter.—Statistics of the production of the Trail smelter, including both the copper and lead smelters, have been published in the annual reports of the Company, the figures since 1906 having been as follows:—

Production of Trail Smelter.

Year ending June 30.	Ore smelted.	METALS CONTAINED IN MATTE AND BULLION PRODUCED.			
		Gold.	Silver.	Lead.	Copper.
		Tons.	Ozs.	Ozs.	Lbs.	Lbs.
1906 (6 mos. only).....	157,640	64,590	1,074,255	15,133,683	2,399,161
1907.....	222,573	69,168	1,100,271	20,383,083	3,443,310
1908.....	305,956	121,380	2,224,888	32,167,139	4,004,468
1909.....	347,417	114,920	2,443,475	43,675,077	4,637,631
1910.....	487,125	137,614	2,162,406	42,368,816	5,974,959
1911.....	383,785	119,067	1,458,768	24,026,015	4,421,988
1912.....	296,458	129,789	1,765,992	26,072,074	2,914,141
Production from 1894 to June, 1912.....	3,143,927	1,146,912	20,224,623	250,970,644	50,789,983

Granby Smelter.—The smelting plants of the Boundary district are of particular interest on account of the low grade ore treated. These ores vary from 1 to 3 per cent in copper, from \$1 to \$3 in gold and silver, and about 1,000,000 tons are now annually smelted. There are two smelters in the district, the larger being that at Grand Forks, operated by the Granby Consolidated Mining, Smelting, and Power Company. The first furnace, of 300 tons capacity, was completed in 1900, and since that date the capacity of the plant has been increased, from time to time, until at present there are eight furnaces with a capacity of about 4,500 tons per day. The converter plant, which was first installed in 1902, was enlarged in 1909, the new plant being claimed by the Company to have a capacity of 40,000,000 pounds per year.

The quantities of ores smelted and the total production of metals, shown in the next table, are as published in the Annual Report of the Company for the year ending June 30, 1911.

Ore Smelted and Metals Recovered at Granby Smelter.

Year ending June 30.	ALL MATERIAL SMELTED.				METALS PRODUCED.		
	Granby ore.	Foreign.		Total.	Gold.	Silver.	Copper.
		Ore.	Matte.				
	Tons.	Tons.	Tons.	Tons.	Ozs.	Ozs.	Lbs.
1901.....	160,087	7,832	.....	176,919	8,871	34,990	5,435,955
1902.....	293,645	4,454	3,001	301,100	30,786	274,511	10,836,851
1903.....	289,583	7,691	6,223	303,497	35,121	277,574	12,551,753
1904.....	516,059	36,182	4,290	556,531	54,493	275,935	16,020,986
1905.....	550,738	39,382	.....	590,120	42,980	215,449	14,224,692
1906.....	796,188	36,158	.....	832,346	50,020	316,947	19,939,004
1907.....	649,022	16,893	.....	665,915	32,738	201,337	16,410,576
1908.....	858,432	24,179	.....	882,611	40,068	300,204	21,092,288
1909.....	964,783	19,944	.....	984,733	45,760	335,520	21,901,528
1910.....	1,175,548	21,829	.....	1,197,377	48,752	356,746	22,754,899
1911.....	959,563	24,783	.....	984,346	41,707	343,178	17,858,860
1912.....	721,719	17,800	.....	739,519	33,932	225,305	13,231,121
Total.....	7,944,373	257,127	13,514	8,215,014	465,228	3,157,696	192,358,518

Greenwood Smelter.—At this plant, owned by the British Columbia Copper Company, there are three large furnaces having a total daily capacity of from 2,400 to 2,500 tons per day.

In the Annual Report of the Company for the year ending November 30, 1911, the Acting General Manager, the Late Mr. E. G. Warren, refers to the smelting operations as follows:—

“ The Smelter.

“There were handled at the smelter during the year exclusive of coke, 608,945 tons of ore segregated as follows:—

B.C. Copper Co. Ores.....	385,829 tons.
Custom Ores.....	212,927 “
Converter Slag.....	10,189 “
	608,945 “

“Included in the item of the converter slag was 5,679 tons of custom ore and clay.

“The blister production amounted to 10,044,093 pounds containing:—

Fine Copper.....	9,944,937 lbs.
Gold.....	31,144 ozs
Silver.....	134,266 “

"On March 31 a strike was declared in the Crowsnest Pass Coal District entirely shutting off the Company's supply of coke from those fields and forcing us into the Connellsville market to prevent a suspension of operations. There were imported from Pennsylvania 41,500 tons of coke at an increased cost of \$150,000 over the cost of the same tonnage of local coke."

"Apart from the use of foreign coke and the attendant inconveniences brought about through its irregular delivery, smelting operations were normal and the largest tonnages and copper production were made in the Company's history."

"Since our last Annual Report options to purchase have been secured upon certain promising mineral claims as follows:—

"Copper" and "Riverside" Claims, in Franklin Camp, B.C.

"Voight Property", near Princeton, B.C.

"L.H." Claim, in Slocan district, B.C.

"Greyhound" Claim, in Deadwood Camp, B.C."

A description of the smelting works of the British Columbia Copper Company, Ltd., at Greenwood, B.C., by the consulting engineer of the Company and late General Manager, Mr. J. E. McAllister, will be found in the "Engineering and Mining Journal" of May 20, 1911.

The Ladysmith Smelter.—This smelter is owned and operated by the Tye Copper Company, and was the only Canadian smelter in operation on the coast during the last four years. Both domestic and imported ores are treated, but the Company has not published details of its smelter operations.

At Observatory inlet, Portland canal, the Granby Consolidated Mining, Smelting, and Power Company have under construction a smelter to treat the ores from their Hidden Creek property and also custom ores.

METALLIC PRODUCTS.

COPPER.

The total production of copper in Canada in 1911, estimated on the basis of smelter recovery from ores treated, was 55,648,011 pounds, which at the average price of copper for the year in New York, 12.376 cents per pound, would be worth \$6,886,998.

The copper production in 1910, compiled on a similar basis, was estimated at 55,692,369 pounds, showing a slight decrease in production in 1911. The average New York price for copper in 1910 was 12.738 cents, the decrease in price being 0.362 cents or 2.8 per cent.

In the Province of British Columbia the copper production is mainly derived from ores carrying a very low content of copper metal. In the smelting of these ores the copper losses in slag are quite considerable, reaching as high, in some cases, as 25 per cent or more, of the copper content of the ore. With ores of this character there is, therefore, a wide difference between the copper content of ore shipped from the mine and the copper metal recovered by the smelters.

The statistics of copper production for the years previous to 1909 as given in Tables 1 and 2 include for British Columbia a record of the copper production in that Province as collected by the Provincial Bureau of Mines. These are compiled on the basis of the total metal content of the ores sent to smelters for which smelter returns were received during the year; and these show a relatively higher copper production than the figures published by the Province of Ontario, which are based on copper content of matte produced.

The independent collection of statistics on smelter production by the Mines Branch—through the courtesy of the smelter operators—has made possible the compilation and publication of statistics of production based on smelter recoveries as given above; thus providing for a more equitable comparison of the production of the several provinces, and the production of Canada generally, with other countries.

COPPER.—TABLE 1.
Production by Provinces 1909, 1910, and 1911.

Provinces.	1909. †		1910.		1911.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value
		\$		\$		\$
Quebec.....	1,088,212	141,272	877,347	111,757	2,436,190	301,503
Ontario.....	15,746,699	2,044,237	19,259,016	2,453,213	17,932,263	2,219,297
British Columbia...	35,653,952	4,629,245	35,270,006	4,492,693	35,279,558	4,966,198
Other districts*.....			286,000	36,431	‡	
Total.....	52,493,862	6,814,754	55,692,369	7,094,094	55,648,011	6,886,998

* Includes Nova Scotia and Yukon.

† The apparently large decrease in British Columbia copper production in 1909 as compared with 1908 is mainly due to the different basis of compilation adopted in 1909, for explanation of which see the text. The British Columbia copper production in 1909 based on copper content of ores sent to smelters was 45,597,245 pounds. (See Tables 8 and 9).

‡ A shipment is reported from New Brunswick.

With the exception of a small output of copper sulphate at Trail, B.C., the copper production of Canada is practically all exported. The exports of copper in ore, matte, regulus, etc., from Canada during the calendar year, 1911, are reported by the Customs Department as 55,208,054 pounds, of which 49,202,456 pounds were exported to the United States, and 6,003,818 pounds to Great Britain.

The exports in 1910 were recorded as 56,964,127 pounds. These figures agree fairly closely with the statistics of smelter recovery.

Prices.—The average monthly prices in cents per pound of electrolytic copper in New York are shown for a period of five years in the accompanying table.

Monthly Average Prices of Electrolytic Copper in New York.

Months.	1907.	1908.	1909.	1910.	1911.
	Cts.	Cts.	Cts.	Cts.	Cts.
January	24·404	13·726	13·893	13·620	12·295
February	24·869	12·905	12·949	13·332	12·256
March.....	25·065	12·704	12·387	13·255	12·139
April.....	24·224	12·743	12·563	12·733	12·019
May.....	24·048	12·598	12·893	12·550	11·989
June.....	22·665	12·675	13·214	12·404	12·385
July.....	21·130	12·702	12·880	12·215	12·463
August.....	18·356	13·462	13·007	12·490	12·405
September	15·565	13·388	12·870	12·379	12·201
October.....	13·169	13·354	12·700	12·553	12·189
November.....	13·391	14·130	13·125	12·742	12·616
December.....	13·163	14·111	13·298	12·581	13·552
Yearly average....	20·004	13·208	12·932	12·738	12·376

In London, the monthly average prices of standard copper were as shown hereunder in £ per ton of 2,240 pounds.

Monthly Average Prices of Standard Copper in London.

Months.	1907.	1908.	1909.	1910.	1911.
	£	£	£	£	£
January.....	106·739	62·386	57·688	60·923	55·604
February.....	107·356	58·786	61·197	59·388	54·970
March.....	106·594	58·761	56·231	59·214	54·704
April.....	98·625	58·331	57·363	57·238	54·035
May.....	102·375	57·387	59·338	56·313	54·313
June.....	97·272	57·842	59·627	55·310	56·368
July.....	95·010	57·989	58·556	54·194	56·670
August.....	79·679	60·500	59·393	55·733	56·264
September.....	68·375	60·338	59·021	55·207	55·253
October.....	60·717	60·139	57·551	56·722	55·176
November.....	61·226	63·417	58·917	57·634	57·253
December.....	60·113	62·943	59·906	56·069	62·063
Yearly average.....	87·007	59·902	58·732	57·054	55·973

The price of copper in New York varied between 13½ cents per pound in December and a minimum of 11 cents in May.

Statistics showing the annual copper production in Canada since 1886 are given in Table 2, which shows the yearly increase or decrease, as the case may be, and also the yearly price per pound in New York.

COPPER.—TABLE 2.
Annual Production.

Calendar Year.	Lbs.	Increase or decrease.		Value.	Increase or decrease.		Average price per pound.
		Lbs.	%		\$	%	
				\$			Cts.
1886.....	3,505,000			385,550			11·00
1887.....	3,260,424	(d) 244,576	6·99	366,798	(d) 18,752	4·86	11·25
1888.....	5,562,864	2,302,440	70·60	927,107	560,309	152·70	16·66
1889.....	6,800,752	1,246,888	22·40	936,341	9,234	0·99	13·75
1890.....	6,015,671	(d) 796,081	11·69	947,153	10,812	1·15	15·75
1891.....	9,529,401	3,515,730	58·46	1,226,703	279,550	29·51	12·87
1892.....	7,087,275	2,442,126	25·63	818,580	(d) 408,123	33·27	11·55
1893.....	8,109,856	1,022,381	14·40	871,809	53,229	6·50	10·75
1894.....	7,708,789	(d) 401,067	4·94	736,960	(d) 134,849	15·46	9·56
1895.....	7,771,639	62,850	0·81	836,228	99,268	13·47	10·76
1896.....	9,393,012	1,621,373	20·86	1,021,960	185,732	22·21	10·88
1897.....	13,300,802	3,907,790	41·60	1,501,660	479,700	46·94	11·29
1898.....	17,747,136	4,446,334	33·43	2,134,980	633,320	42·17	12·03
1899.....	15,078,475	(d) 2,668,661	15·04	2,655,319	520,339	24·37	17·61
1900.....	18,937,138	3,858,663	25·59	3,065,922	410,603	15·46	16·19
1901.....	37,827,019	18,889,881	99·75	6,096,581	3,030,659	98·84	16·117
1902.....	38,804,259	977,240	2·58	4,511,883	(d) 1,585,198	26·00	11·626
1903.....	42,684,454	3,880,195	10·00	5,649,487	1,138,104	25·23	13·235
1904.....	41,383,722	(d) 1,300,732	3·05	5,306,635	(d) 342,852	6·07	12·823
1905.....	48,092,753	6,709,031	16·21	7,497,660	2,191,025	41·29	15·590
1906.....	55,609,888	7,517,135	15·63	10,720,474	3,222,814	42·98	19·278
1907.....	56,979,205	1,369,317	2·46	11,398,120	677,654	6·32	20·004
1908.....	63,702,873	6,723,668	11·80	8,413,876	2,984,244	26·18	13·208
1909*	52,493,863			6,814,754			12·992
1910.....	55,692,369	3,198,506	6·09	7,094,094	(d) 279,340	4·10	12·738
1911.....	55,648,011	(d) 44,358	0·79	6,886,998	(d) 207,096	2·92	12·376

*The decrease is not as large as the figures would indicate because of the calculation of part of the 1909 production on a different basis from previous years. (See explanation in text).

Statistics of the exports of copper as collected by the Customs Department are shown in Table 3, and statistics of imports in Tables 4 and 5. The total imports of copper in so far as weights are given, amounted during the fiscal year ending March, 1911, to 30,586,768 pounds. During the calendar year, 1911, the total imports were valued at \$4,936,769, and included crude and manufactured copper to the extent of 37,352,237 pounds, valued at \$4,721,480, together with other copper manufactures valued at \$215,289, of which the quantity is not stated. In detail these imports comprise crude copper (pigs, ingots, scrap, blocks, etc.), 8,112,337 pounds, valued at \$823,374; copper in bars, rods, coils, etc., 25,495,400 pounds, valued at \$3,272,478; copper in strips, sheets or plates, 2,826,100 pounds, valued at \$434,574; copper tubing, etc., 562,826 pounds, valued at \$113,949; and copper wire, 355,524 pounds, valued at \$77,105.

COPPER.—TABLE 3.
Exports of Copper in Ore, Matte, etc.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1885.....		262,600	1899.....	11,371,766	1,199,908
1886.....		249,259	1900.....	23,631,523	1,741,885
1887.....		137,966	1901.....	32,488,872	3,404,908
1888.....		257,260	1902.....	26,094,498	2,476,516
1889.....		168,457	1903.....	38,364,676	3,873,827
1890.....		398,497	1904.....	38,553,282	4,216,214
1891.....		348,104	1905.....	40,740,861	5,443,873
1892.....		277,632	1906.....	42,398,538	7,303,366
1893.....	4,792,201	269,160	1907.....	54,638,450	8,749,609
1894.....	1,625,389	91,917	1908.....	51,136,371	5,934,559
1895.....	3,742,352	236,965	1909.....	54,447,750	5,832,246
1896.....	5,462,052	281,070	1910.....	56,964,127	5,840,553
1897.....	14,022,610	850,336	1911*.....	55,208,051	5,469,770
1898.....	11,572,381	840,243			

* Also 7,656 pounds \$7,955, black or coarse and in pigs.

COPPER.—TABLE 4.

Imports of Pigs, Old, Scrap, etc.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	31,900	2,130	1896.....	86,905	9,226
1881.....	9,800	1,157	1897.....	49,000	5,449
1882.....	20,200	1,984	1898.....	1,050,000	80,000
1883.....	124,500	20,273	1899.....	1,655,000	246,740
1884.....	40,200	3,180	1900.....	1,144,000	180,990
1885.....	28,600	2,016	1901.....	951,500	152,274
1886.....	82,000	6,969	1902.....	1,767,200	325,832
1887.....	40,100	2,507	1903.....	2,038,400	252,594
1888.....	32,300	2,322	1904.....	2,115,300	270,315
1889.....	32,300	3,288	1905.....	1,944,400	266,548
1890.....	112,200	11,521	1906.....	2,627,700	441,854
1891.....	107,800	10,452	1907. (9 mos.).....	2,616,600	520,971
1892.....	343,600	14,894	1908.....	3,612,400	650,597
1893.....	168,300	16,331	1909.....	2,732,300	383,441
1894.....	101,200	7,397	1910.....	4,690,700	617,630
1895.....	72,062	6,770	1911.....	5,023,700	641,749
1911 {	Copper, old and scrap or in blocks.....	Duty free.		366,900	41,128
	Copper in pigs or ingots.....	Duty free.		4,656,800	600,621
	Total			5,023,700	641,749

COPPER.—TABLE 5.

Imports of Manufactures.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	123,061	1891.....	563,522	1902.....	1,281,522
1881.....	159,163	1892.....	422,870	1903.....	1,291,635
1882.....	220,235	1893.....	458,715	1904.....	1,191,610
1883.....	247,141	1894.....	175,404	1905.....	1,775,881
1884.....	134,534	1895.....	251,615	1906.....	2,660,303
1885.....	181,469	1896.....	285,220	1907. (9 mos.).....	2,545,600
1886.....	219,420	1897.....	264,587	1908.....	2,713,060
1887.....	325,365	1898.....	736,529	1909.....	2,086,205
1888.....	303,459	1899.....	551,586	1910.....	2,870,630
1889.....	402,216	1900.....	1,090,280	1911.....	3,742,940
1890.....	472,668	1901.....	551,045		

COPPER.—TABLE 5—Continued.

Imports of Manufactures.

		Duty.	Lbs.	Value.
1911.	Copper in bars and rods, in coils, or otherwise, in lengths not less than 6 feet, unmanufactured . . .	Free.	21,396,800	\$ 2,845,060.
	Copper, in strips, sheets or plates, not planished or coated, etc.	"	3,372,800	536,862
	Copper tubing in lengths not less than 6 feet, and not polished, bent or otherwise manufactured . . .	"	517,911	106,416
	Copper rollers, for use in calico printing . . . . .	"	.....	20,361
	Copper and manufactures of:—			
	Nails, tacks, rivets and burrs or washers	30 %	.....	2,158
	Wire, plain, tinned or plated	15 "	275,557	64,720
	Wire cloth, etc.	25 "	.....	7,175
	All other manufactures of, N.O.P.	30 "	.....	160,188
	Total			3,742,940

Nova Scotia.

No copper was produced during the year, development work only being done.

New Brunswick.

A small shipment is reported from this Province.

Quebec.

The copper production of Quebec was as usual from the pyritic ores of the Eastern Townships. There was a large increase over 1910, the copper production for 1911 being 2,436,190 pounds, valued at \$301,503, representing the estimated recovery from 39,122 tons of ore and concentrates shipped containing some 3,123,189 pounds of copper.

Statistics of the copper production in this Province since 1886 are shown in Table 6.

COPPER.—TABLE 6.

Quebec:—Production.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1886	3,340,000	367,400	1899	1,632,560	287,494
1887	2,937,900	330,514	1900	2,220,000	359,418
1888	5,562,864	927,107	1901	1,527,442	246,178
1889	5,315,000	730,813	1902	1,640,000	190,666
1890	4,710,606	741,920	1903	1,152,000	152,467
1891	5,401,704	695,469	1904	1,760,000	97,455
1892	4,883,430	564,042	1905	621,243	252,752
1893	4,463,352	480,348	1906	1,981,169	381,930
1894	2,176,430	208,067	1907	1,517,990	303,659
1895	2,242,462	241,288	1908	1,282,024	169,330
1896	2,407,200	261,903	1909	1,088,212	141,272
1897	2,474,970	279,424	1910	877,347	111,757
1898	2,100,235	252,658	1911	2,436,190	301,503

Ontario.

There is as yet comparatively little copper production in this Province besides that obtained from the nickel-copper ores of the Sudbury district. In 1911, productive operations were carried on by the Canadian Copper Company at the Creighton and Crean Hill mines, and by the Mond Nickel Company at Victoria mines.

The Ontario Government pays a bounty on copper over 95 per cent pure metal and on copper sulphate, produced from ore mined and refined in the Province. The text of the Act will be found in the chapter on cobalt under the heading 'Metal Refining Bounty Act.'

The total production of nickel-copper ore in 1911 was 610,834 tons. There were produced during the year 32,607 tons of Bessemer matte, containing 8,966 tons of copper and 17,049 tons of nickel, the shipping value of the matte being approximately \$4,945,592.

Details of the production from these ores are given more completely, and in tabular form in the article on nickel, and also under smelter production. Statistics of the copper production of Ontario since 1886 are given in Table 7.

COPPER.—TABLE 7.

Ontario:—Production.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1886.....	165,000	18,150	1899.....	5,723,324	1,007,877
1887.....	322,524	36,284	1900.....	6,740,058	1,091,215
1888.....	Nil	Nil.	1901.....	8,695,831	1,401,507
1889.....	1,466,752	201,678	1902.....	7,408,202	861,278
1890.....	1,303,065	205,233	1903.....	7,172,533	949,285
1891.....	4,127,697	531,284	1904.....	4,913,594	630,070
1892.....	2,203,795	254,538	1905.....	8,779,259	1,368,686
1893.....	3,641,504	391,461	1906.....	10,638,231	2,050,838
1894.....	5,207,679	497,854	1907.....	14,104,337	2,821,432
1895.....	4,576,337	492,414	1908.....	15,005,171	1,981,883
1896.....	3,167,256	344,598	1909.....	15,746,699	2,044,237
1897.....	5,500,652	621,023	1910.....	19,259,016	2,453,213
1898.....	8,375,223	1,007,539	1911.....	17,932,263	2,219,297

British Columbia.

According to the returns received from smelters, the total quantity of copper contained in matte, blister, and copper sulphate produced in British Columbia smelters during 1911, and including an estimate of smelter recovery for the copper ores exported, was 35,279,558 pounds, after deducting the amount of copper produced from foreign ores. The production in 1910 on a similar basis was 35,270,006 pounds, and in 1909, 35,658,952 pounds. Returns of smelter pro-

duction in this Province were not collected by this Department previous to 1908, and a complete record of statistics of production on this basis is not available.

The production of copper in this Province according to statistics collected and published by the Provincial Department of Mines, reached a total of 36,927,656 pounds in 1911, as compared with 38,243,934 pounds in 1910. Statistics of the annual production since 1894, as ascertained by the Provincial Department of Mines, are shown in Table 8, and by districts since 1906, in Table 9.

According to direct returns in 1911, the ores of the Boundary district produced about 58.2 per cent of the total, the Rossland mines about 10.4 per cent, and the Coast district 31.4 per cent.

COPPER.—TABLE 8.

British Columbia:—Copper Content of Ores Shipped.†

Calendar Year.	Copper contained in ores shipped.	Increase.		Value.
	Lbs.	Lbs.	%	
1894	324,680			\$ 31,039
1895	952,840	628,160	193.00	102,526
1896	3,818,556	2,865,716	301.00	415,459
1897	5,325,180	1,506,624	39.00	601,213
1898	7,271,678	1,946,498	36.00	874,783
1899	7,722,591	450,913	6.00	1,359,948
1900	9,977,080	2,254,489	29.00	1,615,289
1901	27,603,746	17,626,666	177.00	4,448,896
1902	29,636,057	2,032,311	7.00	3,445,488
1903	34,359,921	4,723,864	16.00	4,547,735
1904	35,710,128	1,350,207	3.7	4,579,110
1905	37,692,251	1,982,123	5.6	5,876,222
1906	42,990,488	5,298,237	14.1	8,287,706
1907	40,832,720	*2,157,768	*5.02	8,168,177
1908	47,274,614	6,441,894	15.8	6,244,031
1909	45,597,245	*1,677,369	*3.6	5,918,522
1910†	38,243,934			4,871,512
1911‡	36,927,656	*1,316,278	*3.4	4,571,644

* Decrease. † As published by British Columbia Bureau of Mines. ‡ Allowing 5 pound copper per ton for smelter losses.

COPPER.—TABLE 9.

British Columbia:—Production* by Districts.

	1906.	1907.	1908.	1909.	1910.†	†1911.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Cassiar	293,269	674,887	490,873	137,651	.....	19,151
East Kootenay.....	6,910	.....	.....	.....	.....	.....
West Kootenay—						
Nelson.....	216,034	434,222	53,243	186,572	231,936	.....
Slocan.....	2,861	.....	.....	.....	.....	.....
Trail Creek.....	4,750,110	5,080,275	5,042,244	3,509,909	3,577,745	3,429,702
All other.....	1,145	.....	.....	.....	.....	.....
Yale—						
Boundary.....	32,226,732	31,521,550	40,178,521	40,603,042	31,354,985	22,327,359
Ashcroft }	355,377	38,706	3,269	.....	1,178	152,723
Kamloops }						
Coast districts.....	5,138,000	3,083,080	1,506,464	1,160,071	3,078,090	10,998,721
Total.....	42,990,488	40,832,720	47,274,614	45,597,245	38,243,934	36,927,656

* Copper content of ores shipped.

† After deducting five pounds of copper per ton of ore for slag losses.

The low grade ores of the Boundary district, in addition to being self-fluxing, are remarkably uniform in character, ranging from 1 to 2 per cent in copper, and from \$1 to \$2 in gold and silver. In this district the greater part of the production has been obtained from the properties of the four principal companies: The Granby Consolidated Mining, Smelting, and Power Company, Limited; The British Columbia Copper Company, Limited; The Consolidated Mining and Smelting Company of Canada, Limited, and the New Dominion Copper Company, Limited. The last named is controlled by the British Columbia Copper Company. The first three Companies operated their own smelters, and the first two convert their matte into blister copper.

The approximate ore shipments during 1911, and the total shipments of the chief producers to the end of 1911, were as follows:—

	1911.	Total.
Granby Consolidated Mining, Smelting & Power Co., Ltd.....	605,880	7,415,880
British Columbia Copper Co., Ltd.....	366,485	2,751,485
Dominion Copper Co., Ltd.....	182,697	831,697
Consolidated Mining and Smelting Co., of Canada, Ltd.....	30,000	613,000

The Granby Company's mines at Phoenix are equipped for a daily output of about 5,000 tons. At the Company's smelter at Grand Forks, about 630,000 tons of ore were treated during the year 1911, producing about 11,400,000 pounds of copper.

The large falling off was due to the strike among the miners of the Crowsnest Pass coal district, causing a cessation of fuel supply, and though an attempt was made to secure eastern coke, it was found too costly and the Granby smelter was, therefore, closed for nearly five months of the year. The other smelters were

also adversely affected. The chief mines shipping were: the Granby mines; the Mother Lode, Emma, and Wellington of the British Columbia Copper Co.; the Rawhide and Athelstan of the New Dominion Copper Co., and the Snowshoe of the Consolidated Mining and Smelting Co.

Next to the Boundary, the Coast district was the most important copper producer of the year, due mainly to the greatly increased output of the Britannia and Marble Bay mines, especially of the former.

Rosslund's gold-copper ores, though most valuable for their gold content, form another important source of the copper supply of the Province. Some shipments were also made from Kamloops. On the Coast a considerable amount of development is being carried on, the most important being on Alice arm, Observatory inlet, where the Granby Consolidated Mining, Smelting & Power Co. are doing extensive work on their Hidden Creek property, near which on Granby bay they are also erecting a smelter for their own and customs ores.

Yukon District.

No shipments of copper ores are reported from this district during 1911.

GOLD.

Refined Metal.—Gold bullion is received, assayed, and purchased at the Assay Office in Vancouver, operated in connexion with this Department, the bullion being resold. The total quantity of bullion thus received during the twelve months ending December 31, 1911, was 39,069.31 ounces, being the weight after melting, valued at \$647,416.38, after deducting assay charges.

A refinery has been erected at the Royal Mint at Ottawa, and small shipments of gold have been received from different provinces, but at present the greater part of the Canadian gold finds its way to the United States refineries or to the United States Mint.

There is but one other refinery in Canada producing fine gold; that at Trail, established in 1904, operated by the Consolidated Mining and Smelting Company of Canada, Limited, the annual output of which in ounces of fine gold for the years 1904-1911 is shown below. The gold is recovered from the ores treated in the lead furnaces.

Production of Refined Gold at Trail, B.C.

Year.	Ozs.
1904	4,336
1905.....	8,602
1906.....	9,993
1907.....	10,395
1908.....	15,346
1909.....	18,241
1910.....	13,298
1911.....	15,270

Mine Production.—The production of gold in Canada—made up of gold derived from alluvial workings, gold obtained from the crushing of free milling quartz ores, and the gold obtained from other metalliferous ores sent to copper and lead smelters, etc.—reached a total, in 1911, of 473,159 fine ounces, valued at \$9,781,077, as compared with 493,707 fine ounces, valued at \$10,205,835, produced in 1910, a decrease of 20,548 ounces in quantity and \$424,758 in value, or 4.16 per cent.

The production by provinces in 1909, 1910, and 1911 is shown in Table 1 as follows:—

GOLD.—TABLE 1.
Production by Provinces, 1909, 1910, and 1911.

	1909.		1910.		1911.	
	Ozs. (fine †)	Value.	Ozs. (fine)	Value.	Ozs. (fine †)	Value.
		\$		\$		\$
Nova Scotia.....	(b) 10,193	210,711	7,928	163,891	7,781	160,854
Quebec.....	(b) 193	3,990	124	2,565	(a,b) 613	12,672
Ontario.....	(b) 1,569	32,425	3,089	63,849	2,062	42,625
Alberta.....	(a) 25	525	89	1,850	10	207
British Columbia.....	(c) 250,320	5,174,579	261,386	5,403,318	238,496	4,930,145
Yukon.....	(a) 191,565	3,960,000	221,091	4,570,362	224,197	4,634,574
Totals.....	453,865	9,382,230	493,707	10,205,835	473,159	9,781,077

† Calculated from the value: one dollar=0.048375 ozs.

(a) Placer gold.

(b) Gold from vein mining.

	1909.	1910.	1911.
	\$	\$	\$
(c) As follows: Gold from placer mining.....	477,000	540,000	426,000
Gold from vein mining.....	4,697,579	4,863,318	4,504,145
	5,174,579	5,403,318	4,930,145

The exact value of fine gold is $\frac{387}{3575}$ dollars per ounce equivalent to \$20.671834. (United States Standard.)

In most cases, statistics of gold production are stated as crude bullion with value thereof. The fine ounces given in the tables in this report are calculated from the values by multiplying these by $\frac{387}{3575}$ or 0.048375.

Of the total production in 1911, about \$5,014,207 or 51.3 per cent is to be attributed to alluvial workings, \$513,991 or 5.2 per cent derived from stamp milling, and \$4,252,879 or 43.5 per cent obtained from ores sent to the smelters. There was a general decrease in all the provinces except Quebec and Yukon, which show a gain.

Statistics of the annual gold production of Canada are shown in Table 2.

GOLD.—TABLE 2.

Annual Production in Canada, 1858-1911.

Calendar Year.	Ozs. (fine †)	Value.	Calendar Year.	Ozs. (fine †)	Value.
		\$			\$
1858.....	34,104	705,000	1885.....	55,575	1,148,829
1859.....	78,129	1,615,072	1886.....	70,782	1,463,196
1860.....	107,806	2,228,543	1887.....	57,460	1,187,804
1861.....	128,973	2,666,118	1888.....	53,145	1,098,610
1862.....	135,391	2,798,774	1889.....	62,653	1,295,169
1863.....	202,498	4,186,011	1890.....	55,620	1,149,776
1864.....	199,605	4,126,199	1891.....	45,018	930,614
1865.....	192,898	3,987,562	1892.....	43,905	907,601
1866.....	152,555	3,153,597	1893.....	47,243	976,603
1867.....	145,775	3,013,431	1894.....	54,600	1,128,688
1868.....	134,169	2,773,527	1895.....	100,798	2,083,674
1869.....	102,720	2,123,405	1896.....	133,262	2,754,774
1870.....	83,415	1,724,348	1897.....	291,557	6,027,016
1871.....	105,187	2,174,412	1898.....	666,386	13,775,420
1872.....	90,283	1,866,321	1899.....	1,023,529	21,261,584
1873.....	74,346	1,536,871	1900.....	1,350,057	27,908,153
1874.....	97,856	2,022,862	1901.....	1,167,216	24,128,503
1875.....	130,300	2,693,533	1902.....	1,032,161	21,336,667
1876.....	97,729	2,020,233	1903.....	911,559	18,843,590
1877.....	94,304	1,949,444	1904.....	796,374	16,462,517
1878.....	74,420	1,538,394	1905.....	684,951	14,159,195
1879.....	76,547	1,582,358	1906.....	556,415	11,502,120
1880.....	63,121	1,304,824	1907.....	405,517	8,382,780
1881.....	63,524	1,313,153	1908.....	476,112	9,842,105
1882.....	60,288	1,246,268	1909.....	453,865	9,382,230
1883.....	53,853	1,113,246	1910.....	493,707	10,205,835
1884.....	51,202	1,058,439	1911.....	473,159	9,781,077
				14,398,624	297,646,065

†Calculated from the value: One dollar=0.048375.

It will be observed that previous to 1897 the production only twice exceeded \$4,000,000, the maximum during the period being, in 1863, when the output reached \$4,186,011. The discovery in 1896 of the rich placer deposits of the Yukon, however, caused a rapid increase in the production for the next four years, a record maximum being reached in 1900, when the total was only a little less than \$28,000,000. The following year showed a falling off in the Yukon output, as did each succeeding year until 1908. The Yukon production in 1909, 1910, and 1911 has shown an increase, and the total for Canada seems to have an upward tendency, though there is a decrease in the year 1911.

Nova Scotia.

The gold production of Nova Scotia, which is derived almost entirely from quartz ores, was 7,781 fine ounces, valued at \$160,854.

The principal operators in 1911 were:—

United Finance Co., Carleton.

Caribou Gold Mines, Caribou.

Albert Logan, Caribou.

Stillwater Mining Co., Moose River.
 Tributors, Moose River.
 Malcolm McLeod et al., Fifteenmile Stream.
 H. C. Borden et al., Fifteenmile Brook.
 Uniac Mines and Power Co., Gold River.
 E. F. Walton, Kemptville.
 Petpeswick Mining Co., Lake Catcha.
 W. F. Fancy et al., Malaga.
 Nova Scotia Gold Mines, Montagu.
 W. A. Brennan, Oldham.
 Tributors, Oldham.
 New England Mining Co., Stormont.
 Sydney Gold Mining Co., Stormont.
 Seal Harbour Leasing Co., Stormont.
 Boston and Goldenville Mining Co., Shiers Point.
 West Gore Antimony Company, West Gore.
 Dominion Leasing Co., Tangier.
 E. E. Fraser, Mooseland.
 Great Bras d'Or Gold Mining Co., Middle River.
 M. J. O'Brien, Renfrew.

Statistics of the annual production since 1862 are shown in Table 3, and the production of gold by districts during the twelve months ending September 30, 1911, as collected and published by the Provincial Mines Department, in Table 4, while the total production from 1862 to 1911, by districts, according to the same authority, is shown in Table 5.

GOLD.—TABLE 3.

Nova Scotia:—Annual Production.

	Tons. treated.	Ozs. (fine).	Value.	Yield of gold per ton.		Tons. treated.	Ozs. (fine).	Value.	Yield of gold per ton.
			\$	\$				\$	\$
1862..	6,473	6,863	141,871	21·91	1887..	32,280	20,009	413,631	12 81
1863..	17,000	13,180	272,448	16·02	1888..	36,178	21,137	436,939	12·08
1864..	21,431	18,883	390,349	18·21	1889..	39,160	24,673	510,029	13·02
1865..	24,421	24,011	496,357	20·32	1890..	42,749	22,978	474,990	11·11
1866..	32,157	23,776	491,491	15·23	1891..	36,351	21,841	451,503	12·42
1867..	31,384	25,763	532,563	16·96	1892..	32,552	18,366	389,965	11·98
1868..	32,259	19,377	400,555	12·41	1893..	42,354	18,436	381,095	8·99
1869..	35,144	16,855	348,427	19·91	1894..	55,357	18,834	389,338	7·04
1870..	30,324	18,740	387,392	12·56	1895..	60,600	21,919	453,119	7·47
1871..	30,787	18,139	374,972	12·17	1896..	69,169	23,876	493,568	7·13
1872..	17,089	12,352	255,349	14·94	1897..	73,192	27,195	562,165	7·68
1873..	17,708	11,180	231,122	13·05	1898..	82,747	26,054	538,590	6·50
1874..	13,844	8,623	178,244	12 87	1899..	112,226	29,876	617,604	5·50
1875..	14,810	10,576	218,629	14·76	1900..	87,390	28,955	598,553	6·85
1876..	15,490	11,300	233,585	15·08	1901..	91,948	26,459	546,963	5·32
1877..	17,369	15,925	329,205	18·95	1902..	93,042	30,348	627,357	6·68
1878..	17,989	11,864	245,253	13·63	1903..	103,856	25,533	527,806	5·68
1879..	15,936	12,980	268,323	16·83	1904..	45,486	10,362	214,209	4·71
1880..	13,997	12,472	257,823	18·42	1905..	57,774	13,707	283,353	4·90
1881..	16,556	10,147	209,755	12·66	1906..	66,059	12,223	252,676	3·82
1882..	21,081	13,307	275,090	13·04	1907..	58,550	13,675	282,686	4·32
1883..	25,954	14,571	301,207	11·60	1908..	61,536	11,842	244,799	3·97
1884..	25,186	15,168	313,554	12·44	1909..	56,790	10,193	210,711	3·71
1885..	28,890	20,945	432,971	14·98	1910..	43,006	7,928	163,891	3·81
1886..	29,010	22,038	455,564	15·70	1911..	18,328	7,781	160,854	8·78

Total fine ounces gold. 883,737
Total value. \$18,268,498

GOLD.—TABLE 4.

Nova Scotia.—District Details—Year ended September 30, 1911.

District.	Tons crushed.	Total yield of gold.			Average yield of gold per ton.		
		Ozs.	Dwts.	Grs.	Ozs.	Dwts.	Grs.
Stormont.....	5,733	2,615	2	19		9	2
Wagamatcook.....	125	23	4			3	17
Umacke.....	10		2				5
Gold River.....	49	45	4	5		18	11
Caribou.....	754	850	4	18	1	2	13
Caribou (Moose River).....	561	245	5	14		7	13
Tangier.....	5,202	1,746	13			6	17
Oldham.....	395	278	19	1		14	2
Lake Catcha.....	863	320	5	8		7	10
Fifteenmile Stream.....	242	155	7			12	20
Fifteenmile Brook.....	250	25	15			2	1
Kemptville.....	25	16	6			13	1
Carleton.....	48	36	15	2		15	8
Malaga Barrens.....	233	69	14	12		5	23
Montagu.....	41	24	2			11	8
Renfrew.....	3,493	1,527				8	18
Shiers Point.....	14	7	6			10	10
Sherbrook (Mortared).....		3	9				
	18,128	7,990	15	7		8	20
West Gore (Gold in concentrates).....	191	398	16	21	2	1	18
	18,319	8,389	12	4		9	4

GOLD.—TABLE 5.

Nova Scotia:—Production of Gold from 1862 to 1911.

District.	Tons crushed.	Total yield of gold.			Average yield of gold.			Value at \$19 per oz.	
		Ozs.	Dwts.	Grs.	Ozs.	Dwts.	Grs.		
*Caribou and Moose River.	217,647	58,881	3	6	.....	5	9	118,742
Montagu.....	29,523	42,173	3	6	.....	1	8	801,290
Oldham.....	58,421	67,215	17	22	.....	1	3	1,277,102
Renfrew.....	58,411	47,325	17	19	.....	16	5	899,192
Sherbrooke.....	300,213	153,090	1	4	.....	10	5	2,908,711
Stormont.....	520,974	119,743	15	13	.....	4	14	2,275,132
Tangier.....	60,262	27,069	6	19	.....	9	.....	514,317
†Unacke.....	63,341	43,982	19	17	.....	13	21	835,677
Waverly.....	155,520	69,980	10	16	.....	9	0	1,329,630
‡ Brookfield.....	93,527	38,709	2	2	.....	8	7	735,473
‡ Salmon River.....	118,819	41,852	5	20	.....	7	1	795,193
‡ Whiteburn.....	6,907	9,800	0	2	.....	1	8	186,200
§ Lake Cateha.....	28,065	27,306	11	17	.....	19	11	518,325
¶ Rawdon.....	12,189	9,606	5	10	.....	15	18	182,519
Wine Harbour.....	77,396	34,992	15	11	.....	9	1	664,363
‡‡ Fifteenmile Stream.....	36,878	17,362	0	5	.....	9	10	329,897
Malaga.....	22,923	20,305	12	6	.....	17	17	385,806
Other districts.....	142,987	74,764	17	14	.....	10	11	1,420,534
	2,004,006	904,163	6	7	.....	9	1	17,179,103
Not included in above:									
gold extracted from:	1905	527	1,232	16	23	2	6	19	23,424
or contained in stib-	1906	783	1,031	13	11	1	6	8	19,602
nite oreshipped from	1907	1,403	1,319	18	12	18	19	25,078
West Gore, as per	1908	133	179	5	0	1	6	3,406
returns.....	1909
	1910	203	350	4	15	1	14	12	6,654
	1911	191	398	1.6	21	2	1	18	7,578
Total.....	2,007,246	908,676	1	17	.....	9	1	17,264,845

* From 1869. † From 1866. ‡ From 1883. ¶ From 1887. § From 1882. ¶¶ From 1887.
‡‡ From 1883.

The following notes with respect to operations during 1911, are taken from the report of the Provincial Department of Mines:—

“I regret to report that the amount of gold produced is the smallest since the production of the year 1862 and that the tonnage crushed is the smallest tonnage crushed since the year 1882. The direct causes of the small production of the year 1911 may be attributed to the closing down of the Richardson mine at Goldboro and the Oldham-Stirling mine at Oldham. These two mines have been in recent years the largest producers of bullion in the Province.”

“Gold in this Province occurs in ore shoots or specially enriched zones in quartz veins both of the interbedded and fissure type, varying in width from one inch to several feet but usually from 2 inches to 24 inches. Carefully organized prospecting and developing operations carried on underground with strong financial backing are needed and for the individual or company that is prepared to undertake gold mining along these lines, Nova Scotia offers a promising field of operations.”

Quebec.

The production of gold reported from this Province since 1903 has been almost entirely from the pyritic ores mined at Capelton and Eustis in the Eastern Townships. Very little gold has been obtained from the alluvial deposits of the St. Francis, Chaudière, and Gilbert rivers since 1894, when the output was returned as \$29,106. However, renewed activity in the installation of hydraulic plants has raised the alluvial gold production to an amount in excess of that from lode mining.

GOLD.—TABLE 6.

Quebec:—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		\$			\$
1877.....	583	12,057	1896.....	145	3,000
1878.....	868	17,937	1897.....	44	900
1879.....	1,160	23,972	1898.....	295	6,089
1880.....	1,605	33,174	1899.....	238	4,916
1881.....	2,741	56,661	1900.....	Nil.	Nil.
1882.....	827	17,093	1901.....	145	3,000
1883.....	860	17,787	1902.....	391	8,073
1884.....	422	8,720	1903.....	180	3,712
1885.....	103	2,120	1904.....	140	2,900
1886.....	193	3,931	1905.....	191	3,940
1887.....	78	1,604	1906.....	165	3,412
1888.....	181	3,740	1907.....	Nil.	Nil.
1889.....	58	1,207	1908.....	Nil.	Nil.
1890.....	65	1,350	1909.....	193	3,990
1891.....	87	1,800	1910.....	124	2,565
1892.....	628	12,987	1911.....	613	12,672
1893.....	759	15,696			
1894.....	1,412	29,106		15,556	322,162
1895.....	62	1,281			

* Calculated from the value: one dollar = 0.048375 ozs.

Ontario.

The producing properties, in 1911, were:—

- Cordova Mines, Ltd., Cordova mine, Peterborough Co.
- Sturgeon Lake Development Co., St. Anthony mine, Sturgeon Lake.
- Great Golconda Mines, Ltd., Laurentian mine, Gold Rock.
- Kenora Mines, Ltd., Mikado mine, Kenora.
- The Dome Mines Co., Ltd., Dome mine, Porcupine district.
- The Hollinger Gold Mines, Ltd., Hollinger mine, Porcupine district.
- American Eagle Mining Co., American Eagle, Porcupine district.
- Swastika Mining Co., Ltd., Swastika mine, Porcupine district.

The past year has witnessed considerable activity in the Rainy River district. The Porcupine output would have been much greater had it not been for the fire causing such a lamentable loss of life and property. Statistics of production of gold in Ontario since 1887 are shown in Table 7, following:—

GOLD.—TABLE 7.

Ontario:—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		\$			\$
1887.....	327	6,760	1901.....	11,844	244,837
1888.....	Nil.	Nil.	1902.....	11,118	229,828
1889.....	Nil.	Nil.	1903.....	9,076	188,036
1890.....	Nil.	Nil.	1904.....	1,935	40,000
1891.....	97	2,000	1905.....	4,402	91,000
1892.....	344	7,118	1906.....	3,202	66,193
1893.....	708	14,637	1907.....	3,212	66,399
1894.....	1,917	39,624	1908.....	3,212	66,389
1895.....	3,015	62,320	1909.....	1,569	32,425
1896.....	5,563	115,000	1910.....	3,089	63,849
1897.....	9,157	189,294	1911.....	2,062	42,625
1898.....	12,363	265,889			
1899.....	20,394	421,591		123,517	2,553,309
1900.....	14,391	297,495			

* Calculated from the value: one dollar = 0.048375 ozs.

Alberta.

The value of gold derived from the placer deposits of the Saskatchewan river was, in 1909, \$525; in 1910, \$1,850; and in 1911, \$207.

Statistics of the production of gold from the Saskatchewan river since 1887 are shown in Table 8.

GOLD.—TABLE 8.

Alberta:—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		\$			\$
1887.....	102	2,100	1901.....	726	15,000
1888.....	58	1,200	1902.....	484	10,000
1889.....	967	20,000	1903.....	48	1,000
1890.....	193	4,000	1904.....	24	500
1891.....	266	5,500	1905.....	121	2,500
1892.....	508	10,500	1906.....	39	800
1893.....	466	9,640	1907.....	33	675
1894.....	726	15,300	1908.....	50	1,037
1895.....	2,419	50,000	1909.....	25	525
1896.....	2,661	55,000	1910.....	89	1,850
1897.....	2,419	50,000	1911.....	10	207
1898.....	1,209	25,000			
1899.....	726	15,000		14,611	302,040
1900.....	242	5,000			

* Calculated from the value: one dollar = 0.048375 ozs.

British Columbia.

The gold production of British Columbia in 1911, as reported to the Department, amounted to \$4,930,145, comprising placer gold \$426,000, bullion from milling ores \$310,512, smelter recoveries \$4,193,633.

The placer production is as published by the Provincial Mining Bureau. The statistics for lode gold represent as closely as can be ascertained the actual gold recovery based on smelter recoveries and bullion shipments. This production is less than that published by the Provincial Bureau of Mines, which for lode gold is based on the gold content of ores shipped to smelters, etc. According to this authority the production for 1911 was \$5,151,513, as compared with \$6,073,380 in 1910, a decrease of \$921,867.

In lode mining, there were decreases in the Nelson, Trail Creek, and Boundary districts, while there was a large increase in the Coast gold production.

In alluvial gold recovery a general decrease was shown.

Of the 1911 production, 9 per cent was from alluvial workings; 6 per cent from free milling ores, and 85 per cent from ores sent to the smelters.

Statistics of the production by districts in 1911, as published by the Provincial Department of Mines, are shown in Table 9, while the total annual production since 1858 is given in Table 10.

GOLD.—TABLE 9.

British Columbia.—Production by Districts,* 1911.

Districts.	GOLD PLACER.		GOLD LODGE.	
	Ozs.	Value.	Ozs.	Value.
		\$		\$
Cariboo :—				
Cariboo.....	6,800	136,000		
Quesnel.....	1,700	34,000		
Omineca.....	500	10,000		
Cassiar :—				
Atlin.....	11,250	225,000	3	62
All other.....	300	6,000	500	10,335
East Kootenay :—				
Fort Steele.....	150	3,000		
West Kootenay :—				
Ainsworth.....			4	83
Nelson.....	50	1,000	17,640	364,619
Slocan.....			47	971
Trail Creek.....			116,683	2,411,837
Othlers.....	100	2,000	57	1,173
Lillooet.....	250	5,000	71	1,467
Yale :—				
Grand Forks.....	50	1,000	87,745	1,813,690
Similkameen.....	50	1,000		
Yale.....	50	1,000	52	1,075
Coast and all others.....	50	1,000	5,815	120,196
	21,300	426,000	228,617	4,725,513

* From Annual Report of the Minister of Mines for British Columbia.

GOLD.—TABLE 10.

British Columbia:—Annual Production.

Calendar Year.	Ozs. (fine†).	Value.	Calendar Year.	Ozs. (fine†).	Value.
		\$			\$
1858.....	34,104	705,000	1886.....	43,714	903,651
1859.....	78,129	1,615,072	1887.....	33,558	693,709
1860.....	107,806	2,223,543	1888.....	20,834	616,731
1861.....	123,973	2,666,118	1889.....	28,439	588,923
1862.....	123,528	2,656,903	1890.....	23,918	494,436
1863.....	139,318	3,913,563	1891.....	20,792	429,811
1864.....	180,722	3,735,850	1892.....	19,327	399,525
1865.....	163,887	3,491,205	1893.....	18,360	379,535
1866.....	128,779	2,662,106	1894.....	25,664	530,530
1867.....	120,012	2,480,868	1895.....	61,289	1,266,954
1868.....	114,792	2,372,972	1896.....	86,504	1,788,206
1869.....	85,865	1,774,978	1897.....	131,805	2,724,657
1870.....	64,675	1,336,956	1898.....	142,215	2,939,852
1871.....	37,048	1,799,440	1899.....	203,295	4,202,475
1872.....	77,931	1,610,972	1900.....	228,916	4,732,105
1873.....	63,166	1,305,749	1901.....	257,292	5,318,703
1874.....	39,233	1,844,618	1902.....	288,353	5,961,409
1875.....	119,724	2,474,904	1903.....	284,108	5,873,036
1876.....	36,429	1,786,648	1904.....	275,975	5,704,908
1877.....	77,796	1,603,182	1905.....	285,529	5,902,402
1878.....	61,688	1,275,204	1906.....	269,886	5,579,039
1879.....	62,407	1,290,058	1907.....	236,216	4,833,020
1880.....	49,044	1,013,327	1908.....	286,358	5,929,880
1881.....	50,636	1,046,737	1909.....	250,320	5,174,579
1882.....	46,154	954,085	1910.....	261,336	5,403,318
1883.....	38,422	794,252	1911.....	233,496	4,930,145
1884.....	35,612	736,165			
1885.....	34,527	713,738			
				6,542,536	135,246,250

† Calculated from the value : one dollar = 0.048375 ozs.

The placer and hydraulic mining situation shows little change from 1910. There appears to have been a slight decrease, many of the larger companies being still engaged in constructive work. A shortage of water also interfered with the clean up.

Among the camps of the Province producing gold from lode mines Rossland ranks first. The principal companies carrying on active operations during 1911 were as follows:—

The Consolidated Mining and Smelting Company of Canada, Limited, with total shipments of 190,676 tons.

The Le Roi Mining Company, Limited, shipping 6,915 tons in the early part of the year. This Company having gone into voluntary liquidation, sold the Le Roi mine to the Consolidated Mining and Smelting Co. who are now operating it.

The Le Roi No. 2 Mining Company, Limited, shipping 24,800 tons of first class ore and 1,595 tons of concentrates, which were produced from the milling of 18,778 tons of second class ore.

Several of the smaller properties of the camp were actively operated during the year.

The Boundary district comes next in gold production. The output is largely due to the large tonnage of copper ores mined in this district. These ores will average in gold only from 0.04 to 0.05 ounces per ton. Included with this district is the Osoyoos Mining Division, in which is situated the Nickel Plate mine at Hedley, operated by the Hedley Gold Mining Company. In this Company's report for 1911, the following details of interest are given: "Total lineal feet of development in 1911, 1,315; total diamond drilling, 3,160 feet; tons milled, 57,815; assay value, \$10.55 to \$14.36 per ton; receipts, \$679,616.47; expenditures, \$370,814.29; profit, \$300,802.18."

Nelson Mining Division was rather inactive and may be said to have undergone a period of reorganization. The ore is in most cases free-milling, and several of the mines treat the ore in stamp mills producing bullion and concentrates. Others ship direct to the smelter.

There was an increase of production in the Coast district.

Yukon.

The production of the Yukon in 1911 was \$4,634,574, as compared with \$4,570,362 in 1910, an increase of \$64,212 or 1.4 per cent. In this is included \$54,574 produced by lode mines in the district. The statistics of the production of gold in the Yukon district during the years between 1898 and 1906, as given in Table 11, are based primarily on the receipts of gold at the United States mints and receiving offices and credited to the Canadian Yukon. Although a royalty was exacted on the gold output, it seems certain that particularly during the years of high production, considerable amounts of gold were produced which escaped royalty payment. During the past six years, however, the gold production of the Yukon, as ascertained by the Interior Department, and on which royalty of 2½ per cent is imposed, has agreed fairly closely with the quantities reported at the United States receiving offices as having been derived from the Canadian Yukon. For the purpose of collecting the royalty, a fixed value of \$15 per ounce is placed upon the crude gold. The actual value of the gold will average somewhat higher than this, however. The average value of the deposits for a number of years as shown by the experience of the United States assay office has been about \$16.50 per ounce. At the Canadian assay office at Vancouver, B.C., there were deposited during the twelve months ending December 31, 1911, 2,073.61 ounces from the Yukon, valued, after all charges had been deducted, at \$34,994.39, showing an average value of about \$16.88 per ounce.

The production of crude placer gold in the Yukon, during the past six years, as ascertained by the Department of the Interior, and upon which a royalty of 2½ per cent has been collected, is shown in the accompanying table.

Production of Crude Gold in the Yukon District.

Month.	1906.	1907.	1908.	1909.	1910.	1911.
	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.
January..	3,732·94	7,308·95	2,464·00	69·50	16·68	..
February.....	11,693·99	213·00	47·30	115·33	749·28	435·66
March.....	10·30	66·80	16·65	848·39	193·81	13·30
April.....	784·77	202·80	947·00	3·75	0·50	.....
May.....	64,060·66	35,736·62	6,851·96	117·33	43·83	16,719·16
June.....	57,578·27	31,402·14	51,530·90	62,254·92	54,301·17	38,499·39
July.....	49,012·36	26,793·50	35,291·11	52,126·43	37,942·31	42,783·38
August.....	54,947·07	22,392·10	37,930·99	47,440·83	47,673·06	47,677·49
September.....	53,487·08	33,119·51	39,654·27	44,466·20	57,695·65	48,383·63
October.....	51,799·53	35,589·70	37,028·98	26,572·23	51,883·18	58,690·82
November.....	131·81	200·30	1,989·39	4,858·69	21,404·29	11,097·51
December.....	3,852·83	52·80	5,491·76	892·75	3,563·75	13,130·63
	350,391·61	193,078·22	219,244·31	239,766·35	275,472·51	277,430·97

In 1911 the placer production is estimated as \$4,580,000 in gold, representing 221,557 fine ounces of metal, and 50,300 fine ounces of silver, valued at \$26,812, being at the average price of fine silver for the year, making a total valuation of the Yukon placer output of \$4,606,812. In 1910 the placer production was estimated at \$4,550,000, representing 220,106 fine ounces of gold, and 50,000 fine ounces of silver, valued at \$26,743, making a total valuation of \$4,576,743.

Statistics of the annual production of gold in the district since 1885 are shown in Table 11.

GOLD.—TABLE 11.
Annual Production in Yukon.

Calendar Year.	Ozs. (fine‡).	Value.	Calendar Year.	Ozs. (fine‡).	Value.
		\$			\$
1885 }			1899.....	774,000	16,000,000
1886 }	4,387	100,000	1900.....	1,077,553	22,275,000
1887.....	3,386	70,000	1901.....	870,750	18,000,000
1888.....	1,935	40,000	1902.....	701,437	14,500,000
1889.....	8,466	175,000	1903.....	592,594	12,250,000
1890.....	8,466	175,000	1904.....	407,938	10,500,000
1891.....	1,935	40,000	1905.....	331,001	7,876,000
1892.....	4,233	87,500	1906.....	270,900	5,600,000
1893.....	8,514	176,000	1907.....	152,381	3,150,000
1894.....	0,047	125,000	1908.....	174,150	3,600,000
1895.....	12,094	250,000	1909.....	191,565	3,960,000
1896.....	14,513	300,000	1910*	221,091	4,570,362
1897.....	120,937	2,500,000	1911*	224,197	4,634,574
1898.....	483,750	10,000,000			
				6,818,670	140,954,436

‡ Calculated from the value : one dollar=0·048375 ozs.

* Including a small production from lode mines.

Since 1898, a royalty to the extent of \$3,889,907 has been collected on the gold production of this district. The yearly amounts collected, as well as the annual production of gold as ascertained by the Interior Department, are shown

in the accompanying table. The difference between these figures and those shown in Table 11, which are based on the mint receipts of Yukon gold, has already been mentioned and is probably due to two main factors: (1) the fixing of the value of the gold for royalty purposes at \$15 per ounce, a figure from \$1 to \$2 less than the actual value of the gold, and (2) the probability that in the earlier years of royalty collection considerable quantities of gold dust left the camp unrecorded and escaped royalty payment.

Gold Production in the Yukon, and Royalty Collected.†

Fiscal Year.	Total gold production.	Total exemption.	Royalty collected on.	Royalty paid.
	\$	\$	\$	\$
1898.....	3,072,773	339,845	2,732,928	273,292
1899.....	7,582,283	1,699,657	5,882,626	588,262
1900.....	9,809,464	2,501,744	7,307,720	730,771
1901.....	9,162,082	1,927,666	7,236,522	592,660
1902.....	9,566,340	1,199,114	8,367,225	331,436
1903.....	12,113,015	.....	12,113,015	302,393
1904.....	10,790,663	.....	10,790,663	272,217
1905.....	8,222,054	.....	8,222,054	204,760
1906.....	6,540,007	.....	6,540,007	163,963
1907 (9 months).....	3,304,791	.....	3,304,791	82,622
1908.....	2,820,162	.....	2,820,162	70,505
1909.....	3,260,282	.....	3,260,282	81,507
1910.....	3,594,251	.....	3,594,251	89,844
1911.....	4,126,728	.....	4,126,728	103,168

† From the Report of the Yukon and Mining Lands Branch of the Department of the Interior

IRON AND STEEL.

INTRODUCTORY.

There has been a very rapidly growing demand for iron and steel products in Canada during the past few years, accompanied by a corresponding increase in the output of Canadian iron and steel furnaces, although this output probably supplies not more than 30 per cent of the tonnage of iron and steel consumed. The increase in production was continued during 1911, notwithstanding abnormally low prices received for pig iron and steel products. Manufacturers, generally, report a very strong demand, but claim that business has been carried on with a very low margin of profit in order to meet prices quoted on imported products. At the same time extensive preparations are being made to increase the output and supply a larger proportion of the home market.

The total shipments of iron ore in 1911 from mines in Canada were 210,344 tons, whereas blast furnaces consumed 1,695,802 tons, and steel furnaces, 42,892 tons. The shipments from iron ore mines in 1911 were the lowest recorded in twelve years. The production of pig iron was 917,535 short tons, and of steel ingots and castings, 882,396 tons.

The rate of production of iron ore has shown practically no increase during the past twelve years, while the present production of pig iron is nearly ten times that of 1900. About 6 per cent only of the iron ore used in Canadian blast furnaces during 1911 was of domestic origin. Of the coke used, 52 per cent was either imported or made from imported coal, and 22 per cent of the limestone flux used was from sources outside of Canada. In each instance the proportion of imported raw material used is higher than was the case in 1910.

The total production of iron ore in Canada to the end of 1910 has probably not exceeded 5,500,000 tons, while the total consumption of ore in iron and steel blast furnaces since 1886 has been over 13,500,000 tons. During 1911 the tonnage of imported ores used was 1,628,368 tons, which was derived chiefly from Newfoundland and the south shore of Lake Superior.

The assistance granted by the Federal Government to the iron and steel industries in the form of bounties ceased on December 31, 1910, with the exception of the bounty on steel rods, which was continued to June 30, 1911, and the bounty on pig iron and steel made in electric furnaces, which is available until December 31, 1912.

The accompanying table gives a summary of the chief statistics of production of iron ore, pig iron, and steel, while more detailed records will be found in subsequent pages.

Summary of Iron and Steel Statistics, 1908-1911.

	1908.	1909.	1910.	1911.
	Tons.	Tons.	Tons.	Tons.
Iron ore shipped.	238,082	268,043	259,418	210,344
Canadian iron ore charged to blast furnaces. . . .	209,266	257,502	171,191	97,732
Imported iron ore charged to blast furnaces. . . .	1,051,445	1,235,000	1,377,035	1,628,368
Iron ore charged to steel furnaces.	(a)	(a)	39,332	42,392
Pig iron made.	630,835	757,162	800,797	917,535
Pig iron exported.	290	5,063	9,763	5,370
Pig iron imported.	58,365	148,338	243,859	208,487
Pig iron consumption (calculated).	688,910	900,437	1,034,893	1,120,152
Pig iron used in steel furnaces.	(a)	(a)	690,912	700,679
Steel ingots and castings made.	588,763	754,719	822,284	882,306
Steel rails made.	267,192	377,642	399,762	399,760
Canadian coke used in iron blast furnaces.	492,076	412,016	491,281	543,933
Imported coke used in iron blast furnaces.	325,670	507,255	476,838	577,388
Iron and steel imported. (b)	1,079,000	565,734	915,425	1,284,401
Number of completed blast furnaces. No.	16	16	17	18
Number of men employed in blast furnaces " "	1,380	1,486	1,403	1,778
Wages paid in blast furnaces. \$	750,224	879,429	1,006,727	1,097,354
Value of pig iron produced. \$	8,111,194	9,581,864	11,245,622	12,307,225
Value of iron and steel goods exported. (c) \$	5,907,792	7,172,413	7,895,489	9,907,281
Value of iron and steel goods imported. (d) \$	61,819,698	40,393,431	59,952,197	85,319,541

(a) Not collected.

(b) Figures cover the fiscal year ending March 31 and include all iron and steel goods for which weights are given. For details see Table 20.

(c) Figures cover the calendar year. For details see Table 19.

(d) Figures cover the fiscal year ending March 31. For details see Tables 21 and 22.

IRON ORE.

The total shipments of iron ore from mines in Canada in 1911 were 210,344 tons, valued at \$522,319 at the shipping point, as compared with 259,418 tons valued at \$574,362 in 1910, and 268,043 tons valued at \$659,316 in 1909. Of the 1911 production, 137,399 tons are classed as hematite and 72,945 tons as magnetite.

Ontario was the largest producer, having nearly 85 per cent of the total production. The principal mines operated during the year were the Moose Mountain at Sellwood, 30 miles north of Sudbury; the Helen, north of Michipicoten, and the Atikokan, 130 miles north of Port Arthur. In addition to these a considerable tonnage of ore was reported as having been raised at the Wilbur mine in Lanark county, but no shipments were made. The total shipments of ore during the year were 175,586 tons, valued at \$446,326, as compared with shipments of 231,445 tons, valued at \$513,722, in 1910. In Nova Scotia, 38,227 tons of ore were mined at the Torbrook mines, Annapolis county, but only 22 tons were shipped; the shipments in 1910 were 18,134 tons. The only mines operated in New Brunswick are those at Austin Brook, near Bathurst, from which 31,120 tons were shipped in 1911, as against 5,336 tons in 1910. The total tonnage mined in 1911 was 96,034. The ore is a magnetite with an intermixture of hematite, and shipments are made from the Company's docks at Newcastle.

In Quebec province, shipments of titaniferous magnetite to the extent of about 3,616 tons were made from the north shore of the St. Lawrence.

The production by provinces during the past three years was as follows:—

IRON.—TABLE 1.

Production of Iron Ore by Provinces, 1909-10-11.

Provinces.	1909.		1910.		1911.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
New Brunswick.			5,336	11,910	31,120	69,464
Nova Scotia.			18,184	40,478	22	50
Quebec.	4,150	5,508	4,503	8,252	3,616	6,479
Ontario.	263,893	653,808	231,445	513,722	175,586	446,326
	268,043	659,316	259,418	574,362	210,344	522,319

The production during 1910 and 1911 classed as magnetite (including titaniferous iron ores and some ores with an admixture of hematite), hematite (including brown ores), and bog ore, was as follows:—

IRON.—TABLE 2.

Classified Production of Iron Ore, 1910-11.

Character of ore.	1910.			1911.		
	Short ton.	Value.	Per ton.	Short ton.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
Magnetite.	127,768	289,870	2 27	72,945	154,295	2 12
Hematite.	130,880	281,090	2 16	137,399	368,024	2 68
Bog.	1,270	3,402	2 68	Nil		
	259,418	574,362	2 21	210,344	522,319	2 48

A record of the production by provinces in past years is shown in Tables 3 and 4. There was a considerable production in Ontario previous to 1886 which is not recorded.

IRON.—TABLE 3.

Production of Iron Ore by Provinces, 1886-1911.

Calendar Year.	New Brunswick.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1886.....		44,388		16,032	3,941	64,361
1887.....		43,532	13,404	16,598	2,796	76,330
1888.....		42,611	10,710	16,894	8,372	78,587
1889.....		54,161	14,533		15,487	84,181
1890.....		49,206	22,305			76,511
1891.....		53,649	14,330		950	68,979
1892.....		78,258	22,690		2,300	103,248
1893.....		102,201	22,076		1,325	125,602
1894.....		89,379	13,492		1,120	109,991
1895.....		83,792	17,783		1,222	102,797
1896.....		58,810	17,630	15,270	196	91,906
1897.....		23,400	22,436	2,770	2,099	50,705
1898.....		19,079	17,873	21,111	280	58,343
1899.....		23,000	19,420	25,126	2,071	74,617
1900.....		18,940	19,000	32,950	1,110	122,000
1901.....		18,619	15,489	272,538	7,000	313,646
1902.....		16,172	18,524	359,288	10,019	404,003
1903.....		40,335	12,035	209,634	2,290	264,294
1904.....		61,293	16,152	141,601		219,046
1905.....		84,952	12,681	193,464		291,097
1906.....		97,520	9,933	141,078		248,831
1907.....		89,839	12,748	207,769	2,500	312,856
1908.....		11,802	10,103	216,177		238,082
1909.....			4,150	263,893		268,043
1910.....	5,336	18,134	4,503	231,445		259,418
1911.....	31,120	22	3,616	175,586		210,344

IRON.—TABLE 4.

Production of Iron Ore in Nova Scotia, 1876-1885.

Calendar Year.	Tons.	Calendar Year.	Tons.
1876.....	15,274	1881.....	39,843
1877.....	16,379	1882.....	42,135
1878.....	36,600	1883.....	52,410
1879.....	29,889	1884.....	54,885
1880.....	51,193	1885.....	48,129

Following is a list of the principal producers of iron ore in Canada:—

Canada Iron Corporation, Limited, Mark Fisher Bldg., Montreal, Que.

E. H. Duval, Lévis, Que. (Guay P.O.).

H. C. Bosse, 92 St. Peter St., Quebec, Que.

Joseph Bouchard, Baie St. Paul, Que.

Loughborough Mining Co., Schenectady, N.Y.

The Canadian Iron Ore Co., 1231 St. Valier St., Quebec, Que.

Exploration Syndicate of Ontario, Limited, Wilbur, Ont.

The Lake Superior Power Company, Sault Ste. Marie, Ont.

Atikokan Iron Company, Port Arthur, Ont.

Moose Mountain, Limited, Sellwood, Ont.

Dominion Bessemer Ore Company, Limited, 472 Bullitt Bldg., Philadelphia, Pa.

EXPORTS AND IMPORTS.

The Customs Department does not keep a separate record of the imports of iron ore into Canada, but as the imports are practically all used in blast furnaces the statistics of consumption of imported ores in these furnaces will serve the same purpose.

There were used in Canadian iron furnaces during 1911, 1,628,368 tons of imported iron ores, as compared with 1,377,035 tons in 1910. Increasing amounts of iron ores have been imported since 1896, the total quantity imported during the sixteen years being 10,526,489 tons.

According to United States reports of Commerce and Navigation there were exported to Canada during the twelve months ending June 30, 1911, 826,071 tons (2,000 pounds) of iron ore, valued at \$2,496,246, and during the previous year 609,617 tons (2,000 pounds), valued at \$1,636,917.

The shipments from Newfoundland to Canada during the calendar year 1911 were 737,261 tons, as compared with 808,762 tons during the year 1910.

There were exported during 1911 about 37,686 tons of iron ore, valued at \$133,411, as compared with exports of 114,499 tons, valued at \$324,186, in 1910.

The ores exported in 1911 were chiefly those from Bathurst, N.B., Moose Mountain, Ont., and titaniferous iron ores from Quebec.

Annual statistics of exports are shown in the following tables:—

IRON.—TABLE 5.

Exports of Iron Ore, Calendar Years 1893-1911.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1893.....	2,419	7,590	1903*.....	368,233	922,571
1894.....		21,294	1904*.....	168,828	401,738
1895.....	1,571	3,909	1905*.....	168,289	407,881
1896.....	1,033	1,911	1906.....	74,778	149,177
1897.....	403	811	1907.....	25,901	45,907
1898.....	182	278	1908.....	(a)	
1899.....	4,145	9,538	1909.....	21,956	61,954
1900.....	5,527	13,511	1910.....	114,499	324,186
1901*.....	306,199	762,233	1911.....	37,686	133,411
1902*.....	428,901	1,065,019			

* The export figures for the five years indicated are incorrect owing to a duplication of entries.

(a) The figures of the Trade Report for this year include ferro-products, and are, therefore, omitted.

IRON.—TABLE 6.

Exports of Iron Ore, Fiscal Years, 1879-1911.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1879.....	3,562	7,530	1896.....	14	35
1880.....	30,524	76,474	1897.....	1,320	2,492
1881.....	44,677	114,850	1898.....	360	402
1882.....	43,835	135,463	1899.....	1,849	4,968
1883.....	44,914	138,775	1900.....	4,327	7,689
1884.....	25,308	66,549	1901*.....	58,401	150,657
1885.....	54,367	132,074	1902*.....	523,983	1,303,901
1886.....	7,542	23,039	1903*.....	293,510	733,230
1887.....	23,345	71,934	1904*.....	233,850	579,883
1888.....	13,544	39,945	1905*.....	224,908	540,909
1889.....	24,752	60,239	1906*.....	148,040	345,540
1890.....	13,811	31,376	1907†.....	34,191	65,367
1891.....	14,648	32,582	1908.....	26,310	46,686
1892.....	7,707	36,935	1909.....	3,933	71,663
1893.....	7,811	26,114	1910.....	31,535	80,540
1894.....	1,859	9,026	1911.....	104,307	304,718
1895.....	2,315	5,743			

* See foot-note to Table 5. † Nine months ending March 31, 1907.

IRON.—TABLE 7.

Imports of Iron Ore into the United States from Canada, 1893-1911.*

Year ending June 30.	Short tons.	Value.	Year ending June 30.	Short tons.	Value.
		\$			\$
1893.....	7,706	17,186	1903.....	144,725	320,263
1894.....	301	756	1904.....	126,995	283,765
1895.....	2,681	10,114	1905.....	120,241	245,623
1896.....	39	142	1906.....	113,809	220,112
1897.....	2,535	5,243	1907.....	34,731	52,765
1898.....	1,313	2,904	1908.....	32,124	55,617
1899.....	2,585	5,120	1909.....	3,490	12,660
1900.....	4,477	5,550	1910.....	36,070	97,984
1901.....	34,453	76,159	1911.....	117,393	264,452
1902.....	309,527	685,540			

* Compiled from the 'Foreign Commerce and Navigation of the United States.'

PIG IRON AND STEEL.

An increase of 14.6 per cent is shown in the production of pig iron in Canada in 1911, over the production of 1910, as compared with an increase of 5.5 per cent in 1910 over that of 1909.

At the close of the year Canada had eighteen completed furnaces and two under construction, grouped in ten separate plants and operated by eight separate companies or corporations.

The total production in 1911 was 917,535 short tons (819,228 long tons), valued at approximately \$12,307,125, as compared with 800,797 short tons (714,998 long tons), valued at \$11,245,622, in 1910, and 757,162 short tons (676,038 long tons), valued at \$9,581,864, in 1909. The Londonderry furnace was not in operation during the past three years. These figures do not include the output from electric furnaces making ferro-products, which are situated at Welland and Sault Ste. Marie, Ont., and Buckingham, Que. Ferro-silicon, ferro-titanium, and electric pig were made at Welland, and ferro-phosphorus at Buckingham during 1911, but the Sault Ste. Marie plant was not in operation during the year.

Of the total output of pig iron in 1911, 20,759 tons, valued at \$365,832, or \$17.62 per short ton, were made with charcoal as fuel, and 896,776 tons, valued at \$12,041,393, or \$13.43 per ton, with coke. The amount of charcoal iron made in 1910 was 17,164 tons, and in 1909, 17,003 tons; while the quantity made with coke in 1910 was 783,633 tons, and in 1909, 740,159 tons.

The classification of the coke iron production in 1911, according to the purpose for which it was intended, was as follows:—

Bessemer, 208,626 tons; basic, 464,221 tons; foundry (including miscellaneous), 223,929 tons.

The classification of the production in 1910 was:—

Bessemer, 219,491 tons; basic, 425,400 tons; foundry, 133,742 tons.

The total production of pig iron in 1911 and 1910 is shown by provinces in the following table, the average value per ton being also indicated. In the case of Nova Scotia, a large proportion of the pig iron is directly converted to steel, and as a very small portion of the metal is sold as pig iron it is somewhat difficult to place a satisfactory valuation upon the output. For statistical purposes a value of \$12 per short ton has been placed upon this production. The Quebec production is entirely charcoal iron, which has for many years commanded a high price.

IRON.—TABLE 8.
Production of Pig Iron by Provinces, 1910-11.

Provinces.	1910.			1911.			Percentage increase or decrease in quantity.
	Tons.	Value.	Value per ton.	Tons.	Value.	Value per ton.	
		\$	\$ cts.		\$	\$ cts.	%
Nova Scotia ..	350,287	4,203,444	12 00	390,242	4,682,901	12 00	+ 11.4
Quebec.....	3,237	85,255	26 34	658	17,282	26 24	- 79.7
Ontario	447,273	6,956,923	15 55	526,635	7,606,939	14 44	+ 17.7
Total....	800,797	11,245,622	14 04	917,535	12,307,125	13 41	+ 14.6

A record of the production by provinces since 1887 is shown in Table 9. It will be observed that while the production in Nova Scotia has remained fairly constant during the past five years, the Ontario production has increased from 275,558 tons in 1906 to 526,635 tons in 1911. The proportions of the whole contributed by the several provinces were, in 1911: Nova Scotia, 42.5 per cent; Ontario, 57.4 per cent, and Quebec less than one-tenth of one per cent.

IRON.—TABLE 9.

Annual Production of Pig Iron by Provinces, 1887-1911.

Year.	NOVA SCOTIA.		ONTARIO.		QUEBEC.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1887....	19,320	250,000	.....	.....	5,507	116,192	24,927	366,192
1888....	17,556	211,403	.....	.....	4,243	101,832	21,799	313,235
1889....	21,289	383,202	.....	.....	4,632	116,670	25,921	499,872
1890....	18,332	262,608	.....	.....	3,390	69,080	21,772	331,688
1891....	21,353	309,527	.....	.....	2,538	59,374	23,891	337,901
1892....	40,049	583,556	.....	.....	2,394	53,865	42,443	673,421
1893....	46,472	553,408	.....	.....	9,475	236,875	55,947	790,283
1894....	41,344	449,533	.....	.....	8,623	196,914	49,967	646,447
1895....	35,192	417,083	.....	.....	7,262	169,653	42,454	536,736
1896....	32,351	400,329	28,302	368,942	6,615	154,358	67,268	924,129
1897....	22,500	230,000	26,115	291,466	9,392	217,235	58,007	738,701
1898....	21,627	221,677	43,253	530,789	7,135	159,929	77,015	912,395
1899....	31,100	404,300	64,749	808,157	7,094	164,849	102,943	1,377,306
1900....	28,133	421,995	62,337	938,725	6,055	140,978	96,575	1,501,698
1901....	151,130	1,764,017	116,371	1,599,413	6,875	149,493	274,376	3,512,923
1902....	237,244	2,477,767	112,688	1,584,273	7,970	181,501	357,902	4,243,541
1903....	201,246	2,186,273	87,004	1,345,464	9,635	210,973	297,885	3,742,710
1904....	164,488	1,700,130	127,845	1,746,126	11,121	241,729	303,454	3,687,985
1905....	261,014	2,440,722	256,704	3,368,197	7,588	166,267	525,306	6,475,186
1906....	315,008	3,439,217	275,558	4,338,275	7,845	177,644	593,411	7,955,136
1907....	366,456	4,211,913	275,459	4,581,309	10,047	232,004	651,962	9,125,226
1908....	352,642	3,554,540	271,484	4,385,271	6,709	171,383	630,835	8,111,194
1909....	345,380	3,453,300	407,012	6,002,441	4,770	125,623	757,162	9,581,864
1910....	350,237	4,203,444	447,273	6,956,923	3,237	85,255	800,797	11,245,622
1911....	390,212	4,682,904	526,635	7,606,939	658	17,232	917,535	12,307,125

Prices.—The average price of domestic pig iron at Toronto ranged during the first five months of 1911 from \$19 to \$20 per gross ton, and during the balance of the year from \$19 to \$19.50.

A record of the average monthly prices per gross ton of Bessemer pig iron and of grey forge pig iron at Pittsburgh is shown in the accompanying tables:—

Bessemer Pig Iron at Pittsburgh, per Gross Ton (2,240 pounds).

	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
January.....	16 70	22 15	13 91	16 85	18 35	23 15	19 00	17 34	19 90	15 90
February.....	16 93	21 45	13 66	16 41	18 35	22 85	17 90	16 73	19 34	15 90
March.....	17 37	21 85	14 25	16 35	18 28	22 85	17 86	16 25	18 60	15 90
April.....	18 75	21 28	14 18	16 35	18 19	22 35	17 49	15 78	18 27	15 90
May.....	20 75	20 01	13 60	16 16	18 10	24 01	16 93	15 84	17 52	15 90
June.....	21 56	19 72	12 81	16 65	18 23	24 27	16 90	16 05	16 60	15 90
July.....	21 60	18 89	12 40	14 85	18 41	23 55	16 83	16 46	16 40	15 90
August.....	21 62	18 35	12 81	15 20	19 00	22 90	16 23	17 03	16 09	15 90
September.....	21 75	17 22	12 63	15 91	19 54	22 90	15 90	18 05	15 90	15 90
October.....	21 75	16 05	13 10	16 54	20 35	22 00	15 71	19 53	15 90	15 44
November.....	21 68	15 18	14 85	17 85	22 85	20 65	16 59	19 90	15 82	15 00
December.....	21 75	14 40	16 65	18 35	23 75	19 34	17 40	19 90	15 90	15 03

Grey Forge Pig Iron at Pittsburgh, per Gross Ton (2,240 pounds).

	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
January.....	16 00	20 50	12 81	16 11	17 30	22 58	17 00	15 40	17 40	14 09
February.....	16 37	20 50	12 75	15 99	17 29	22 20	15 99	15 09	17 02	14 27
March.....	17 44	20 87	13 17	16 00	16 91	21 76	15 90	14 65	16 15	14 40
April.....	18 56	20 45	13 09	15 77	16 66	21 72	15 45	14 40	16 09	14 40
May.....	19 75	19 87	12 62	15 57	16 49	22 88	14 90	14 40	15 90	14 27
June.....	20 06	18 87	12 27	15 18	16 35	23 15	14 90	14 77	15 20	14 00
July.....	21 00	17 90	11 92	14 55	16 41	22 96	14 90	14 85	14 52	13 90
August.....	20 69	16 04	11 89	14 36	17 75	21 90	14 71	15 21	14 30	13 90
September.....	20 51	15 25	11 75	14 72	18 35	21 15	14 46	16 15	14 15	13 84
October.....	21 60	14 20	12 30	15 66	19 47	20 40	14 40	17 02	14 15	13 65
November.....	21 06	13 00	14 25	16 88	22 45	19 17	14 90	17 27	14 09	13 47
December.....	20 55	12 80	15 85	16 97	22 85	18 40	15 25	17 40	13 90	13 40

The quantities of iron ore, coke, charcoal, limestone, etc., consumed in blast furnaces in 1910 and 1911 are shown as follows:—

IRON.—TABLE 10.

Ore, Fuel, and Flux Charged to Blast Furnaces, in Years 1910-11.

	1910.			1911.		
	Quantity.	Value.	Canadian and imported.	Quantity.	Value.	Canadian and imported.
		\$	%		\$	%
Canadian iron ore and mill cinder..... Tons.	171,191	564,838	11	97,732	583,105	6
Imported iron ore..... "	1,377,035	3,668,409	89	1,628,368	3,358,413	94
Canadian coke..... "	491,281	1,596,664	51	543,933	1,767,782	48
*Imported coke..... "	476,838	2,263,917	49	577,388	2,393,820	52
Charcoal..... Bus.	1,615,919	159,662	.....	1,960,459	178,274	.....
Canadian limestone..... Tons.	464,584	360,756	82	492,737	303,301	78
Imported limestone..... "	104,771	85,636	18	132,479	130,221	22

*Including coke made from imported coal.

Previous to 1896 pig iron was made entirely from Canadian ores. Since that date, however, increasing quantities of imported ore have been used as well as imported fuels and fluxes, and in 1911 about 94 per cent of the ore charged, 52 per cent of the coke, and 22 per cent of the limestone were imported. This condition is due largely to questions of cost and transportation affecting each furnace. The Newfoundland iron ores can be cheaply and conveniently laid down in Sydney, N.S.; in fact the iron industry here has been built up on the basis of these ores and of the local coal supplies. In Ontario, also, large quantities of imported ores are used. In 1911 the imported ores used in Ontario amounted to 849,086 tons, and the Canadian ores, 85,678 tons, the imported ores being derived from Michigan and Minnesota deposits: thus during 1911 about 91 per cent of the ore used in this Province was imported, as compared with 83 per cent in 1910, and about 71 per cent in 1909. The fuel used in Ontario was also almost altogether imported, as well as a portion of the limestone flux.

IRON.—TABLE 11.

Iron Ore, Fuel, and Flux Charged to Furnaces since 1887.

Calendar Year.	IRON ORE CHARGED.		FUEL CHARGED.			Limestone. Tons.
	Canadian.	Imported.	Charcoal.	*Coke from Canadian coal.	Imported coke.	
	Tons.	Tons.	Bushels.	Tons.	Tons.	
1887	60,434		940,400	33,581		17,171
1888	54,956		804,286	30,228		16,857
1889	65,670		755,800	36,333		23,122
1890	57,304		589,860	34,073		18,478
1891	60,933		441,812	32,796		11,377
1892	96,948		1,121,365	52,622		22,967
1893	124,053		1,302,720	65,332		27,797
1894	108,871		1,173,970	60,026		35,101
1895	93,208		789,561	51,629		31,585
1896	96,560	46,300	756,600	50,067	33,990	37,462
1897	53,658	55,722	1,031,800	35,800	27,810	31,273
1898	57,881	77,107	836,400	31,952	50,407	33,913
1899	66,384	120,650	1,923,025	44,844	64,648	51,826
1900	71,341	112,042	1,799,737	45,021	59,345	52,966
1901	156,613	361,010	1,835,736	207,835	115,367	169,399
1902	125,664	559,381	2,146,623	362,208	112,314	293,594
1903	82,035	485,911	2,322,030	350,190	96,540	277,452
1904	180,932	454,671	3,477,470	257,182	130,210	211,278
1905	116,974	861,847	4,404,394	365,897	243,882	369,715
1906	221,733	982,740	2,168,476	462,672	304,676	456,036
1907	244,104	1,117,260	1,682,085	521,068	327,082	488,462
1908	209,266	1,051,445	1,121,990	492,076	325,670	483,065
1909	257,502	1,235,000	1,779,258	412,016	507,255	526,076
1910	171,191	1,377,035	1,615,919	491,281	476,838	569,355
1911	97,732	1,628,368	1,960,459	543,933	577,388	625,216

* Includes for the first ten years small quantity of coal.

Of eighteen completed furnaces fifteen were in blast in 1911 for varying periods of time. The operating companies, with numbers and capacities of furnaces, were as follows:—

Dominion Iron and Steel Company, Sydney, C.B.: four completed furnaces of 280 tons capacity each per day; one operated throughout 1911, one for 305 days, one for 272 days, and the fourth for 244 days.

Nova Scotia Steel and Coal Company, Limited, New Glasgow, N.S.: one furnace at Sydney Mines, C.B., of 200 tons capacity; operated 360 days.

Londonderry Iron and Mining Company, Limited, Londonderry, N.S.: one furnace of 100 tons capacity; idle throughout the year.

Canada Iron Corporation, Limited, Montreal, Que.: two small furnaces of seven and eight tons capacity, at Drummondville, Que., one being operated 106 days; one furnace of 25 tons daily capacity, at Radnor Forges, Que., idle throughout the year; two furnaces of 125 tons and 250 tons, at Midland, Ont., operated for 365 days.

Standard Chemical Iron and Lumber Company of Canada, Limited, Deseronto, Ont.: one furnace with a daily capacity of 65 tons; operated for 11 months during 1911.

The Steel Company of Canada, Limited, Hamilton, Ont.: two furnaces, one of 200 tons capacity operated for 308 days in 1911, a second furnace of 300 tons capacity operated 327 days in 1911.

Algoma Steel Company, Limited, Sault Ste. Marie, Ont.: three furnaces at Steelton, near Sault Ste. Marie, two of 250 tons capacity each, operated for 310 and 357 days, respectively; and one of 450 tons capacity, operated for 261 days.

The Atikokan Iron Company, Limited, Port Arthur, Ont.: one furnace of 100 tons capacity; operated for 228 days during 1911.

The total daily capacity of the eighteen furnaces is about 3,580 tons.

The average number of men employed in blast furnace operations in 1911 is reported as 1778, and the total wages paid, \$1,097,354. Of the eighteen completed furnaces, twelve were in blast and six idle on December 31, 1911.

With respect to new furnaces under way or contemplated, the Dominion Iron and Steel Company have met with considerable delay in the completion of their fifth furnace, which has now been under construction for some time. It is expected, however, that this furnace will shortly be completed. A beginning has also been made on the erection of a sixth furnace. This Company has also erected wire mills and has commenced the manufacture of nails.

The Steel Company of Canada, Limited, has undertaken the erection at Hamilton of a blooming mill, billet mill, rod and bar mill, together with two more 50 ton open-hearth furnaces.

The Lake Superior Corporation completed their new No. 3 blast furnace during the year. Their new coke ovens and merchant mills were also placed in full operation. A sixth open-hearth furnace is in progress and mixers are being installed.

EXPORTS AND IMPORTS OF PIG IRON.

There has been comparatively little pig iron exported from Canada. During 1911 the exports were 5,870 tons, valued at \$271,968, or an average value per

ton of \$40.33; as compared with exports of 9,763 tons, valued at \$296,310, or an average of \$30.35 per ton, in 1910. The exports during 1909 were 5,063 tons, valued at \$186,778, or an average of \$36.89; and during 1908, 290 tons, valued at \$10,614, or an average of \$42.45 per ton. These exports probably consist chiefly of ferro-silicon and high grade charcoal pig iron.

Considerable quantities of pig iron are annually imported into Canada. During the calendar year 1911 the imports were 208,487 tons, valued at \$2,610,989, or an average of \$12.52 per ton; as against 243,859 tons, valued at \$3,364,847, imported in 1910. No charcoal pig iron was imported in 1911. The 1910 imports included 227,753 tons of pig iron, valued at \$3,122,695, or an average of \$13.71 per ton, and 16,106 tons of charcoal pig iron, valued at \$242,152, or an average of \$15.03 per ton.

The annual imports of these two classes of pig iron since 1880 are shown in the accompanying table, No. 12, the statistics being given therein for the fiscal year.

IRON.—TABLE 12.

Annual Imports of Pig Iron Since 1880.

Fiscal Year.	PIG IRON.		CHARCOAL PIG IRON.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1880, year ending June 30.....	(a) 23,159	371,956			23,159	371,956
1881 " "	(a) 43,630	715,997			43,630	715,997
1882 " "	56,594	811,221	6,837	211,791	63,431	1,023,012
1883 " "	75,295	1,085,755	2,198	58,994	77,493	1,144,749
1884 " "	49,291	653,708	2,893	66,602	52,184	723,010
1885 " "	42,279	545,426	1,119	27,333	43,398	572,759
1886 " "	42,463	528,483	3,185	60,086	45,648	588,569
1887 " "	46,295	554,388	3,919	77,420	50,214	631,808
1888 " "	(b) 48,973	648,012			48,973	648,012
1889 " "	(b) 72,115	864,752			72,115	864,752
1890 " "	(b) 87,613	1,148,078			87,613	1,148,078
1891 " "	(b) 81,317	1,085,929			81,317	1,085,929
1892 " "	(b) 68,918	886,485			68,918	886,485
1893 " "	56,849	682,209	5,544	84,358	62,793	766,567
1894 " "	42,376	483,787	2,906	34,968	45,282	518,755
1895 " "	31,637	341,259	2,780	31,171	34,417	372,430
1896 " "	36,131	394,591	917	11,726	37,048	406,317
1897 " "	25,766	291,788	2,936	35,373	28,702	327,161
1898 " "	37,186	382,103	2,250	23,533	39,436	405,636
1899 " "	44,261	452,911	1,955	19,123	46,216	472,034
1900 " "	49,767	811,490	1,816	38,736	51,583	850,226
1901 " "	35,293	548,033	490	7,121	35,783	555,154
1902 " "	39,978	585,077	38	726	40,016	585,803
1903 " "	91,730	1,338,574	882	16,352	92,612	1,354,926
1904 " "	62,515	894,728			62,515	894,728
1905 " "	71,005	857,879			71,005	857,879
1906 " "	96,797	1,401,047			96,797	1,401,047
1907, nine months ending March 31.....	150,127	2,280,860	30	675	150,157	2,281,535
1908, year ending March 31.....	210,053	3,448,125	2,237	45,475	212,290	3,493,600
1909 " "	57,669	857,357	922	16,575	58,591	873,932
1910 " "	158,910	2,118,445	596	8,690	159,506	2,127,135
1911 " "	254,284	3,376,843	15,818	237,088	270,102	3,613,931

(a) Comprises pig iron of all kinds.

(b) These figures appear in Custom reports under heading "iron in pigs, iron kettledge, and cast iron."

IRON.—TABLE 13.
Annual Exports of Pig Iron, 1896-1911.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1896.....	2,187	55,448	1904.....	21,016	200,363
1897.....	3,099	81,381	1905.....	866	22,284
1898.....	1,278	32,645	1906.....	305	7,429
1899.....	6,981	149,190	1907.....	439	13,504
1900.....	3,513	88,052	1908.....	290	10,614
1901.....	57,650	593,739	1909.....	5,063	186,778
1902.....	75,195	778,619	1910.....	9,763	296,310
1903.....	4,400	78,382	1911.....	5,870	271,968

World's Production.—The production of pig iron in other countries is given hereunder for the past six years, in order to show the relative position occupied by Canada in the production of this metal.

IRON.—TABLE 14.
Production of Pig Iron in Principal Countries of the World, from 1906 to 1911: metric tons.

	1906.	1907.	1908.	1909.	1910.	1911.
United States . . .	25,713,556	26,195,340	16,191,907	26,209,677	27,741,990	24,029,296
Germany	12,292,819	12,875,159	11,805,321	12,644,946	14,227,455	15,280,527
United Kingdom..	10,347,385	10,276,689	9,202,280	9,685,045	10,330,799	9,874,693
France	3,314,162	3,590,235	3,400,771	3,573,848	4,032,459	4,410,866
Russia	2,691,606	2,823,309	2,805,384	2,874,822	3,042,302	3,588,449
Austria-Hungary..	1,687,581	1,872,684	2,041,523	2,044,573	2,006,842 (a)	2,089,867
Belgium	1,375,775	1,406,980	1,270,050	1,616,370	1,803,500 (a)	2,072,843
Canada	542,875	591,456	572,290	686,893	726,478	832,382
Sweden	604,789	615,778	567,821	444,764	604,300	633,800
Spain	379,241	355,240	403,554	389,000 (a)	425,000 (a)	435,000
Italy	135,296	112,232	112,924	207,800 (a)	343,600 (a)	253,322
China	*34,305	*36,306	66,409	74,000 (a)	120,000	94,826
Japan	42,679	51,943	45,396 (a)	161,020	187,793 (a)	162,000
Australasia		29,902	30,393	29,762	42,268 (a)	36,354

* Exports. † Not available. (a) From statistics by James Watson & Co., Glasgow, Scotland.

FERRO-PRODUCTS.

Ferro-silicon, ferro-phosphorus, and ferro-titanium were produced in Canada in electric smelting plants during 1911. The ferro-titanium was produced in an experimental way only. Ferro-phosphorus was made by the Electric Reduction Company at Buckingham, Que. In former years this Company has also manufactured other ferro-products, including ferro-silicon and ferro-chrome.

The Electric Metals, Limited, at Welland, Ont., engaged chiefly in the production of ferro-silicon. There was also, however, considerable experimental work done in the production of pig iron in electric furnaces and in the production of ferro-titanium.

The electric furnace plant of the Lake Superior Corporation at Sault Ste. Marie was not operated during the year.

The total production of electric furnace plants in 1911 was 7,507 short tons, valued at \$376,404.

The imports of ferro-silicon, manganese, etc., during the calendar year 1911, were 17,226 tons, valued at \$429,465, or an average of \$24.93 per ton. The imports during the calendar year 1910 were 18,900 tons, valued at \$464,741, or an average of \$24.59 per ton. The imports since 1887 are shown in Table 15, the figures of the table being for the fiscal year.

IRON.—TABLE 15.
Imports of Ferro-Manganese, Etc., 1887-1911.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
*1887.....	123	1,435	+1900.....	1,149	39,064
*1888.....	1,833	29,812	+1901.....	1,512	38,954
*1889.....	5,868	72,108	+1902.....	6,513	150,977
*1890.....	696	18,895	+1903.....	6,350	162,710
*1891.....	2,707	40,711	+1904.....	2,975	75,554
*1892.....	1,311	23,930	+1905.....	12,935	246,815
*1893.....	529	15,853	+1906.....	15,023	462,739
*1894.....	284	9,885	+1907 (9 months).....	16,414	610,875
+1895.....	164	5,408	+1908.....	17,417	612,062
+1896.....	652	12,811	+1909.....	13,053	388,024
+1897.....	426	9,235	+1910.....	14,952	352,486
+1898.....	1,418	22,516	+1911.....	18,796	461,331
+1899.....	1,160	22,539			

*These amounts include: ferro-manganese, ferro-silicon, spiegel, steel bloom ends and crop ends of steel rails, for the manufacture of iron or steel.

† Ferro-silicon, spiegeleisen, and ferro-manganese.

STEEL.

The production of steel ingots and castings in 1911 was 882,396 tons, as compared with 822,284 tons in 1910 and 754,719 tons in 1909. In 1911 the production of open-hearth ingots was reported as 651,676 tons; Bessemer ingots, 209,817 tons; direct open-hearth castings, 20,163 tons, and other steels, 740 tons. The total increase in production over 1910 was 60,112, or a little over 7 per cent.

The production during the past five years is shown in Table 16 following:—

IRON.—TABLE 16.
Production of Steel, 1907-1911.

	1907.	1908.	1909.	1910.	1911.
	Tons.	Tons.	Tons.	Tons.	Tons.
<i>Ingots</i> — Open-hearth (basic).....	459,240	443,442	535,988	580,932	651,676
Bessemer (acid)	225,989	135,557	203,715	222,668	209,817
<i>Castings</i> — Open-hearth.....	20,602	9,051	14,013	18,085	20,163
Other steels.....	1,151	713	1,003	599	740
Total.....	706,982	588,763	754,719	822,284	882,396

Statistics showing the quantities of the principal materials used in steel furnaces were obtained for the first time for the year 1910, and it may be of interest to refer to these here. The total quantity of pig iron used in steel furnaces during 1911 was 700,679 tons, of which 640,636 tons were produced by firms reporting, and 60,043 tons purchased. The quantity of ferro-alloys used was 21,359 tons purchased. Scrap, etc., was used to the extent of 278,797 tons, being 198,482 tons produced by the firms reporting, and 80,315 tons purchased. Ores used included 829 tons of manganese ore and 42,892 tons of iron ore, while 130,270 tons of limestone or dolomite flux were used and 8,067 tons of fluorspar. In Ontario a little over 662 million cubic feet of natural gas were used, while in Nova Scotia coke oven gas was used at Sydney, of which a record of quantity is not obtained.

In 1910 the total quantity of pig iron used in steel furnaces was 690,913 tons, of which 601,219 tons were produced by firms reporting, and 89,694 tons purchased. The quantity of ferro-alloys used was 8,143 tons purchased. Scrap, etc., was used to the extent of 211,453 tons, being 140,913 tons produced by the firms reporting and 70,540 tons purchased. Ores used included 1,317 tons of manganese ore and 39,332 tons of iron ore, while 144,110 tons of limestone or dolomite flux were used and 7,461 tons of fluorspar. In Ontario a little over 600 million cubic feet of natural gas were used.

Statistics of the production of steel ingots and castings since 1894 are given in the following table, the figures for 1894 to 1906, inclusive, having been collected and published by the American Iron and Steel Association; those for the years 1907 to 1911 have been collected by this Department and are as shown in detail in Table 16.

IRON.—TABLE 17.

Annual Production of Steel Ingots and Castings, 1894-1911.

Calendar Year.	Short tons.	Calendar Year.	Short tons.	Calendar Year.	Short tons.
1894.....	28,767	1900.....	26,406	1906.....	639,396
1895.....	19,040	1901.....	29,214	1907.....	706,982
1896.....	17,920	1902.....	203,881	1908.....	588,763
1897.....	20,608	1903.....	203,296	1909.....	754,719
1898.....	24,125	1904.....	166,881	1910.....	822,284
1899.....	24,640	1905.....	451,863	1911.....	882,396

Following is a list of firms making steel in Canada:—

- Dominion Iron and Steel Company, Sydney, N.S.
- Nova Scotia Steel and Coal Company, New Glasgow, N.S.
- Canadian Steel Foundries, Limited, Montreal, Que.
- The Algoma Steel Company, Sault Ste. Marie, Ont.
- The Steel Company of Canada, Limited, Hamilton, Ont.
- The Wm. Kennedy Sons, Limited, Owen Sound, Ont.

Rolled Products, etc.—Complete statistics of the production of rolled products and of manufactured steel have not been received; returns from seven of the largest producers, however, show a production of blooms, billets, slabs, etc., of 737,261 tons, of which 719,514 tons were used by the producer for further manufacture, and 17,747 tons sold to other rolling mills.

The production of rails was 399,760 tons; of rods, 85,811 tons; of bars, 199,623 tons, and of other rolled products, 65,076 tons. The production of steel rails in 1910 was returned as 399,762 tons, and in 1909, 377,642 tons.

The production of finished rolled iron and steel in Canada from 1906 to 1911, as ascertained and published by the American Iron and Steel Association, was as follows, in long tons:—

IRON.—TABLE 18.
Annual Production of Rolled Iron and Steel, 1907-11.

Products — Gross tons.	1907.	1908.	1909.	1910.	1911.
Rails.....	311,461	268,692	344,830	366,465	360,547
Structural shapes and wire rods.....	65,541	41,520	74,136	30,993	76,617
Plates and sheets.....	18,493	11,656	36,241	26,642	14,833
Nail plate, merchant bars, and all other finished rolled forms.....	204,684	174,649	207,534	265,711	323,427
Total	600,179	496,517	662,741	739,811	775,424

BOUNTIES.

Bounties on iron and steel made in Canada were provided for by the Dominion Government in 1897 (Chapter 6, Statutes of Canada, 1897). This Act was amended in 1899 (Chapter 8, Statutes of Canada, 1899), and again in 1903 (Chapter 68, Statutes of Canada, 1903). The latter Act provided for the payment of bounty until June 30, 1907. On April 27, 1907, a new Act was passed (Chapter 24, Statutes of Canada, 1907), providing for the further payment of bounties from January 1, 1907, to December 31, 1910, and in the case of pig iron made by electric smelting, until December 31, 1912. An Act assented to May 4, 1910 (Chapter 33, 1910, Edward VII), provided that the bounty on rolled round wire rods should cease after the 30th day of June, 1911.

The total bounty payments on account of iron and steel made during the calendar year 1911 were \$300,750, paid on 50,125 tons of wire rods manufactured by the Dominion Iron and Steel Company, Limited.

Since 1896 a total of \$16,785,827 has been paid by the Government of Canada in bounties for the production of iron and steel, the annual payments on pig iron, puddled iron bars, steel and manufactures of steel being shown in the following table:—

Total Bounties on Iron and Steel paid by the Government of Canada since 1896.

Year ended..	Pig iron.	Puddled iron bars.	Steel.	Manufactures of steel.
	\$	\$	\$	\$
June 30, 1896.....	104,105	5,611	59,499	.....
" 1897.....	66,509	3,019	17,366	.....
" 1898.....	165,654	7,706	67,454	.....
" 1899.....	187,954	17,511	74,644	.....
" 1900.....	238,296	10,121	64,360	.....
" 1901.....	351,259	16,703	100,058	.....
" 1902.....	693,103	20,550	77,431	.....
" 1903.....	666,001	6,702	729,102	.....
" 1904.....	533,932	11,669	347,990	15,321
" 1905.....	624,667	7,395	676,318	231,324
" 1906.....	687,632	5,375	941,000	369,832
March 31, 1907 (9 months).....	385,231	312	575,259	338,999
" 1908.....	863,817	.....	1,092,201	347,135
" 1909.....	693,423	.....	838,100	333,091
" 1910.....	573,969	.....	695,752	533,812
" 1911.....	261,434	.....	350,456	526,353
" 1912.....	.....	.....	.....	166,750
Total.....	7,097,041	113,674	6,706,990	2,868,122

EXPORTS AND IMPORTS OF IRON AND STEEL GOODS.

The total value of iron and steel goods, including agricultural implements, automobiles and bicycles, exported from Canada during 1911 was \$9,907,281, as compared with a value of exports in 1910 of \$7,895,489, and in 1909 a value of \$7,172,413. Of the total exports in 1911, stoves, gas buoys, castings, machinery, and hardware contributed a total valuation of \$1,242,006; pig iron, \$271,968; scrap iron and steel, \$54,618; steel and manufactures of steel, \$769,692; agricultural implements, \$6,281,929, and automobiles and bicycles, \$1,287,068. Particularly large increases are noted in the exports of agricultural implements and of automobiles and bicycles. Details of these exportations during the past two years are shown in the accompanying table:—

IRON.—TABLE 19.

Exports of Iron and Steel Goods, the product of Canada, during the Calendar Years 1910 and 1911.

	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Stoves..... No.	1,058	15,832	1,176	20,626
Gas buoys and parts of.....				68,485
Castings, N.E.S..... \$		51,958		33,441
Pig iron..... Tons.	9,763	296,310	5,870	271,966
Machinery (linotype machines).....		39,438		12,239
Machinery, N.E.S.....		301,961		431,493
Sewing machines..... No.	17,834	188,196	13,519	218,075
Typewriters..... "	5,970	409,326	4,771	318,935
Scrap iron and steel..... Cwt.	233,264	171,603	84,153	54,618
Hardware, tools, etc..... \$		88,844		94,513
Hardware, N.E.S..... "		43,472		44,199
Steel and manufactures of..... "		1,110,925		760,692
Agricultural implements —				
Mowing machines..... No.	18,745	634,326	22,859	778,274
Reapers..... "	3,411	220,517	9,385	574,315
Harvesters..... "	11,382	1,234,794	14,355	1,432,911
Ploughs..... "	16,888	540,677	20,437	508,095
Harrows..... "	8,924	115,068	5,412	95,904
Hay rakes..... "	6,344	206,342	11,085	317,842
Seeders..... "	256	13,727	174	13,795
Threshing machines..... "	29	8,576	339	92,442
Cultivators..... "			5,923	138,377
All other..... "		1,163,722		1,533,728
Parts of..... "		575,848		796,246
Automobiles..... "	387	433,663	1,509	1,184,506
" parts of..... "				45,798
Bicycles..... "	72	2,710	90	5,936
" parts of..... "		28,654		50,828
Total.....		7,895,489		9,907,281

A detailed statement of the imports of iron and steel, as compiled from the annual reports of Trade and Navigation, is shown in Tables 21 and 22, Table 21 showing the imports subject to duty and Table 22 showing the imports free of duty.

The total value of the imports during the fiscal year ending March, 1911, was \$85,319,541, as compared with the valuation of imports in 1910 of \$59,952,197, and \$40,393,431 during the fiscal year 1909. These imports include all classes of iron and steel goods manufactured, as well as those of a crude form. In many cases the imports of manufactured goods are given only in dollars, so that the total tonnage of imports cannot be estimated. In the case of most of the cruder materials, however, the quantities are given, and a compilation of these shows a minimum importation of iron and steel during the fiscal year ending March, 1911, of 1,284,401 tons, as compared with 915,425 tons in 1910 and 565,734 tons in 1909. A summary of these importations is shown in Table 20.

In addition to the imports of pig iron and of ferro-products which have already been referred to, this record shows an importation in 1911 of ingots,

blooms, billets, puddled bars, etc., of 48,395 tons; scrap iron and scrap steel, 53,824 tons; plates and sheets, 205,690 tons; bars, rods, hoops, bands, etc., 183,865 tons; structural iron and steel, 345,350 tons; rails and connexions, 36,690 tons; pipe and fittings, 28,831 tons; nails and spikes, 3,099 tons; wire, 64,850 tons; forgings, castings, and manufactures, 24,523 tons.

The total value of the 1,284,401 tons imported was \$33,766,865, or an average value per ton of \$26.29. Other iron and steel goods of which the weights are not recorded were imported to the value of \$51,552,676, making up the total value of \$85,319,541, shown in detail in Tables 21 and 22.

A very large proportion of these imports is derived from the United States, and it may be of interest here to quote from the records published in the 'Commerce and Navigation of the United States,' showing the exports of iron and steel goods from that country to Canada.

According to this authority there was exported to Canada from the United States during the twelve months ending June 30, 1911, 821,526 tons of iron and steel goods, valued at \$25,544,421, together with other iron and steel goods of which the weight is not given, valued at \$38,738,575, or a total value of \$64,282,996.

During the twelve months ending June 30, 1910, the corresponding exports to Canada were 574,807 tons, valued at \$19,673,740, together with other iron and steel goods to the value of \$28,153,628, or a total value of \$47,827,368. Iron ores are not included in either case.

The detailed items will be found in Table 23.

IRON.—TABLE 20.

Imports of some Iron and Steel Products of which the Weights are Available.

Material.	TWELVE MONTHS ENDING MARCH.			
	1908.	1909.	1910.	1911.
	Tons.	Tons.	Tons.	Tons.
Pig iron.....	212,290	58,591	159,506	270,102
Ferro-products and chrome steel.....	17,661	13,206	15,153	19,182
Ingots, blooms, billets, puddled bars, etc.....	21,222	8,887	36,819	48,395
Scrap iron and scrap steel.....	69,213	26,212	28,797	53,824
Plates and sheets.....	126,172	116,610	200,575	205,690
Bars, rods, hoops, bands, etc.....	98,631	73,261	117,159	183,865
Structural iron and steel.....	373,871	162,735	195,748	345,350
Rails and connexions.....	52,706	32,543	55,183	36,690
Pipe and fittings.....	25,090	18,309	16,705	28,831
Nails and spikes.....	2,741	1,611	3,476	3,099
Wire.....	57,046	39,375	63,211	64,850
Forgings, castings and manufactures.....	22,357	14,394	18,093	24,523
Total.....	1,079,000	565,734	915,425	1,284,401

IRON.—TABLE 21.

Imports of Iron and Steel Goods Subject to Duty.

Material.	TWELVE MONTHS ENDING MARCH, 1910.		TWELVE MONTHS ENDING MARCH, 1911.	
	Quantity.	Values.	Quantity.	Values.
Agricultural implements, N.O.P., viz.:		\$		\$
Binding attachments.....	No.	156		10,022
Cultivators and weeders.....	10,069	54,392	6,296	59,064
Drills, seed.....	5,428	218,599	6,886	355,821
Farm, road, or field rollers.....	71	29,542	118	64,305
Forks, pronged.....	3,639	3,553	20,982	10,018
Harrows.....	9,004	114,586	15,001	229,911
Harvesters, self-binding.....	1,483	166,013	1,110	115,794
Hay loaders.....	460	25,119	453	25,272
Hay tedders.....	14	736	9	261
Hoes.....	9,290	1,978	4,737	1,210
Horse rakes.....	1,252	30,758	351	26,967
Knives, hay or straw.....	3,210	870	8,213	4,517
Knives, edging.....	143	173	56	72
Lawn mowers.....	6,722	22,454	8,783	32,412
Manure spreaders.....	248	21,750	705	65,562
Mowing machines.....	1,431	62,978	1,367	52,999
Ploughs.....	26,695	953,716	52,972	1,993,214
Post hole diggers.....	2,012	2,279	4,213	4,368
Potato diggers.....	770	32,225	626	16,767
Rakes, N.O.P.....	28,456	5,555	58,769	10,689
Reapers.....	161	8,350	827	60,677
Scythes.....	2,098	10,720	2,286	10,559
Sickles or reaping hooks.....	329	959	529	1,163
Snaths.....	78	306	15	30
Spades and shovels of iron or steel, N.O.P.....	9,095	43,145	9,539	45,751
Spade and shovel blanks, and iron or steel cut to shape for the same.....	4,474	7,410	3,247	5,448
Parts of agricultural implements paying 12½ per cent and 17½ per cent.....		231,245		464,202
" " " " 12½, 17½, and 20 per cent.....		493,714		765,844
All other agricultural implements, N.O.P.....		57,072		83,226

Anvils and vises.....	"	66,592	104,670
Cart or wagon skeins or boxes.....	Lbs.	132,868	9,945
Springs, N.O.P. and parts thereof, of iron or steel, for railway, tramway, or other vehicles.....	Cwt.	6,100	36,652
Axle and axle parts, N.O.P., and axle blanks and parts thereof, of iron or steel for railway, tramway, or other vehicles.....	"	40,261	164,891
Bar iron or steel, rolled, whether in coils, bundles, rod or bars, comprising rounds, ovals, squares, and flats, N.O.P.....	"	1,402,674	1,952,170
Butts and hinges N.O.P.....	\$	65,783	2,097,914
Canada plates, Russia iron, terne plate, and rolled sheets of iron and steel coated with zinc, spelter or other metal, of all widths or thicknesses, N.O.P.....	Cwt.	59,685	195,126
Castings, iron or steel, N.O.P.....	\$	403,524	29,765
Cast iron pipe of every description.....	Cwt.	280,891	327,175
Cast scrap iron.....	Tons	12,621	153,578
Chains, coil chain, chain links, and chain shackles of iron or steel of $\frac{3}{16}$ " diameter, and over.....	Cwt.	55,216	158,251
Chains, N.O.P.....	\$	45,386	61,069
Tacks, shoe.....	Lbs.	23,427	45,386
Nails, brads, spikes and tacks of all kinds, N.O.P.....	"	483,265	28,753
Engines, etc.:—			
Locomotives for railways.....	No.	99	346,090
Locomotive parts.....	\$	41,823	98
Motor cars for railways and tramways.....	No.	7	7,141
Engines, fire.....	"	12	7,638
Engines, gasoline.....	"	5,617	1,000,003
Engines, steam.....	"	324	252,864
Boilers, steam.....	"	654	243,246
Boilers, N.O.P.....	"	1,988	120,753
Fire extinguishing machines, including sprinklers for fire protection.....	\$	78,248	1,364
Fittings, iron or steel, for iron or steel pipe of every description.....	Lbs.	5,321,262	357,782
Flat eye-bar blanks, not punched or drilled, for use exclusively in the manufacture of bridges or of steel structural work, or in car construction.....	Tons	199	5,911
Ferro-silicon, spiegeleisen, and ferro-manganese.....	"	14,952	332,486
Forging of iron and steel of whatever size, shape, or in whatever stage of manufacture, N.O.P., and steel shafting, turned, compressed or polished and hammered, drawn or cold rolled iron or steel bars or shapes, N.O.P.....	Lbs.	2,491,222	121,952
Hardware, viz.: builders, cabinet-makers, upholsterers, harness-makers, saddlers and carriage hardware, including curry-combs, N.O.P.....	\$	503,939	2,424,963
Horse, mule, and ox shoes.....	"	13,797	631,050
Iron or steel billets, weighing not less than 60 pounds per lineal yard.....	Cwt.	567,159	518,102
Iron or steel ingots, clogged ingots, blooms, slabs, puddled bars and loops, or other forms, N.O.P., less finished than iron or steel bars, but more advanced than pig iron, except castings.....	"	115,490	97,333
Iron or steel bridges or parts thereof, iron or steel structural work, columns, shapes, or sections, drilled, punched, or in any further stage of manufacture than as rolled or cast, N.O.P.....	"	48,940	125,938
Iron in pig.....	Tons	158,910	2,118,440
Iron in pig charcoal.....	"	596	8,695
Locks of all kinds.....	\$	353,243	15,818
Machines, machinery, etc.:—			
Automobiles and motor vehicles of all kinds.....	No.	1,424	1,732,215

IRON.—TABLE 21—Continued.

Imports of Iron and Steel Goods Subject to Duty.

Material.	TWELVE MONTHS ENDING MARCH, 1910.		TWELVE MONTHS ENDING MARCH, 1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Machines, machinery, etc.:—Continued.				
Automobiles and motor vehicles, parts of.....	\$	269,586		522,223
Fanning mills.....	No. 831	10,854	2,246	29,319
Grain crushers.....	" 49	661	92	2,405
Windmills and complete parts thereof.....	No. 1,036	48,310	1,482	51,805
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, rock drills, air compressors, cranes, derricks, and percussion coal cutters.....	\$	259,311		265,935
Portable machines:—				
Fodder or feed cutters.....	No. 180	1,713	395	4,177
Horse powers for farm purposes.....	" 48	3,912	4	231
Portable engines with boilers in combination and traction engines for farm purposes.....	" 1,216	1,817,209	2,170	3,636,392
Portable sawmills and planing mills.....	" 13	12,303	36	17,204
Steam shovels.....	" 20	95,948	47	296,043
Threshing machine separators.....	" 1,199	629,799	1,286	741,360
Threshing machine separators, parts of, including wind-stackers, baggers, weighers and self-feeders for same, and finished parts thereof for repairs, when imported separately.....	\$	344,329		422,044
All other portable machines, N.O.P., and parts.....	"	23,873		43,742
Sewing machines.....	No. 16,430	323,249	14,968	351,525
Sewing machines, parts of.....	\$	101,584		108,957
Machines, typewriting.....	No. 9,319	670,165	11,230	686,936
Machines, type-casting and type-setting, and parts thereof, adapted for use in printing offices.....	" 66	297,071	134	226,325
Machines specially designed for ruling, folding, binding, embossing, creasing, or cutting paper or cardboard, when for use exclusively by printers, bookbinders, and by manufacturers of articles made from paper or cardboard, including parts thereof, composed wholly or in part of iron, steel, brass, or wood.....	" 310	197,004	1,015	265,810
Lithographic presses and type-making accessories for same.....	\$	62,000		68,631
Printing presses.....	"	326,185		392,873
Machinery of a class or kind not made in Canada and parts thereof adapted for carding, spinning, weaving, braiding, or knitting fibrous material, when imported by manufacturers for such purposes.....	"	847,247		893,413

All machinery composed wholly or in part of iron or steel, N.O.P., and iron or steel castings, and iron or steel integral parts of all machinery specified in tariff item 453.....	No.	7,136,558			12,556,876
Machines, washing.....	No.	6,538	36,178	5,751	36,373
Nails and spikes, composition and sheathing nails.....	Lbs.	255,728	9,140	192,918	8,717
Nails and spikes, cut (ordinary builders).....	Cwt.	2,461	4,977	4,696	9,657
Railway spikes.....	"	29,842	50,320	44,583	71,135
Nails, wire of all kinds, N.O.P.....	"	8,375	33,457	10,774	41,599
Pumps, hand, N.O.P.....	No.	17,861	72,660	20,942	97,224
Iron and steel railway bars or rails of any form, punched or not, N.O.P., for railways, which term for the purposes of this item shall include all kinds of railways, street railways and tramways, even although they are used for private purposes only, and even although they are not used or intended to be used in connexion with the business of common carrying of goods or passengers.....	Tons.	50,198	1,398,373	32,784	895,984
Railway fish-plates.....	"	2,526	109,114	1,489	60,786
Railway tie-plates.....	"	1,399	47,273	957	35,399
Rolled iron or steel angles, tees, beams, channels, girders, and other rolled shapes or sections, not punched or drilled or further manufactured than rolled, N.O.P.....	Cwt.	831,933	1,084,950	1,130,321	1,580,387
Rolled iron or steel beams, channels, angles, and other rolled shapes of iron and steel, not punched, drilled, or further manufactured than rolled, weighing not less than 35 pounds per lineal yard, not being square, flat, oval, or round shapes, and not being railway bars or rails.....	"	1,674,455	2,011,445	2,499,706	3,209,773
Rolled iron or steel hoop, band, scroll, or strip, 12 inches or less in width, No. 13 gauge and thicker, N.O.P.....	"	25,319	41,158	71,090	123,238
Rolled iron or steel hoop, band, scroll, or strip, No. 14 gauge and thinner, galvanized or coated with other metal or not, N.O.P.....	"	116,887	252,217	162,857	386,162
Rolled iron or steel sheets or plates, sheared or unsheared, and skelp iron or steel, sheared or rolled grooves, N.O.P.....	"	273,690	388,563	509,350	755,212
Rolled iron or steel plates not less than 30" in width and not less than ¼" in thickness, N.O.P.....	"	634,688	826,894	887,968	1,223,212
Rolled iron or steel sheets, polished or not, No. 14 gauge and thinner, N.O.P.....	"	400,898	956,028	441,671	1,046,123
Rolls of chilled iron or steel.....	"	751	3,191	3,292	10,526
Sad or smoothing hatters' and tailors' irons.....	\$		5,556		5,596
Safes, doors for safes and vaults.....	"		140,274		193,530
Screws, iron and steel, commonly called 'wood screws,' N.O.P., including lag or coach screws, plated or not, and machine or other screws, N.O.P.....	Gross.	151,389	29,189	249,613	47,268
Scales, balances, weighing beams, and strength-testing machines of all kinds.....	\$		119,447		113,176
Shafting, round, steel, in bars not exceeding 2½" diameter.....	Cwt.	43,971	76,756	58,535	119,498
Sheets or plates of steel, cold rolled with sheared edges over 14 gauge, and not less than 1½" wide for the manufacture of mower bars, hinges, typewriters, and sewing machines.....	"	6,161	12,324	15,893	35,789
Sheets, flat, of galvanized iron or steel.....	"	266,687	825,443	169,241	509,027
Sheets, iron or steel, corrugated, galvanized.....	"	1,564	3,546	2,633	9,468
Sheets, iron or steel, corrugated, not galvanized.....	"	26	48	6	76
Skates of all kinds, roller or other, and parts thereof.....	Pairs.	96,061	45,908	138,766	80,255
Skelp iron or steel, sheared or rolled in grooves, imported by manufacturers of wrought iron or steel pipe, for use exclusively in the manufacture of wrought iron or steel pipe in their own factories.....	Cwt.	1,222,161	1,546,580	1,191,529	1,598,385
Steel billets, N.O.P.....	"	53,636	63,089	14,226	19,940
Stoves of all kinds, for coal, wood, oil, spirits, or gas.....	\$		492,538		694,389
Stove urns of metal, and dovetails, chaplets, and hinge tubes of tin for use in the manufacture of stoves.....	"		17,136		22,370
Switches, frogs, crossings, and intersections for railways.....	Cwt.	22,996	134,734	29,201	144,195

IRON.—TABLE 21—Continued.

Imports of Iron and Steel Goods Subject to Duty.

Material.	TWELVE MONTHS ENDING MARCH, 1910.		TWELVE MONTHS ENDING MARCH, 1911.	
	Quantity.	Value.	Quantity.	Value.
Tubing:—		\$		\$
Wrought or seamless tubing, iron or steel, plain or galvanized, threaded and coupled, or not, over 4" diameter, N.O.P.	\$	683,763		503,206
Wrought or seamless tubing, iron or steel, plain or galvanized, threaded and coupled, or not, 4" and less in diameter, N.O.P.	\$	332,215		394,613
Seamless steel tubing, valued at not less than 3½ cents per lb.	Cwt. 5,039	27,497	12,016	45,605
Rolled or drawn square tubing of iron or steel, adapted for use in the manufacture of agricultural implements.	\$	5,942		1,894
Iron or steel pipe or tubing, plain or galvanized, riveted, corrugated or otherwise specially manufactured, including lockjoint pipe, N.O.P.	"	194,545		285,190
Iron or steel pipe, not butt or lap welded, and wire bound wooden pipe, not less than 30" internal diameter, when for use exclusively in alluvial gold mining.	"	47,488		22,599
Ware—Agate, granite, or enamelled iron or steel ware	"	143,374		167,693
Ware—Iron or steel hollow ware, plain black or coated, N.O.P., and nickel and aluminium kitchen or household hollow ware.	"	42,507		79,507
Wire bale ties.	Bundles of 250 ties		3,514	3,575
Wire bound wooden pipe, N.O.P.	\$	185		1,143
Wire cloth or woven wire and netting of iron and steel.	Lbs. 1,347,439	76,792	2,553,155	140,037
Wire, crucible cast steel, valued at not less than 6 cents per lb.	" 114,770	24,743	176,173	32,166
Wire screens, doors, and windows.	\$	9,623		20,065
Wire buckthorn strip fencing, woven wire fencing, and wire fencing of iron and steel, N.O.P., not to include woven wire or netting made from wire smaller than No. 14 gauge, not to include fencing or wire larger than No. 9 gauge.	Lbs. 1,598,471	51,688	1,840,681	65,448
Wire, single or several, covered with cotton, linen, silk, rubber, or other material, including cable so covered.	" 3,157,730	329,229	3,576,896	495,560
Wire of iron and steel all kinds, N.O.P.	" 7,713,386	210,630	8,969,965	271,402
Wire rope, stranded or twisted wire clothes lines, picture or other twisted wire, and wire cables, N.O.P.	" 5,339,334	345,756	7,525,843	530,054
Iron or steel nuts, rivets, or bolts with or without threads, nut bolt, and hinge blank, and T and strap hinges of all kinds, N.O.P.	Cwt. 33,875	132,082	46,938	192,798

Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings, and clippings of iron or steel plates or sheets having been in actual use: crop ends of tin plate bars, blooms, and rails, the same not having been in actual use.....	"	302,714	191,782	617,875	408,075
Penknives, jack-knives, and pocket knives of all kinds.....	\$		74,868		100,318
Knives and forks of steel, plated or not, N.O.P.....	"		201,445		263,804
All other cutlery, N.O.P.....	"		507,612		677,030
Guns, rifles, including air guns and air rifles (not being toys), muskets, cannons, pistols, revolvers, or other firearms.....	"		377,950		622,037
Bayonets, swords, fencing foils, and masks.....	"		6,043		9,810
Needles of any material or kind, N.O.P.....	"		101,496		118,783
Steel, chrome steel.....	Cwt.	4,028	17,581	7,711	30,691
Steel plate, universal mill or rolled edge plates of steel over 12" wide, imported by manufacturers of bridges or of structural work, or for use in car construction.....	"	316,760	390,953	487,764	655,047
Steel in bars or sheets to be used exclusively in the manufacture of shovels when imported by the manufacturers of shovels.....	"	27,723	36,437	31,121	44,546
Rolled iron or steel, or cast steel in bars, bands, hoops, scroll, or strip, sheet or plate of any size, thickness or width, galvanized or coated with any material or not, and steel blanks for the manufacture of milling cutters, when of greater value than 3½ cents per pound.....	"	71,716	415,331	106,676	621,431
Steel balls adapted for use in bearings of machinery and vehicles.....	\$		14,725		15,613
Flat steel, cold rolled, not over ½" thick, for the manufacture of cups and cones for ball bearings.....	Cwt.	396	1,429		
Steel wool.....	"	126	2,418	452	2,989
Tools and implements— Adzes, cleavers, hatchets, wedges, sledges, hammers, crowbars, cant-dogs and track tools, picks, mat-tocks and eyes and poles for the same.....	\$		63,078		67,132
Axes.....	Doz.	6,593	35,667	7,993	45,361
Saws.....	\$		80,677		113,401
Files and rasps, N.O.P.....	"		83,927		121,165
Tools, hand or machine, of all kinds, N.O.P.....	"		628,471		767,628
Knife blades or blanks, and table forks of iron and steel, in the rough, not handled, filed, ground, or otherwise manufactured.....	"		95		388
Manufactures, articles or wares of iron and steel, or of which iron and steel (or either) are the component materials of chief value, N.O.P.....	"		4,994,498		7,122,976
Total.....			49,850,258		73,371,113

IRON.—TABLE 22.

Imports of Iron and Steel Goods Free of Duty.

Material.	TWELVE MONTHS ENDING MARCH, 1910.		TWELVE MONTHS ENDING MARCH, 1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Anchors for vessels.....	Cwt. 5,698	22,299	6,168	25,362
Chain, malleable sprocket or link belting.....	\$	180,839		240,704
Cream separators, and steel bowls for.....	"	585,148		387,340
Cream separators—materials which enter into the construction and form part of when imported by manufacturers of cream separators to be used in the manufacture thereof.....	"	227,680		396,501
Gas buoys—The following articles and materials, when imported by manufacturers of automatic gas buoys and automatic gas beacons, for use in the manufacture of such buoys and beacons for the Government of Canada or for export, viz., iron or steel tubes over 16" in diameter; flanged and dished steel heads made from boiler plate, over 5 feet in diameter; hardened steel balls, not less than 3" in diameter; acetylene gas lanterns and parts thereof, and tobac bronze in bars or rods.....	"	14,916		29,829
Gun barrels, in single tubes, forged, rough bored.....	"			1,372
Iron or steel rods over $\frac{1}{4}$ " in diameter for manufacturing of chain.....	Cwt. 21,134	27,363	27,708	35,461
Rolled iron or steel rods not over $\frac{1}{4}$ " in diameter or width, to be manufactured into horseshoe nails.....	" 2,917	5,602		
Iron or steel, rolled round wire rods, in the coil, not over $\frac{3}{8}$ " in diameter, when imported by wire manufacturers for use in making wire in the coil in their own factories.....	" 561,423	749,117	720,641	965,912
Boiler plate of iron or steel not less than 30" in width, and not less than $\frac{1}{4}$ " in thickness, for use exclusively in the manufacture of boilers.....	" 307,737	438,744	319,897	492,247
Flat galvanized iron or steel sheets.....	" 391,076	1,167,496	381,797	1,127,087
Rolled iron and steel, and cast steel in bars, band, hoop, scroll or strip, sheet or plate of any size, thickness or width, galvanized or coated with any material or not, and steel blanks for the manufacture of milling cutters, when of greater value than 3 $\frac{1}{2}$ cts. per lb.....	" 59,261	412,110	82,746	531,804
Rolled iron or steel sheets in strips, polished or not, 14 gauge and thinner, N.O.P.....	" 324,935	648,641	363,381	800,034
Rolled iron or steel, hoop, band, scroll, or strip, No. 14 gauge or thinner, galvanized or coated with other metal or not, N.O.P.....	" 17,936	28,413	23,881	41,143
Iron tubing for manufacture of extension rods for windows.....	\$	5,866		8,642
Iron or steel, beams, sheets or plates, ankles, knees, masts or parts thereof, and cable chains for wooden, iron, steel or composite ships or vessels.....	Cwt. 113,010	173,143	283,319	417,981
Locomotive and car wheel tires of steel in the rough.....	" 136,586	337,093	192,110	451,253

Scrap iron and scrap steel, old, and fit only to be remanufactured, being part of or recovered from any vessel wrecked in waters subject to the jurisdiction of Canada.

Machinery:—

Articles of metals as follows when for use exclusively in mining or metallurgical operations, viz: coal cutting machines, except percussion coal cutters; coal heading machines; coal augers; rotary coal drills; core drills; miners safety lamps and parts thereof, also accessories for cleaning, filling, and testing such lamps; electric or magnetic machines for separating or concentrating iron ores; furnaces for the smelting of copper, zinc, and nickel ores; converting apparatus for metallurgical processes in metals; copper plates, plated or not, machinery for extraction of precious metals by the chlorination or cyanide process; amalgam safes; automatic ore samplers; automatic feeders; retorts, mercury pumps; pyrometers; bullion furnaces; amalgam cleaners; blast furnace blowing engines; wrought iron tubing, butt or lap welded; threaded, or coupled or not, over 4" in diameter; and integral parts of all machinery mentioned in this item; blowers of iron or steel for use in the smelting of ores, or in the reduction, separation, or refining of metals, rotary kilns, revolving roasters, and furnaces of metal designed for roasting ore, mineral rock or clay; furnace slag trucks, and slag pots of a class or kind not made in Canada; buddles, vanners, and slime tables adapted for use in gold mining.

Appliances of iron and steel, of a class or kind not made in Canada, and elevators and machinery of floating dredges, when for use exclusively in alluvial gold mining.

Well-drilling, and apparatus of a class or kind not made in Canada for drilling for water, natural gas or oil, and for prospecting for minerals, not to include motive power.

Briquette making machines.

Newspaper printing presses, of not less value by retail than \$1,500 each, of a class or kind not made in Canada.

Machinery or tools not manufactured in Canada up to the required standard necessary for any factory to be established in Canada for the manufacture of rifles for the Government of Canada.

All materials, or parts in the rough, unfinished, and screws, nuts, bands, and springs to be used in rifles to be manufactured at any such factory for the Government of Canada.

Machinery of every kind, and structural iron and steel for use in the construction and equipment of factories for the manufacture of sugar from beet root.

Machinery of a class or kind not made in Canada and parts thereof, for the manufacture of twine cordage, or linen, or for the preparation of flax fibre.

Mould boards or shares, or plough plates, land sides, or other plates for agricultural implements, when cut to shape from rolled plates of steel, but not moulded, punched, polished, or otherwise manufactured.

Steel balls adapted for use on bearings on machinery, and vehicles.

Steel, rolled, for saws and straw cutters not tempered, or ground, nor further manufactured than cut to shape without indented edges.

Steel strips, and flat steel wire when imported into Canada by manufacturers of buckthorn and plain strip fencing, for use exclusively in their own factories in the manufacture thereof.

Steel wire, Bessemer soft drawn spring of Nos. 10, 12, and 13 gauge, respectively, and homo steel spring wire of Nos. 11 and 12 gauge, respectively, when imported by manufacturers of wire mattresses, to be used exclusively in their own factories in the manufacture of such articles.

Steel, crucible sheet, 11 to 16 gauge, 2 1/2" to 18" wide for the manufacture of mower and reaper knives when imported by manufacturers thereof for use exclusively in the manufacture of such articles in their own factories.

	800	100	1,230	730
		765,564		704,878
		60,154		251,041
		120,409		209,717
		3,742		27,582
No.	97	391,657	114	504,556
		9,331		6,166
		54,068		50,067
		51,222		29,903
		16,351		43,129
Cwt.	103,627	289,044	164,052	512,857
\$		3,688		3,206
Cwt.	19,145	158,438	22,896	181,866
	19	157	8	32
	8,610	21,885	9,173	22,831
	13,830	55,095	14,118	57,518

IRON.—TABLE 22—Continued.

Imports of Iron and Steel Goods Free of Duty.

Material.	TWELVE MONTHS ENDING MARCH, 1910.		TWELVE MONTHS ENDING MARCH, 1911.		
	Quantity.	Value.	Quantity.	Value.	
		\$		\$	
Steel No. 20 gauge and thinner, but not thinner than 30 gauge, for the manufacture of corset steels, clock springs, and shoeshanks, imported by manufacturers of such articles for exclusive use in the manufacture of such articles in their own factories.	Cwt.	87	360	1,118	2,771
Steel wire, flat, of 16 gauge or thinner, imported by the manufacturers of crinoline, and corset wires and dress stays, for use exclusively in the manufacture of such articles in their own factories.	"	12,950	46,665	6,286	40,240
Steel, No. 12 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of buckle clasps, bed fasts, furniture casters, and ice-creepers, imported by the manufacturers of such articles, for use exclusively in the manufacture of such articles in their own factories.	"	3,123	7,859	4,704	14,268
Steel, No. 24 and 17 gauge, in sheets 63" long and from 13" to 32" wide, when imported by the manufacturers of tubular bow sockets for use exclusively in the manufacture of such articles in their own factories.	"	1,565	3,090	1,440	3,132
Steel springs for the manufacture of surgical trusses, when imported by manufacturers of surgical trusses for use exclusively in the manufacture thereof in their own factories.	Lbs.	2,265	479	1,200	438
Swedish rolled iron, and Swedish rolled steel nail rods, under half an inch in diameter, for the manufacture of horse-shoe nails.	Cwt.	19,208	39,313	20,420	47,039
Steel seamless tubing valued at not less than 3½ cents per pound.	"	1,448	11,758	2,751	20,015
Steel rolled or drawn square tubing adapted for use in the manufacture of agricultural implements.	\$		163		
Steel or iron tubes, rolled, not joined or welded, not more than 1½" diameter, N.O.P.	"		11,459		17,777
Seamless steel, or wrought iron boiler tubes, including flues and corrugated tubes for marine boilers.	"		52,290		573,579
Steel imported by manufacturers of rifles for use in manufacturing rough parts of rifles, when such parts are to be used in rifles for the Government of Canada.	\$		4,180		
Barbed fencing wire of iron or steel.	Cwt.	351,576	765,427	345,108	743,527
Wire, crucible cast steel, valued at not less than 6 cents per pound.	Lbs.	6,264	1,450	16,939	2,479
Wire, curved or not, galvanized iron or steel, Nos. 9, 12, and 13 gauge.	Cwt.	763,538	1,524,742	637,393	1,243,580
Wire, steel, valued at not less than 2½ cents per pound when imported by manufacturers of rope for use exclusively in the manufacture of rope.	"	34,765	136,715	46,311	180,832
Total.			10,101,939		11,448,428

IRON.—TABLE 23.

Imports of Iron and Steel into Canada from the United States.*

Material.	TWELVE MONTHS ENDING JUNE 30, 1910.		TWELVE MONTHS ENDING JUNE 30, 1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Pig iron.....Short tons	75,270·7	1,135,509	145,867·7	2,090,722
Scrap and old, fit only for remanufacture "	14,071·6	195,316	48,349·3	609,191
Bar iron....."	5,802·7	216,228	11,157·7	363,283
<i>Bars or Rods of Steel—</i>				
Wire rods....."	27,736	781,335	19,825·9	527,306
All other....."	75,050·9	2,390,235	92,268·0	2,322,424
Billets, ingots, and blooms of steel.. "	14,395	306,268	56,433·4	1,113,957
Hoop, band, and scroll....."	4,617·5	200,655	†	†
Steel rails for railways....."	30,525·6	801,034	43,752·8	1,168,101
Sheets and plates (iron)....."	26,290	1,264,985	23,894·2	1,139,918
Sheets and plates (steel)....."	128,277	4,875,466	174,055·9	6,437,314
Sheets and plates (tin plates, terne plates, and taggers tin)....."	11,892·6	826,929	23,008·8	1,607,458
Structural iron and steel....."	74,574	2,828,358	89,201·3	3,496,033
Wire (barbed)....."	18,202·5	839,818	16,182	707,893
Wire (all other)....."	29,950	1,296,835	35,097·6	1,483,075
<i>Nails and Spikes—</i>				
Cut....."	1,097·5	39,085	1,854·9	56,034
Wire....."	693·5	37,452	376	22,968
All other, including tacks....."	328	20,021	845·9	56,163
Pipes and fittings....."	37,031·9	1,618,181	36,264·4	1,640,592
Radiators and cast iron house heating boilers....."	†	†	3,090·6	201,989
	574,807·0	19,673,740	821,526·4	25,544,421

* Compiled from "Commerce and Navigation of the United States, 1911," Washington, D.C.

† Included in "all other manufactures of" in 1910.

‡ " " " " 1911.

Table continued on next page.

IRON.—TABLE 23—Continued.

Imports of Iron and Steel into Canada from the United States.

Material.	1910.		1911.	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
<i>Builders Hardware and Tools —</i>				
Locks, hinges, and other builders hardware		1,272,969		1,560,793
Saws		203,262		233,785
Tools not elsewhere specified		1,025,979		1,417,144
Car wheels	No. 6,592	66,505	5,976	71,588
Castings, not elsewhere specified		904,412		1,439,080
<i>Cutlery —</i>				
Table		12,226		*
All other		109,039		123,231
<i>Firearms</i>		305,016		416,129
<i>Machinery, Machines, and parts of —</i>				
Adding machines		†		320,326
Brewers' machinery		†		112,405
Cash registers	No. 724	45,260	2,268	197,597
Electrical machinery		1,151,449		1,664,668
Laundry machinery		124,325		139,008
Metal working machinery (including metal working machine tools)		336,172		766,127
Mining machinery		734,631		912,270
Printing presses and parts of		756,493		1,057,876
Pumps, and pumping machinery		456,353		634,343
Refrigerating machinery, ice-making machinery, etc.		†		73,193
Sewing machines and parts of		462,128		436,059
Shoe machinery		228,431		266,998
Steam engines and parts of (fire)	No. 16	7,199	†	†
Steam engines and parts of (locomotive)	" 65	247,979	69	345,618
Steam engines and parts of (stationary)	" 3,173	840,418	4,016	852,685
Steam engines and parts of (traction)	" 1,296	2,094,247	1,590	2,743,147
Steam engines and parts of (all other engines and parts of engines)	"	1,366,650		1,585,231
Sugar-mill machinery		†		4,883
Typewriting machines and parts of		430,737		647,152
Windmills and parts of		40,041		78,692
Wood working machinery		349,094		454,596
All other		7,343,794		10,383,946
Safes	No. 2,960	136,684	3,967	209,092
Scales and balances		109,181		138,674
Stoves, ranges, and parts of		635,900		832,447
All other manufactures of		6,357,049		8,569,792
		28,153,628		38,738,575
Total value		47,827,368		64,282,996

* In 1911, included in "all other cutlery."

† In 1911, included in "locomotive."

‡ In 1910, included in "all other machinery."

LEAD.

The following statistics of the production of lead in Canada in 1911 are based on direct smelter returns and represent the amount of lead refined in Canada and shipped as pig lead or manufactured products.

The 1911 output was almost entirely from the mines of British Columbia, and a considerable decrease is shown, the production being 23,784,969 pounds in that year, against 32,987,508 for 1910. A small shipment was made from Quebec, but in regard to this figures are not obtainable.

In valuing the lead production for 1911, the average price per pound at Montreal has been used. The New York market is practically closed to Canadian lead by high tariff, and to the London market price must be added the freight, etc., to reach the Canadian market. The price at Montreal or Toronto is lower than that at New York, and higher than that at London, and is probably a more equitable valuation to place upon the Canadian production.

Statistics showing the lead production since 1887 are given in the following table:—

LEAD.—TABLE 1.
Annual Production.

Calendar Year.	Lbs.	Price per lb.	Value.	Calendar Year.	Lbs.	Price per lb.	Value.
		Cts.	\$			Cts.	\$
1887.....	204,800	5·400	9,216	1900....	63,169,821	4·370	2,760,521
1888.....	674,500	4·420	29,812	1901.....	51,900,958	4·334	2,249,387
1889.....	165,100	3·930	6,488	1902.....	22,956,381	4·069	934,095
1890.....	105,000	4·430	4,704	1903.....	18,139,283	4·237	768,562
1891.....	88,665	4·350	3,857	1904.....	37,531,244	4·309	1,617,221
1892.....	808,420	4·090	33,064	1905.....	56,864,915	4·707	2,676,632
1893.....	2,135,023	3·730	79,636	1906.....	54,608,217	5·627	3,089,187
1894.....	5,703,222	3·290	187,636	1907.....	47,738,703	5·325	2,542,086
1895.....	16,461,794	3·230	531,716	1908.....	43,195,733	4·200	1,814,221
1896.....	24,199,977	2·980	721,159	1909.....	45,857,424	*3·690	1,692,139
1897.....	39,013,219	3·530	1,396,853	1910.....	32,987,508	3·687	1,216,249
1898.....	31,915,319	3·780	1,206,399	1911.....	23,784,969	†3·480	827,717
1899.....	21,862,436	4·470	977,250				

* In 1909 and 1910, average prices at Toronto as quoted by *Hardware and Metal*; in previous years average prices at New York, as quoted by *Engineering and Mining Journal*.

† 1911 average price at Montreal. Quotations furnished by Messrs. Thos. Robertson & Co., Montreal, Que.

Previous to 1904, lead ores mined in Canada were either exported as ore, or smelted in Canadian furnaces and exported in the form of base bullion to be refined abroad. A lead refinery employing the Bett's Electrolytic Process is now operated at Trail, B.C., in connexion with the smelter there, and has witnessed frequent enlargements until it is now treating the base bullion pro-

duced from the smelting of practically all the British Columbia lead ores by the Trail smelter.

Pig lead, fine gold, fine silver, refined antimony, copper sulphate, and babbitt metal are produced at the refinery, and lead pipe is also manufactured there. The refined lead finds a market in Canada, the United States, and the Orient. Of that used in Canada a great part is consumed in the manufacture of white lead, for which the Trail product is especially valuable on account of its purity.

The production of refined lead, including pig lead and lead pipe, etc., has been as follows:—

Year.	Refined lead produced.	Year.	Refined lead produced.
1904.....	7,519,440	1908.....	36,549,274
1905.....	15,804,509	1909.....	41,883,614
1906.....	20,471,314	1910.....	32,987,508
1907.....	26,607,461	1911.....	23,784,969

The price of lead in London averages from $\frac{1}{2}$ to 2 cents per pound lower than in New York.

The average price for soft lead in 1911, on the London market, was £13 19s. 3d. per long ton (equivalent to 2.992 cents per pound), as compared with £12 19s. (2.775 cents per pound) in 1910, and £13 1s. 8d. (2.803 cents per pound), in 1909.

The price of lead on the Canadian market at Montreal is intermediate between the New York and London values. Montreal is the main Canadian market. The Toronto price in winter is about the same as that at Montreal but the latter falls during the period of summer freight rates about 10 cents per 100 pounds below the former.

The average price of lead in Montreal in 1911 was 3.480 cents per pound, against 2.992 in London and 4.420 in New York.

The monthly and yearly average prices of lead in Montreal for the past five years are given in the following table:—

Price of Pig Lead at Montreal.*

Month.	1907.	1908.	1909.	1910.	1911.
January.....	4·94	3·67	3·35	3·48	3·31
February.....	4·88	3·60	3·38	3·40	3·32
March.....	4·92	3·54	3·42	3·34	3·34
April.....	4·92	3·44	3·35	3·21	3·26
May.....	4·84	3·21	3·26	3·13	3·20
June.....	4·93	3·11	3·23	3·15	3·27
July.....	4·98	3·17	3·12	3·13	3·33
August.....	4·69	3·31	3·08	3·11	3·45
September.....	4·85	3·24	3·14	3·11	3·63
October.....	4·56	3·29	3·26	3·23	3·77
November.....	4·25	3·42	3·28	3·31	3·93
December.....	3·65	3·37	3·34	3·35	3·95
Average.....	4·701	3·364	3·268	3·246	3·480

*Producers prices for car-load quantities ex cars Montreal as furnished by Messrs. Thos. Robertson & Co., Ltd., of Montreal.

The average monthly prices of lead in New York as quoted in the 'Engineering and Mining Journal' are shown in the next table.

Monthly Average Prices of Lead in New York, in cents per pound.

Month.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
January.....	4·35	4·000	4·075	4·347	4·552	5·600	6·000	3·691	4·175	4·700	4·483
February.....	4·35	4·075	4·075	4·375	4·450	5·464	6·000	3·725	4·018	4·613	4·440
March.....	4·35	4·075	4·442	4·475	4·470	5·350	6·000	3·838	3·986	4·459	4·304
April.....	4·35	4·075	4·567	4·475	4·500	5·404	6·000	3·993	4·168	4·376	4·412
May.....	4·35	4·075	4·325	4·423	4·500	5·685	6·000	4·253	4·287	4·315	4·373
June.....	4·35	4·075	4·210	4·196	4·500	5·750	5·760	4·466	4·350	4·343	4·435
July.....	4·35	4·075	4·075	4·192	4·524	5·750	5·288	4·447	4·321	4·404	4·499
August.....	4·35	4·075	4·075	4·111	4·665	5·750	5·250	4·580	4·363	4·400	4·500
September.....	4·35	4·075	4·243	4·200	4·850	5·750	4·813	4·515	4·342	4·400	4·485
October.....	4·35	4·075	4·375	4·200	4·850	5·750	4·750	4·351	4·341	4·400	4·265
November.....	4·35	4·075	4·218	4·200	5·200	5·750	4·376	4·330	4·370	4·442	4·298
December.....	4·15	4·075	4·162	4·600	5·422	5·900	3·658	4·213	4·560	4·500	4·450
Average.....	4·33	4·069	4·237	4·309	4·707	5·657	5·325	4·200	4·273	4·446	4·420

The average monthly prices of soft lead in London, England, as published by Julius Matton of London, and 'Metallgesellschaft' of Frankfort-on-the-Main, were, from 1902 to 1911, as follows:—

Average Monthly Prices of Lead in London, £ per long ton.

Month.	1902.			1903.			1904.			1905.			1906.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	10	11	4	11	6	1	11	11	2	12	17	6	16	17	4
February	11	12	4	11	14	2	11	11	10	12	9	3	16	0	4
March	11	10	2	13	4	6	12	..	9	12	5	11	15	17	9
April	11	11	11	12	8	1	12	5	1	12	13	2	15	16	6
May	11	12	..	11	16	..	11	15	11	12	15	3	16	13	6
June	11	5	5	11	8	9	11	10	5	13	..	..	16	15	6
July	11	4	8	11	7	8	11	13	4	13	12	2	16	11	7
August	11	2	5	11	2	11	11	14	9	13	19	2	17	1	3
September	10	17	10	11	3	4	11	15	9	13	19	..	18	4	4
October	10	14	11	11	2	2	12	3	9	14	13	7	19	7	9
November	10	14	4	11	2	2	12	17	10	15	6	9	19	5	6
December	10	15	1	11	3	7	12	15	6	17	1	..	19	12	6
Yearly average	11	5	3	11	11	7	11	19	8	13	14	5	17	7	..

Month.	1907.			1908.			1909.			1910.			1911.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	19	16	8	14	10	6	13	3	6	13	3	11	13	..	8
February	19	11	6	14	5	6	13	5	5	13	7	3	13	1	11
March	19	14	7	14	1	4	13	8	8 ¹ / ₂	13	2	9	13	2	11
April	19	16	4	13	13	10	13	7	..	12	13	9	12	18	5
May	19	17	7	13	2	7	13	5	3	12	11	8	12	19	2
June	20	6	..	12	15	7	13	2	4	12	13	9	13	5	5
July	20	8	2	12	19	6	12	13	3	12	11	8	13	10	11
August	19	t	3	13	9	10 ¹ / ₂	12	10	6	12	10	10	14	1	4
September	19	17	6	13	3	6	12	15	3	12	12	6	14	15	1
October	18	13	..	13	7	3	13	4	4	13	2	..	15	6	1
November	17	4	11	13	12	2	13	1	4 ¹ / ₂	13	4	6	15	15	5
December	14	9	4	13	3	6	13	2	11 ¹ / ₂	13	3	9	15	13	4
Yearly average	19	1	10	13	10	5	13	1	8	12	19	..	13	19	3

Bounties.—In 1901, and again in 1903, the Dominion Government, to encourage the lead industry, authorized the payment of a bounty on the production of lead. The Act of 1903 provided for the payment under certain restrictions of 75 cents per hundred pounds on lead contained in ore mined and smelted in Canada, provided that when the standard price of pig lead in London, England, exceeded £12 10s. per ton of 2,240 pounds, such bounty should be reduced proportionately by the amount of such excess. Thus, when the price of lead in London rose to £16 or over per long ton, the bounty ceased. As the price of lead exceeded £16 sterling on the London market for a considerable period during 1906 and 1907 the bounty paid during those years was comparatively small.

The Act of 1903 provided that payment of bounty should cease on June 30, 1908, and as only a portion of the funds provided had been used, a new Act was passed in the latter year providing for further bounty payments at the rate of 75 cents per hundred pounds, or approximately £3 10s. per ton of 2,240 lbs., subject to the restriction that when the price of lead in London exceeds £14 10s. the bounty shall be reduced by such excess.

The Act, together with the regulation based upon it, is reproduced herewith in full.

ACT 7-8 EDWARD VII., CHAPTER 43.

AN ACT RESPECTING THE PAYMENT OF BOUNTIES ON LEAD CONTAINED IN LEAD-BEARING ORES MINED IN CANADA.

Assented to July 20th, 1908.

Whereas under the provisions of an Act passed on the 24th day of October, 1903, being chapter 31 of the Acts of 1903, payment of a bounty on lead contained in lead-bearing ores mined in Canada, not to exceed five hundred thousand dollars in any fiscal year, was authorized to be paid until the thirtieth day of June, 1908, and whereas the total amount of bounty paid thereunder up to the thirty-first day of March, 1908, was six hundred and sixty-seven thousand four hundred and four dollars, and it is estimated that a further amount of forty-five thousand dollars will be payable on or before the thirtieth day of June, 1908, leaving unexpended about one million seven hundred and eighty-eight thousand and seventy-eight dollars of the total amount authorized to be paid under the provisions of the said chapter 31: Therefore, His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. The Governor in Council may authorize the payment of a bounty of seventy-five cents per one hundred pounds on lead contained in lead-bearing ores mined in Canada, on and after the first day of July, 1908, such bounty to be paid to the producer or vendor of such ores; Provided that the sum to be paid as such bounty shall not exceed five hundred thousand dollars in any year ending on the thirtieth day of June: Provided also that when it appears to the satisfaction of the Minister charged with the administration of this Act that the standard price of pig lead in London, England, exceeds fourteen pounds ten shillings sterling per ton of two thousand two hundred and forty pounds, such bounty shall be reduced by the amount of such excess.

The total amount of bounty payable under the provisions of chapter 31 of the Acts of 1903, and of this Act, shall not exceed two million five hundred thousand dollars.

2. Payment of the said bounty may be made from time to time to the extent of sixty per cent upon smelter returns showing that the ore has been delivered for smelting at a smelter in Canada. The remaining forty per cent may be

paid at the close of the fiscal year, upon evidence that all such ore has been smelted in Canada.

If at the close of any year it appears that during the year the quantity of lead produced, on which the bounty is authorized, exceeds thirty-three thousand three hundred and thirty-three tons of two thousand pounds, the rate of bounty shall be reduced to such sum as will bring the payments for the year within the limit mentioned in section 1.

3. If at any time it appears to the satisfaction of the Governor in Council that the charges for transportation and treatment of lead ores in Canada are excessive, or that there is any discrimination which prevents the smelting of such ores in Canada on fair and reasonable terms, the Governor in Council may authorize the payment of bounty at such reduced rates as he deems just, on the lead contained in such ores mined in Canada and exported for treatment abroad.

4. If at any time it appears to the satisfaction of the Governor in Council that products of lead are manufactured in Canada direct from lead ores mined in Canada without the intervention of the smelting process, the Governor in Council may make such provision as he deems equitable to extend the benefits of this Act to the producers of such ores.

5. The bounties payable under the provisions of this Act shall cease and determine on the thirtieth day of June, one thousand nine hundred and thirteen.

6. The Governor in Council may make regulations for carrying out the intention of this Act.

REGULATIONS under the provisions of the Act 7-8, Edward VII, Chapter 43, intituled: " An Act to provide for the payment of Bounty on Lead contained in the lead-bearing ores mined in Canada."

(As authorized by Order in Council on the 3rd August, 1903.)

1. The Minister of Trade and Commerce is charged with the administration of this Act.

2. All producers or vendors of lead-bearing ores who desire to avail themselves of the provisions of the Act above quoted, and to be paid bounty, shall, before making claim for such bounty, notify the Minister of their intention to claim under the provisions of the Act, and shall declare the name of the mine producing such ore, its situation, the names of the President, Secretary, and Manager, as well as the name of the official authorized to make claim. Notice shall be given the Minister of changes in ownership and management. Where the bounty is claimed by Lessees, the consent of the owner shall be shown.

3. All claims for the payment of bounty shall be made and substantiated under the oath of the Manager of the mine, or of the official authorized to make the claim.

4. Claims may be made monthly, that is immediately after the close of each calendar month, and be in such form, and contain such evidence, as may seem to the Minister from time to time necessary.

5. No claims made otherwise than in conformity with these regulations, and in form required by the Minister, shall be recognized, allowed or paid by the Minister.

6. The smelting of all such ores shall at all times be under the supervision of the officer of the Department of Trade and Commerce, appointed or detailed for the purpose.

7. The supervising officer may at any time demand and receive a portion of the floor sample of any ore delivered at the smelter for smelting purposes.

8. The rate of bounty shall be computed according to the London quotation upon the day the ore is taken into stock at the smelter, such day not to be later than the last day of the calendar month during which the ore was unloaded from cars at smelter grounds.

9. The lead contents of ores shall for the purpose of this Act be ascertained by fire assay, as used in ordinary commercial assaying.

10. The books of the claimants, and those of the smelting works at which the ore is smelted, shall be at all times open to the inspection of such supervising officer, and of any officer of the Department of Trade and Commerce who may be detailed by the Minister for the purpose.

11. All claims shall be substantiated by the oath of the Manager of the Smelting Works at which the ores are smelted, and shall be verified and certified to by the officer of the Department of Trade and Commerce, appointed to supervise the smelting at the works where it has been carried on.

12. The cost of the supervision shall be paid by the claimants and may be deducted *pro rata* according to the quantity smelted during the fiscal year from the amount payable to such claimants at the close of each fiscal year."

Statement of Bounties paid on Lead during the fiscal years 1899 to 1912.

Year ending.	Bounty paid.	Year ending.	Bounty paid.
	\$		\$
June 30, 1899.....	76,665	March 31, 1907 (9 mos.).....	1,995
" 30, 1900.....	43,335	" 31, 1908.....	51,001
" 30, 1901.....	30,000	" 31, 1909.....	307,433
" 30, 1902.....		" 31, 1910.....	340,542
" 30, 1903.....	4,380	" 31, 1911.....	248,534
" 30, 1904.....	195,627	" 31, 1912.....	179,288
" 30, 1905.....	330,645		
" 30, 1906.....	90,196	Total.....	1,899,641

Exports and Imports.—According to Trade and Navigation reports, the total quantity of lead contained in ore and concentrates, and pig lead, exported, during the calendar year 1911, was 137,061 pounds, valued at \$4,632, as compared with 7,759,053 pounds, valued at \$249,482, in 1910.

Details of exports, 1908 to 1911, are as follows:—

Exports of Lead, 1908 to 1911.

	LEAD IN ORE, CONCENTRATES, ETC.		PIG LEAD.	
	Lbs.	Value.	Lbs.	Value.
1908.		\$		\$
To United States..	719,086	20,514	168,866	5,329
To other countries..	3,792,845	132,880	13,773,797	463,731
Total	4,511,931	153,394	13,942,663	469,060
1909.		\$		\$
To United States..	6,096,852	126,478	280	8
To other countries..	129,216	6,100	11,301,680	361,056
Total	6,226,068	132,578	11,301,960	361,064
1910.		\$		\$
To United States..	46,800	1,308	59,605	2,295
To other countries..			7,652,648	245,879
Total	46,800	1,308	7,712,253	248,174
1911.		\$		\$
To United States..	65,100	1,826	71,961	2,806
To other countries..				
Total	65,100	1,826	71,961	2,806

The exports of lead since 1873 are shown in Table 2:—

LEAD.—TABLE 2.

Exports of Lead.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1873.....		1,903	1893.....		3,099
1874.....		127	1894.....	5,792,700	144,509
1875.....		7,510	1895.....	23,075,892	435,071
1876.....		66	1896.....	26,480,320	462,095
1877.....		720	1897.....	43,802,697	925,144
1878.....			1898.....	37,375,678	885,485
1879.....		230	1899.....	15,799,518	466,950
1880.....			1900.....	57,642,029	1,917,690
1881.....			1901.....	45,590,995	1,804,687
1882.....		32	1902.....	17,761,484	457,170
1883.....		5	1903.....	18,624,303	426,466
1884.....		36	1904.....	25,868,825	559,461
1885.....			1905.....	41,657,403	1,046,541
1886.....			1906.....	21,436,022	736,007
1887.....		724	1907.....	25,591,893	1,029,898
1888.....		18	1908.....	18,454,594	622,454
1889.....		18	1909.....	17,528,028	493,642
1890.....			1910.....	7,759,053	249,482
1891.....		5,000	1911.....	137,061	4,632
1892.....		2,509			

The principal imports of lead during the calendar years 1909, 1910, and 1911, were as follows:—

	Cal. year 1909.		Cal. year 1910.		Cal. year 1911.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Old, scrap, pig, and block.....	5,649	184,572	6,030	346,516	9,989	495,923
Bars and sheets.....	671	44,073	885	45,674	1,542	55,458
Pipe.....	71	4,884	202	15,365	256	19,426
Shot and bullets.....	5	489	3	311	4	1,053
Manufactures of lead.....		102,370		107,688		108,012
Tea lead.....	1,113	116,461	1,186	117,399	1,344	134,160
Litharge.....	852	58,100	777	56,049	899	65,743
Total	7,822	510,949	9,083	689,002	14,034	879,775
Metallic lead contained in imported lead pigments.....	1,514	.....	1,461	.....	1,597	169,501
	9,336	.....	10,544	.....	15,631	1,049,276

Statistics of the annual imports since 1880 of lead and manufactures of lead, are shown in Tables 3 and 4; imports of litharge in Table 5; and imports of dry white and red lead in Table 6.

LEAD.—TABLE 3.

Imports of Lead.

Fiscal Year.	OLD, SCRAP, AND PIG.		BARS, BLOCKS, SHEETS.		TOTAL.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
		\$		\$		\$
1880.....					30,298	124,117
1881.....	16,236	56,919	18,222	70,744	34,458	127,663
1882.....	36,655	120,870	10,540	35,728	47,195	156,598
1883.....	48,680	148,759	8,591	28,785	57,371	177,544
1884.....	39,409	103,413	9,704	28,458	49,113	131,871
1885.....	36,106	87,038	9,362	24,396	45,468	111,434
1886.....	39,945	110,947	9,793	28,948	49,738	139,895
1887.....	61,160	173,477	14,153	41,746	75,313	215,223
1888.....	68,678	196,845	14,957	45,900	83,635	242,745
1889.....	74,223	213,132	14,173	43,482	88,396	256,614
1890.....	101,197	283,096	19,083	59,484	120,280	342,580
1891.....	86,382	243,033	15,646	48,220	102,028	291,253
1892.....	97,375	254,384	11,299	32,368	108,674	286,752
1893.....	94,485	215,521	12,403	32,286	106,888	247,807
1894.....	70,223	149,440	8,486	20,451	78,709	169,891
1895.....	67,261	139,290	6,739	16,315	74,000	155,605
1896.....	72,433	173,162	8,575	23,169	81,008	196,331
1897.....	65,279	158,381	10,516	29,175	75,795	187,556

	OLD, SCRAP, PIG, AND BLOCK. *		BARS AND SHEETS †		TOTAL.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
1898.....	88,420	260,779	22,214	39,041	110,634	299,820
1899.....	114,659	283,432	44,796	39,833	159,455	323,265
1900.....	62,361	207,819	15,493	53,506	77,854	251,325
1901.....	(a) 85,321	97,011	16,295	78,316	101,616	175,327
1902.....	(a) 122,279	104,672	18,596	49,261	140,875	153,933
1903.....	(a) 98,530	67,321	11,535	35,398	110,065	103,219
1904.....	(a) 94,602	121,165	14,102	39,644	108,704	160,809
1905.....	(a) 87,074	133,775	17,792	51,972	74,866	185,747
1906.....	82,729	271,105	16,106	57,185	98,835	328,290
1907.....	79,575	277,470	13,710	56,630	93,285	334,100
1908.....	63,921	284,604	17,253	75,186	81,174	359,790
1909.....	50,110	151,173	13,754	46,093	63,864	197,266
1910.....	113,249	191,971	11,446	37,004	124,695	228,975
1911.....	116,655	334,159	15,587	55,312	132,242	389,471

* Duty 15 per cent.

† Duty 25 per cent.

(a) Includes Canadian lead ore sent to the United States for refining, imported at price of refining only.

LEAD.—TABLE 4.

Imports of Lead Manufactures.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 15,400	1891.....	\$ 23,898	1902.....	\$ 120,020
1881.....	22,629	1892.....	22,636	1903.....	134,151
1882.....	17,232	1893.....	33,733	1904.....	129,093
1883.....	25,556	1894.....	29,361	1905.....	147,177
1884.....	31,361	1895.....	38,015	1906.....	163,793
1885.....	36,340	1896.....	50,722	1907.....	162,425
1886.....	33,078	1897.....	60,735	1908.....	243,926
1887.....	19,140	1898.....	63,179	1909.....	213,167
1888.....	18,816	1899.....	91,497	1910.....	234,930
1889.....	16,315	1900.....	104,736	1911.....	235,248
1890.....	25,600	1901.....	107,260		

LEAD.—TABLE 5.

Imports of Litharge.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	3,041	\$ 14,334	1891.....	7,979	\$ 27,613	1902.....	13,002	\$ 47,021
1881.....	6,126	22,129	1892.....	10,384	34,343	1903.....	13,921	47,761
1882.....	4,900	16,651	1893.....	7,685	24,401	1904.....	9,394	32,633
1883.....	1,532	6,173	1894.....	38,547	28,685	1905.....	17,865	57,736
1884.....	5,235	18,132	1895.....	11,955	32,953	1906.....	10,165	39,836
1885.....	4,990	16,156	1896.....	10,710	32,817	1907.....	11,311	49,133
1886.....	4,928	16,063	1897.....	12,023	34,538	1908.....	19,052	90,785
1887.....	6,397	21,865	1898.....	10,446	32,904	1909.....	12,117	43,597
1888.....	7,010	23,308	1899.....	9,530	32,518	1910.....	13,101	62,174
1889.....	8,089	31,032	1900.....	9,139	29,176	1911.....	16,543	59,987
1890.....	9,453	31,401	1901.....	11,132	51,944			

The imports of white and red lead and orange mineral, in 1911, amounted to 4,072,433 pounds, valued at \$169,501. In 1903, the imports were 19,208,786 pounds, the falling off being due to the establishment of corroding works at Montreal.

Detailed statistics of imports of lead pigments during the calendar years 1909, 1910, and 1911, are as follows; the statistics of imports since 1885 being shown in Table 6:—

Imports of White and Red Lead in 1909, 1910, and 1911.

	CALENDAR YEAR 1909.		CALENDAR YEAR 1910.		CALENDAR YEAR 1911.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
		\$		\$		\$
Lead, white, dry.....	2,690,575	95,894	2,076,629	75,465	1,467,193	58,335
Lead, white, ground in oil.....	730,001	32,678	811,510	37,475	1,033,732	46,986
Lead, red, dry and orange mineral.....	516,032	25,341	881,788	31,803	1,571,508	64,180
	3,936,608	153,913	3,769,927	144,741	4,072,433	169,501

LEAD.—TABLE 6.

Imports of Dry White and Red Lead and Orange Mineral, and White Lead Ground in Oil.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1885.....	5,540,753	198,913	1899.....	14,507,945	514,842
1886.....	6,703,077	213,258	1900.....	14,679,920	634,492
1887.....	6,993,820	233,725	1901.....	10,241,601	461,368
1888.....	6,361,334	216,654	1902.....	15,584,164	603,582
1889.....	7,066,465	267,236	1903.....	19,208,786	758,371
1890.....	10,859,672	381,959	1904.....	16,925,535	662,098
1891.....	8,560,615	337,407	1905.....	17,376,588	638,381
1892.....	10,288,766	351,636	1906.....	10,412,891	417,444
1893.....	10,865,183	364,680	1907.....	5,956,626	290,629
1894.....	10,958,170	353,053	1908.....	7,850,860	420,537
1895.....	8,780,052	282,353	1909.....	4,687,416	195,258
1896.....	11,711,496	367,569	1910.....	3,585,921	141,114
1897.....	10,310,463	347,539	1911.....	3,967,091	161,897
1898.....	12,682,308	448,659			

The production of refined lead as already shown was, in 1911, 11,892 tons; while the exports of lead were 69 tons, leaving 11,823 tons as the consumption of Canadian lead.

The imports of lead during the calendar year 1911 are shown above to have been 15,631 tons, not including certain manufactures of lead valued at \$108,012, so that the total consumption of lead in 1911 probably exceeded 27,500 tons.

Nova Scotia.

There was no production from this Province during the year. Some prospecting and development were done near Musquodoboit.

Quebec.

A small shipment is reported from Calumet island, but no details are obtainable.

Ontario.

There has been no production from this Province during the year, but the reopening of some of the older mines gives promise of a production in the future.

British Columbia.

As already stated almost all the production in 1911 was from British Columbia mines, and there was a decrease from the previous year as shown by Table 7 following:—

LEAD.—TABLE 7.

British Columbia:—Production.

Calendar Year.	Lbs.	Value.	Price per pound.	Calendar Year.	Lbs.	Value.	Price per pound.
		\$	Cts.			\$	Cts.
1887.....	204,800	9,216	4.40	1900.....	63,158,621	2,760,031	4.370
1888.....	674,500	29,313	4.42	1901.....	51,582,906	2,235,603	4.334
1889.....	165,100	6,488	3.93	1902.....	22,536,381	917,005	4.069
1890.....	Nil.			1903.....	18,089,283	766,443	4.237
1891.....	Nil.			1904.....	36,646,244	1,579,086	4.309
1892.....	808,420	33,064	4.09	1905.....	56,580,703	2,663,254	4.707
1893.....	2,131,092	79,490	3.73	1906.....	52,408,217	2,964,733	5.657
1894.....	5,703,222	187,636	3.29	1907.....	47,738,703	2,542,086	5.325
1895.....	16,461,794	531,716	3.23	1908.....	43,195,733	1,814,221	4.200
1896.....	24,199,977	721,159	2.98	1909.....	45,857,424	1,692,139	*3.690
1897.....	38,841,135	1,390,513	3.58	1910.....	32,987,508	1,216,249	3.687
1898.....	31,693,559	1,198,017	3.78	1911.....	23,784,969	827,717	†3.480
1899.....	21,862,436	977,250	4.470				

* Average prices at Toronto for years 1909 and 1910. For previous years average prices at New York.

† Average price at Montreal. Quotations furnished by Messrs. Thos. Robertson & Co., Montreal, Que.

LEAD.—TABLE 8.

British Columbia:—Production by Districts.*

	1905.	1906.	1907.	1908.	1909.	1910.	1911.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Cassiar.	5,500					1,695	238,578
East Kootenay—							
Fort Steele.	48,248,828	44,487,481	37,526,194	30,204,788	27,004,528	23,874,562	17,158,069
Other districts.	149,584	167,691	73,842	358,270	18,724	66,010	
West Kootenay—							
Ainsworth.	1,002,114	3,173,353	3,654,775	4,790,216	10,298,343	2,558,353	289,009
Nelson.	1,368,388	1,034,553	1,582,113	345,424	1,097,069	1,245,844	1,023,836
Slocan.	5,399,330	2,975,074	4,305,826	6,572,268	4,976,199	6,406,358	6,705,571
Other districts.	339,883	469,000	570,534	903,552	979,916	470,241	522,615
Yale.	67,076	100,465	25,419	21,215	21,567	35,584	29,719
	56,580,703	52,408,217	47,738,703	43,195,733	44,306,346	34,658,746	26,872,397

* From the Report of the Minister of Mines, B. C.

The falling off in the output of this Province is the result of a number of causes.

The Slocan forest fires of 1910 by their interruption of traffic caused a cessation or decrease of shipments from several important properties. Then, too, the heavy decrease caused by the working out of the St. Eugene has not been entirely counteracted by the tonnage from the Sullivan. There are, however, several features of promise: the approaching completion of the Bear Lake Branch of the Canadian Pacific railway and its extension to Kaslo; the increased activity in the Slocan among the larger properties and the reopening of many of the older mines; the activity of the Consolidated Mining and Smelting Co. in Ainsworth and Sheep Creek camps, and the renewal of work at the Blue Bell mine, all pointing to increase in the lead production in the near future.

NICKEL.

The mining and metallurgical treatment of the nickel-copper ores of the Sudbury district of Ontario has become one of the most important of Canada's metal mining industries, and special interest is attached to this industry because of the fact that these deposits at the present time supply a very large portion of the world's demand for nickel, and also because the present known available supplies of ore in the district appear to be sufficient for many years' operations. Additional interest is now lent to these ores by the discovery of the valuable properties possessed by the new alloy of nickel and copper recently introduced to commerce under the name of monel metal, of which some particulars were given in the report for 1908.

These nickel-copper ore deposits have already been the subject of special reports¹ by the Geological Survey at Ottawa, and the Ontario Bureau of Mines at Toronto, to which reference may be made for comprehensive descriptions of the geology of the district.

The production of ore and its reduction to a bessemer matte, was carried on during 1911 to a less extent than in the previous year. There were mined during the year 612,511 tons of ore, much of which is subjected to open air heap roasting before being smelted. There were smelted 610,834 tons, from which were produced 32,607 tons of Bessemer matte, carrying approximately 17,049 tons of nickel and 8,966 tons of copper. The net value of the matte was returned as \$4,945,592. The matte, which is shipped to the United States and Great Britain for refining, carries from 77 to 82 per cent of the combined metals, having averaged for the past year 52.3 per cent of nickel and 27.5 per cent in copper.

For the production of monel metal a special matte is produced with contents of 22 per cent copper and 58 per cent nickel, which is included in the total given above. Monel metal is produced from this special matte without the intermediate refining of either the nickel or copper.

Compared with 1910, there was a decrease in matte production, in 1911, of 2,426, or 6.9 per cent, and the decrease in total nickel content of matte was 1,587 tons, or 8.5 per cent. The total copper content of the matte was 8,966 tons, a decrease of 664 tons, or 6.9 per cent from the previous year.

The following were the aggregate results of the operations on the nickel-copper deposits of Ontario during the past four years:—

¹ No. 873. Report on nickel and copper deposits of Sudbury, Ont., by A. E. Barlow, Geological Survey, Canada, 1901.
The Sudbury Nickel Region, by A. P. Coleman, Bureau of Mines, Vol. XIV, part III, 1904.

	1908.	1909.	1910.	1911.
	Tons of 2,000 lbs.	Tons of 2,000 lbs.	Tons of 2,000 lbs.	Tons of 2,000 lbs.
Ore mined.....	409,551	451,892	652,392	612,511
Ore smelted.....	360,180	462,336	628,947	610,834
Bessemer matte produced.....	21,197	25,845	35,033	32,607
Copper content of matte shipped.....	7,503	7,873	9,630	8,966
Nickel " " ".....	9,572	13,141	18,636	17,049
Spot value of matte shipped.....	\$2,930,989	\$3,913,017	\$5,380,064	\$4,945,592
Wages paid.....	1,286,265	1,234,904	1,698,152	1,830,526
Men employed.....	1,690	1,573	1,882	1,885

According to Customs returns exports of nickel in matte, etc., were for twelve months ending December 31, as follows:—

	1907.	1908.	1909.	1910.	1911.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
To Great Britain.....	2,518,338	2,554,486	3,843,763	5,335,331	5,023,393
To United States.....	16,857,997	16,865,407	21,772,635	30,679,451	27,596,578
	19,376,335	19,419,893	25,616,398	36,014,782	32,619,971

The above figures of production do not include the nickel content of the silver-cobalt ores from the Cobalt district, of which it is difficult to obtain complete statistics. The shippers of silver-cobalt ores receive no return for the nickel content, although this metal forms an important constituent of the ore and is possibly, to some extent, saved by the refiners. Plants have been established by the Coniagas Reduction Company at Thorold, and the Deloro Mining and Reduction Company at Deloro, for the recovery of nickel and cobalt oxides.

During 1911, there were shipped from the cobalt-silver smelting works of Ontario, 154,174 pounds of cobalt oxide and nickel oxide, and 1,260,832 pounds of mixed cobalt and nickel oxides and cobalt material having a total value of \$221,690.

Bounty on Refined Nickel and Nickel Oxide.—Under the terms of "The Metal Refining Bounty Act," 1907¹ of the Province of Ontario (7 Edward VII, Chap. XIV), a bounty is authorized to be paid on nickel-cobalt, copper, and arsenic under certain conditions and restrictions during a period of five years following the passing of the Act (April, 1907).

The sections affecting nickel are as follows:—

"The treasurer of the province may, under the authority of such regulations as may from time to time be made in that behalf by the Lieutenant-

¹ The full text of the Act and Amendment will be found in the chapter on Cobalt.

Governor in Council, pay in each year to the refiners of the metals or metal compounds hereinafter specified, when refined in the province from ores raised and mined in the province, a bounty upon each pound of such metal or compound so refined as follows:—

“Class 1.—On refined metallic nickel or on refined oxide of nickel, 6 cents per pound on the free metallic nickel or on the nickel contained in the nickel oxide; but nickel upon which a bounty has already been paid in one form of product shall not be entitled to any further bounty in any other form; and the amount to be paid as bounty on the nickel products herein mentioned is not to exceed in all \$60,000 in any one year.”

In March 1912, the Act was amended to cover a further period of five years.

The price of refined nickel in New York during 1911 was quoted at from 40 to 45 cents per pound. The quotations at the end of December being “large lots contract basis 40 to 45 cents a lb. Retail spot from 50 cents for 500 lb. lots up to 55 cents for 200 lb. lots. The price of electrolytic is 5 cents higher.” During 1910 the price of refined nickel was quoted in New York at from 40 to 45 cents per pound according to size and terms of order.

Statistics of the quantities of nickel contained in matte produced are shown in the following table, the values being based on the final value of the metal, either as refined or monel metal.

Statistics of the quantities of ore mined and smelted, matte produced, etc., will be found in the chapter on smelter production.

NICKEL.—TABLE 1.
Annual Production.

Calendar Year.	Pounds of nickel in matte shipped.	Average price per lb.	Value.	Calendar Year.	Pounds of nickel in matte shipped.	Average price per lb.	Value.
		Cts.	\$			Cts.	\$
1889.....	*830,477	60	498,286	1901.....	9,189,047	50	4,594,623
1890.....	1,435,742	65	933,232	1902.....	10,633,410	47	5,025,903
1891.....	4,035,347	60	2,421,208	1903.....	12,505,510	40	5,002,204
1892.....	2,413,717	58	1,399,956	1904.....	10,547,883	40	4,219,153
1893.....	3,982,982	52	2,071,151	1905.....	18,876,315	40	7,550,526
1894.....	4,907,430	38½	1,870,958	1906.....	21,490,955	42	8,948,834
1895.....	3,888,525	35	1,360,984	1907.....	21,189,793	45	9,535,407
1896.....	3,397,113	35	1,188,990	1908.....	19,143,111	43	8,231,538
1897.....	3,997,647	35	1,399,176	1909.....	26,282,991	36	9,461,877
1898.....	5,517,690	33	1,820,838	1910.....	37,271,033	30	11,181,310
1899.....	5,744,000	36	2,067,840	1911.....	34,098,744	30	10,229,623
1900.....	7,080,227	47	3,327,707				

* Calculated from shipments made by rail.

The companies engaged in mining and smelting nickel ores are:—

The Canadian Copper Company (The International Nickel Company) of Copper Cliff, Ont., and New York.

The Mond Nickel Company, Victoria Mines, Ont., and London, England.

Reference has already been made to the occurrence of nickel as one of the minor constituents of the silver ores of the Cobalt district. The quantity of nickel contained in the ores shipped from this district has been estimated by the Ontario Bureau of Mines as follows:—

Year.	Ore shipped.	Nickel content
	Tons.	Tons.
1904.....	158	14
1905.....	2,144	75
1906.....	5,335	160
1907.....	14,788	370
1908.....	25,624	612
1909.....	30,677	766
1910.....	34,282	604
1911.....	26,653	392

A large portion of these ores, particularly the high grade, is now being reduced at Copper Cliff, Thorold, and Deloro, and as already mentioned cobalt and nickel oxides are being recovered in addition to silver bullion and white arsenic.

Statistics of the exports of nickel as compiled from the Customs Department's reports are shown in Table 2, and the imports in Table 3.

NICKEL.—TABLE 2.

Exports of Nickel contained in Ore, Matte, or other Product.

Calendar Year.	Value.	Calendar Year.	Lbs.	Value.
	\$			\$
1890.....	89,568	1903.....	12,699,227	1,116,099
1891.....	667,280	1904.....	11,233,869	1,091,349
1892.....	293,149	1905.....	17,318,059	1,569,693
1893.....	629,692	1906.....	20,653,845	2,042,965
1894.....	559,356	1907.....	19,376,335	2,280,374
1895.....	521,783	1908.....	19,419,893	1,866,624
1896.....	653,213	1909.....	25,616,398	2,676,483
1897.....	723,130	1910.....	36,014,782	4,030,040
1898.....	1,019,363	1911.....	32,619,971	,676 396
1899.....	939,915			
1900.....	1,031,630			
1901.....	751,080			
1902.....	1,007,211			

NICKEL.—TABLE 3.

Imports of Nickel and Nickel Anodes.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1890.....	3,154	1898.....	5,882	1906.....	15,976
1891.....	3,889	1899.....	9,449	1907.....	19,511
1892.....	3,208	1900.....	6,988	1908.....	36,870
1893.....	2,905	1901.....	12,029	1909.....	14,930
1894.....	3,528	1902.....	15,448	1910.....	23,266
1895.....	4,267	1903.....	26,177	1911.....	22,693
1896.....	4,787	1904.....	14,682		
1897.....	4,737	1905.....	19,076		

During the calendar year 1911 there was an import of "nickel, nickel-silver, and German silver in ingots or blocks" to the extent of 124,710 pounds, valued at \$30,736, and "nickel in bars and rods" 490,774 pounds, valued at \$116,579.

The only other important producer of nickel ore outside of Canada is the French colony of New Caledonia. The exports of nickel ore from this source since 1898 have been as follows in metric tons:—

Exports of Nickel Ore from New Caledonia.¹

Year.	Metric tons.	Year.	Metric tons.	Year.	Metric tons.
1898.....	53,200	1903.....	77,360	1908.....	108,000
1899.....	103,908	1904.....	98,655	1909.....	86,000
1900.....	100,319	1905.....	125,289	1910.....	99,000
1901.....	133,814	1906.....	118,890		
1902.....	129,653	1907.....	120,103		

¹ Statistique de l'Industrie Minérale en France et en Algérie, Paris.

The nickel ore of New Caledonia carries about 6½ per cent of nickel.

Practically all of the above ore is smelted in France, Germany, and England.

The production of raw nickel at smelting works (partly estimated), is given by the 'Metallgesellschaft' as follows, in metric tons:—

Production of Raw Nickel at Smelting Works, in Metric Tons.

Producing country.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
United States of North America and Canada.....	5,100	6,000	4,500	6,500	6,500	7,000	9,000	10,000	12,000
England.....	1,700	2,200	3,100	3,200	3,200	3,000	3,200	3,500	4,500
Germany.....	1,600	2,000	2,700	2,800	2,600	3,000	3,500	4,500	5,000
France.....	1,500	1,800	2,200	1,800	1,800	1,400	1,200	1,500	2,000
Other countries.....						200	400	600	1,000
Total production ²	9,900	12,000	12,500	14,300	14,100	14,600	17,300	20,100	24,500

¹ The figures of production stated for Germany only cover the output in the Kingdom of Prussia; nickel is also produced in the Kingdom of Saxony, but no data are obtainable of this production, which is, however, not important.

² The entire production of nickel, apart from quite insignificant quantities obtained in Germany, Norway, and the United States of America, comes from New Caledonian and Canadian ores.

Statistics of the average yearly prices of nickel in Europe are also given by the same authority as follows:—

Yearly Average Prices of Nickel in Europe in Cents per Pound, and Marks per Kilogram.

Year.	Prices in marks per kilo.	Cents per lb.	Year.	Prices in marks per kilo.	Cents per lb.
1889.....	4·50	48·6	1901.....	3·00	32·4
1890.....	4·50	48·6	1902.....	3·20	34·6
1891.....	4·50	48·6	1903.....	3·30	35·6
1892.....	4·50	48·6	1904.....	3·30	35·6
1893.....	3·80	41·0	1905.....	3·30	35·6
1894.....	3·60	38·9	1906.....	3·80	41·0
1895.....	2·60	28·1	1907.....	3·50	37·8
1896.....	2·50	27·0	1908.....	3·25	35·2
1897.....	2·50	27·0	1909.....	3·25	35·2
1898.....	2·50	27·0	1910.....	3·25	35·2
1899.....	2·50	27·0	1911.....	3·25	35·2
1900.....	3·00	32·4			

Mark=23·8 cents. Kilogram=2·20462 bs.

SILVER.

Owing to the rapid development of the Cobalt silver camp in Ontario during the past five years, the production of silver in Canada has, in point of value, taken second place in the list of our mineral productions, being exceeded only by coal.

The total production of silver in 1911, including that produced as bullion and the metal estimated as recovered from ores sent to smelters or otherwise treated, was reported as 32,559,044 fine ounces, which, compared with a production of 32,869,264 ounces in 1910, shows a decrease of 0.94 per cent.

The average value of fine silver in 1911, according to New York quotations, was 53.304 cents per ounce, as compared with an average value of 53.486 cents in 1910, a decrease of about 0.34 per cent.

The total value of the silver production in 1911 was \$17,355,272, a decrease of \$225,183, or 1.28 per cent over the value, \$17,580,455, in 1910.

A comparison of the production of 1910 and 1909, shows an increase for 1910 of 5,339,791 ounces, or 19.4 per cent in quantity, and \$3,401,951, or 24 per cent in value, the average price in 1910 having increased about 3.85 per cent from 1909.

Statistics of the annual production of silver since 1887 are shown in Table 1.

SILVER.—TABLE 1.
Annual Production, 1887-1911.

Year.	Ozs.	Value.	Average price. per oz.	Year.	Ozs.	Value.	Average price. per oz.
		\$	Cts.			\$	Cts.
1887.....	355,083	347,271	98.00	1900.....	4,468,225	2,740,362	61.33
1888.....	437,232	410,998	94.00	1901.....	5,539,192	3,265,354	58.95
1889.....	383,318	358,785	93.60	1902.....	4,291,317	2,238,351	52.16
1890.....	400,687	419,118	104.60	1903.....	3,198,581	1,709,642	53.45
1891.....	414,523	409,549	98.00	1904.....	3,577,526	2,047,095	57.22
1892.....	310,651	272,130	86.00	1905.....	6,000,023	3,621,133	60.35
1893.....	.....	330,128	77.00	1906.....	8,473,379	5,659,455	66.79
1894.....	847,697	534,049	63.00	1907.....	12,779,799	8,348,659	65.33
1895.....	1,573,275	1,030,299	65.28	1908.....	22,106,233	11,686,239	52.86
1896.....	3,205,343	2,149,503	67.06	1909.....	27,529,473	14,178,504	51.50
1897.....	5,558,456	3,323,395	59.79	1910.....	32,869,264	17,580,455	53.49
1898.....	4,452,333	2,593,929	58.26	1911.....	32,559,044	17,355,272	53.30
1899.....	3,411,644	2,032,658	59.58				

From 1887 to 1893, the production ranged in value between \$300,000 and \$400,000, and was derived chiefly from the Provinces of Ontario and Quebec. The next three years saw a rapid increase in the production due to the development of the silver-lead ore deposits in British Columbia, and in 1896 a production of over \$2,000,000 is recorded. From that year until 1905 the production

varied from \$2,000,000 to \$3,500,000, rising rapidly during the next six years to \$17,355,272 in 1911, as a result of the discovery of the rich ores of the Cobalt district. Ontario, in 1905, produced 40.9 per cent of the total output. In 1911 the production obtained from Ontario was 93.8 per cent, and was practically all from the Cobalt district, the contribution of British Columbia being almost 5.8 per cent.

Statistics of the annual production in each province are separately shown in Table 2.

SILVER.—TABLE 2.
Production by Provinces, 1887-1911.

Calendar Year.	ONTARIO.		QUEBEC.		BRITISH COLUMBIA.		YUKON TERRITORY.	
	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.
		\$		\$		\$		\$
1887.....	190,495	186,304	146,898	143,666	17,690	17,301		
1888.....	208,064	195,580	149,388	140,425	79,780	74,993		
1889.....	181,609	169,986	148,517	139,012	53,192	49,787		
1890.....	158,715	166,016	171,545	179,436	70,427	73,666		
1891.....	225,633	222,926	185,584	185,397	3,906	3,266		
1892.....	41,581	36,425	191,910	168,113	77,160	67,592		
1893.....		8,689		126,439		195,000		
1894.....			101,318	63,830	746,379	470,219		
1895.....			81,753	53,369	1,496,522	976,930		
1896.....			70,000	46,942	3,135,343	2,102,561		
1897.....	5,000	2,990	80,475	48,116	5,472,971	3,272,289		
1898.....	85,000	49,521	74,932	43,655	4,292,401	2,500,753		
1899.....	202,000	120,352	40,231	23,970	2,939,413	1,751,302	236,000	137,034
1900.....	161,650	99,140	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901.....	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902.....	145,000	75,632	42,500	22,168	3,917,917	2,043,886	185,900	96,985
1903.....	17,777	9,562	28,600	15,287	2,996,204	1,601,471	156,000	83,362
1904.....	206,875	118,376	15,000	8,583	3,222,481	1,843,935	133,170	76,201
1905.....	2,451,356	1,479,442	19,620	11,841	3,439,417	2,075,757	89,030	54,093
1906.....	5,401,766	3,607,894	17,686	11,813	2,990,262	1,997,226	63,665	42,522
1907.....	9,982,363	6,521,178	16,000	10,452	2,745,448	1,793,519	35,988	23,510
1908.....	19,398,545	10,254,847	13,239	7,030	2,631,369	1,391,058	63,000	53,304
1909.....	24,822,099	12,784,126	13,233	6,815	2,649,141	1,364,387	45,000	23,176
1910.....	30,366,366	16,241,755	7,593	4,061	2,407,887	1,287,883	87,418	46,786
1911.....	30,540,754	16,279,443	18,435	9,827	1,887,147	1,005,924	112,708	60,078

The average price of fine silver in New York during 1911 varied between a maximum of 55.7 cents per ounce in November, and a minimum of 52.1 cents per ounce in August, the average being 53.304 cents per ounce.

In London the average price of silver in 1911 was 24.592 pence per standard ounce of a fineness of 0.925. For the year 1910, the average price per fine ounce in New York was 53.486 cents, the highest being 55.6 cents in November, and the lowest 51.4 in March of that year.

The average monthly prices of silver in New York from 1906 to 1911, and in London during 1911, are shown in tabulated form following.

Average Monthly Prices of Silver.

Months.	New York.—Cents per fine ounce.					London.— Pence per Standard ounce (a).
	1907.	1908.	1909.	1910.	1911.	1911.
January.....	68·673	55·678	51·750	52·375	53·795	24·865
February.....	68·835	56·000	51·472	51·534	52·222	24·081
March.....	67·519	55·365	50·468	51·454	52·745	24·324
April.....	65·462	54·505	51·428	53·221	53·325	24·595
May.....	65·981	52·795	52·905	53·870	53·308	24·583
June.....	67·090	53·663	52·538	53·402	53·043	24·486
July.....	68·144	53·115	51·043	54·150	52·630	24·286
August.....	68·745	51·683	51·125	52·912	52·171	24·082
September.....	67·792	51·720	51·449	53·295	52·440	24·209
October.....	62·435	51·431	50·923	55·490	53·340	24·594
November.....	58·677	49·647	50·703	55·635	55·719	25·649
December.....	54·565	48·760	52·226	54·428	54·905	25·349
Average for the year.....	63·327	52·864	51·503	53·486	53·304	24·592

(a) 925 parts fine.

Important quantities of silver are now being produced in Canada, both as fine metal and as silver bullion, ranging in fineness from 850 to 998.2. Fine silver is produced at Trail, B.C., by the Consolidated Mining and Smelting Company of Canada, Limited, chiefly from the silver-lead ores of that Province, and is shipped to China, the United States, and to the Ottawa mint.

The annual production of fine silver at Trail since 1904 has been as follows:—

Year.	Fine ozs.	Year.	Fine ozs.
1904.....	551,450	1909.....	2,003,003
1905.....	1,088,328	1910.....	1,798,960
1906.....	1,263,309	1911.....	1,325,601
1907.....	1,631,422		
1908.....	1,956,039	Total.....	11,618,612

In Ontario ores from the Cobalt district are treated by the following companies:—

The Canadian Copper Company at Copper Cliff, Ont.

The Deloro Mining and Reduction Company, Deloro, Ont.

The Coniagas Reduction Company, St. Catharines, Ont.

Canada Refining and Smelting Company, Orillia, Ont.

Silver bullion of a fineness varying from 850 to 998.2 is produced at the works, other products being white arsenic and more recently nickel and cobalt oxides or mixed oxides. The silver bullion, as a rule, finds a market in the

United States and in England. The bullion shipped in 1907 contained 4,449,722 fine ounces of silver; in 1908, 11,168,689 ounces; in 1909, 14,385,985 ounces; and in 1910, 17,365,165 fine ounces. In 1911 these smelters produced 17,753,167 fine ounces, or 53.9 per cent of the total production of Ontario.

Quebec.

The small quantity of silver credited to the Province of Quebec for a number of years, represents a small silver content of the pyritic ores mined at Capelton and Eustis in the Eastern Townships.

Ontario.

From a production valued at only \$118,376 in 1904, the silver output of the Province has grown to a value of over \$16,200,000 in 1911. Not only does it contribute almost 94 per cent of the total silver production of Canada, but it now forms a very appreciable part (estimated at over 13 per cent), of the world's production. According to returns received by this department, there were shipped during 1911, 15,417 tons of ore, and 9,329 tons of concentrates, or a total tonnage of 24,746 tons, having a value of \$14,271,964, besides silver bullion produced at the mines, carrying 3,766,022 fine ounces of silver.

The silver content of ore shipped was estimated as 20,065,621 ounces, or an average of 1,302 ounces per ton, and of the concentrates shipped 8,118,231 ounces, or an average of 870 ounces per ton; the total silver content of ore, concentrates, and bullion shipped from the mines being 32,949,874 ounces. The mine owners receive payment for only 93 to 98 per cent of the silver content, and in estimating and valuing the production a deduction of five per cent is made from silver contained in ore and concentrates to cover losses in smelting and refining. On this basis the silver recovery is estimated at 30,540,754 ounces, and valued at \$16,279,443. No payments for cobalt content were reported.

In the following table a record of shipments since 1904 is given, the figures for the first three years being those published by the Ontario Bureau of Mines.

Silver Ore and Bullion Shipments from Cobalt Mines, 1904-1911.

Year.	SHIPMENTS.		SILVER CONTENT.		SILVER IN OUNCES, PER TON.		Silver bullion shipments. Fine ounces.	Total value of silver.
	Ore. Tons.	Concentrate. Tons.	Ore. Ozs.	Concentrate. Ozs.	Ore.	Concentrate.		
1904.	158	.....	206,875	.....	1,309	.....	.....	\$ 118,376
1905.	2,144	.....	2,451,356	.....	1,143	.....	.....	1,473,192
1906.	5,335	.....	5,401,766	.....	1,013	.....	.....	3,607,894
1907.	14,644	.....	9,982,363	.....	682	.....	.....	6,521,178
1908.	25,682	*	19,398,545	*	755	*	.....	10,254,847
1909.	27,835	3,059	22,349,717	3,627,819	803	1,186	143,440	12,734,126
1910.	28,684	6,943	23,797,111	7,111,579	830	1,024	1,003,111	16,241,755
1911.	15,417	9,329	20,065,621	8,118,231	1,300	870	3,766,022	16,279,443

* Included with ore.

As the camp has developed, the average grade of the ore shipped has gradually diminished, although the introduction of concentration plants in 1908, and their increased use has tended to keep the ore shipped up to a high standard.

With respect to the nickel-cobalt and arsenic contents of these ores, the mining companies have been paid for only a small portion of the cobalt content, and nothing for the nickel and arsenic; in fact in certain cases the last two are penalized, and in 1911 payment for even cobalt ceased.

The total metal content of these ores, as estimated by the Ontario Bureau of Mines, is shown in the next table. The figures for ore shipments and silver content, while not identical, agree very closely with those given in the previous table.

Total Production Cobalt Mines, 1904-1911.*

Year.	ORE AND CONCENTRATE SHIPPED.	METALLIC CONTENT.			
		Nickel.	Cobalt.	Arsenic.	Silver.
	Tons.	Tons.	Tons.	Tons.	Ozs.
1904.....	158	14	16	72	206,875
1905.....	2,144	75	118	549	2,451,356
1906.....	5,385	160	321	1,440	5,401,766
1907.....	14,788	370	759	2,958	10,023,311
1908.....	25,624	612	1,224	3,672	19,437,875
1909.....	30,677	766	1,533	4,294	25,897,825
1910.....	34,282	604	1,098	4,897	†30,645,181
1911.....	26,653	392	852	3,806	31,507,791

* As per Ontario Bureau of Mines.

† Bullion shipments from mines included.

Nearly 30 per cent of the ore shipped from Cobalt was treated in metallurgical works in Canada, and white arsenic is being produced therefrom, of which record will be found under smelter production.

While the greater number of the operating companies hold unrestricted titles to their properties, several are operated on a royalty basis on mining lands owned and leased by the Timiskaming and Northern Ontario Railway Commission. Mr. Arthur A. Cole, Mining Engineer to the Commission, has in his annual report compiled some very interesting statistics covering the whole district with respect to ore shipments, concentration, power and labour, prices paid for ore, etc., from which the following tables and extracts have been freely drawn:—

Ore Shipments from the Cobalt District for the Years 1904 to 1911.

Mine.	1904. to 1906.	1907.	1908.	1909.	1910.	1911.	Totals. 1904-1911.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Badger.....						27 10	27 10
Bailey.....	30 00		88 80	36 85		20 00	175 65
Beaver.....				51 38	140 06	790 81	982 25
Buffalo.....	1,193 60	1,241 54	536 90	648 86	1,185 77	1,275 19	6,081 86
Casey-Cobalt.....			10 00	8 50	48 40	277 74	344 64
Chambers-Ferland.....			223 89	517 88	885 92	622 85	2,250 54
City of Cobalt.....		50 61	761 04	566 82	329 40	281 30	1,989 17
Cobalt Central.....		77 33	187 99	339 01	285 62	22 40	912 35
Cobalt Lake.....			225 97	95 47	296 80	2,111 32	2,729 56
Cobalt Townsite.....		143 22	177 71	27 35	310 99	705 61	1,362 78
Colonial.....	15 01	40 38			178 60	114 10	348 08
Coniagas.....	452 62	2,417 37	610 25	806 93	1,261 46	1,813 89	7,392 52
Crown Reserve.....			657 35	3,167 52	2,814 25	977 32	7,616 44
Drummond.....	307 35	104 13	1,161 38	1,225 47	2,194 41	714 83	5,707 57
Foster.....	200 85	312 13	191 20	113 90			818 07
Green Meehan.....	37 03	98 39				102 98	238 40
Hargrave.....	28 45				343 68	102 44	474 57
Hudson Bay.....		149 53	1,094 23	743 64	260 33	898 88	3,146 61
Imperial Cobalt.....		14 61					14 61
Kerr Lake.....	213 33	319 76	660 24	1,173 42	5,088 78	1,292 58	8,748 08
King Edward(Watts).....	19 00	31 12	338 19	146 58	134 12	20 00	689 01
LaRose.....	1,522 52	2,815 45	4,843 17	6,757 21	5,131 53	3,581 54	24,651 42
Lawson.....	14 61	61 12					75 73
McKinley-Darragh.....	547 54	742 42	1,808 39	1,056 49	2,393 39	3,233 64	9,786 87
Nancy Helen.....		30 10	201 32	116 32			347 74
Nipissing.....	2,668 10	2,538 26	3,571 96	6,470 52	6,833 81	2,952 20	25,034 85
Nova Scotia.....	43 95	272 21	237 95	224 79			778 90
North Cobalt.....				5 87		3 00	9 87
O'Brien.....	140 50	1,491 61	3,459 51	1,419 11	308 67	623 44	7,747 74
Peterson Lake Leases (Little Nipissing)..			40 67	39 62	313 76	28 45	422 50
(Nova Scotia)..				121 15			121 15
Provincial.....			75 84		52 05	100 54	228 43
Princess.....		3 93					3 93
Red Rock.....		45 71					45 71
Right of Way.....	46 25	129 37	750 04	1,608 99	981 41	666 06	4,132 12
Rochester.....					28 30		28 30
Silver Bar.....			0 58			2 72	3 30
Silver Cliff.....			160 44	149 06	156 84	92 30	558 64
Silver Leaf.....	9 00	46 36	197 03				252 39
Silver Queen.....	175 57	478 57	885 70	316 64			1,856 58
Timiskaming.....		204 32	795 20	852 14	1,119 12	855 60	3,826 38
Timiskaming-Cobalt.....	20 47	67 98					88 45
Trotthewey.....	438 06	833 58	1,408 69	1,134 50	536 64	602 98	4,954 45
University.....	171 28	60 23					231 51
Victoria.....			0 47				0 47
Violet.....	36 00						36 00
Waldman.....					38 81		38 81
Wyandoh.....					24 15		24 15
Total.....	8,331 08	14,851 34	25,362 10	29,042 99	33,976 97	24,921 71	137,386 26

† The shipment in 1905 was made by the White Silver Mining Co., the former owner of the Hargrave property.

‡ Shipments from Lawson, Princess, and University since 1907, included with LaRose.

Shipments from the Cobalt District for the Calendar Year 1911.

Mine.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
Badger.....				27 10									27 10
Bailey.....				20 00									20 00
Beaver.....	93 21	132 87	21 87		60 73	31 25	31 50	247 08	30 38	59 38		32 54	790 81
Buffalo.....	121 83	122 77	127 10	91 60	108 45	88 88	130 60	96 01	53 58	122 29		124 35	1,275 19
Casey-Cobalt.....		19 00		16 65	5 19				40 00		196 90		277 74
Chambers-Ferland.....	64 95	32 80	64 15	65 40	63 45	64 40	64 70	64 00		32 00	32 00	75 00	622 85
City of Cobalt.....	30 00	31 90	89 05	66 45	32 80	31 10							281 30
Cobalt Central.....		22 40											22 40
Cobalt Lake.....		345 45	189 20	181 50	98 00	265 25	89 96	154 73	214 46	230 20	162 51	180 06	2,111 32
Cobalt Townsite.....	122 33			14 40	35 25	23 50	48 65	70 64	133 07	110 55	23 58	121 54	703 51
Colonial.....				21 40		22 75		23 70		24 00	22 25		114 10
Coniagas.....	82 15	168 18	266 54	121 30	181 68	155 77	60 60	291 84	101 98	132 60	149 90	91 35	1,813 89
Crown Reserve.....	78 67	86 41	77 40	114 15	135 70	57 90	131 44	95 85	78 63	30 66	48 92	41 65	977 32
Drummond.....								138 70	183 83	212 30	90 00		714 83
Green Meehan.....					29 00					42 90			102 98
Hargrave.....			20 55			60 00							102 44
Hudson Bay.....	30 62	30 55	32 60	61 75	93 60	94 25	123 02	126 11	63 07	62 84	97 32	83 15	898 88
Keir Lake.....	212 70	150 78	60 05	120 75	90 55	90 05	90 90	149 00	90 74	93 80	111 47	31 79	1,292 58
King Edward.....		20 00											20 00
La Rose.....	214 41	209 52	146 65	397 28	305 55	272 78	338 86	492 60	398 57	275 71	252 37	277 24	3,581 54
McKinley-Darragh.....	161 31	271 93	202 30	297 49	274 79	299 34	183 80	319 23	337 68	307 33	258 46	324 98	3,238 64
Nipissing.....	440 82	219 73	186 15	178 51	194 35	370 38	283 95	184 45	206 32	128 78	358 02	260 74	2,952 20
North Cobalt.....		3 00											3 00
O'Brien.....	36 40	62 40	65 41	64 70	39 90	63 50	62 75	63 50	35 26	69 21	32 01	33 40	628 44
Peterson Lake.....	28 45												28 45
Provincial.....				20 00									20 00
Right of Way.....	64 20	30 05	62 55		67 32	94 34	32 95	90 67	89 53	61 25	41 12	32 08	666 06
Silver Bar.....					2 72								2 72
Silver Cliff.....	24 25		25 55	42 70									92 30
Tinniskaming.....	31 65	67 43	110 21	32 54	96 02	42 77	90 26	70 26	51 86	101 84	67 78	92 98	855 60
Trethewey.....	48 40	24 45	67 90	25 25	105 47	35 35	56 00	24 45	50 40	79 75	29 88	55 68	602 98
Total.....	1,886 35	2,101 62	1,815 23	1,980 72	2,020 52	2,173 56	1,850 29	2,702 82	2,184 50	2,177 33	2,087 26	1,941 50	24,921 71

The ore produced in the years 1908 to 1911, was shipped to the following countries for treatment:—

Country.	1908.		1909.		1910.		1911.	
	Tons.	Per cent	Tons.	Per cent	Tons.	Per cent	Tons.	Per cent
Canada	7,401.14	29.18	10,230.64	34.47	9,922.40	23.20	8,746.21	34.02
Great Britain.....	222.08	0.88	30.25	0.10	393.73	1.15	.....	.....
Germany.....	299.46	1.18	106.51	0.35	232.14	0.69	218.66	0.85
United States.....	17,439.42	68.76	19,575.59	65.08	23,428.70	68.96	16,745.35	65.13
Total.....	25,362.10	100.00	29,942.99	100.00	33,976.97	100.00	25,710.22	100.00

With respect to concentration Mr. Cole reports: "Fifteen mills operated during the year, milling a total of 381,870 tons. The Hudson Bay mill started operations in March but the Silver Cliff, King Edward, and Cobalt Central mills were closed down most of the year. The King Edward mill has recently been rented by the City of Cobalt Mining Company for the treatment of their own ores.

"Mills are under construction for the Beaver and Nipissing Companies. Cyanidation is used in conjunction with regular water concentration in the O'Brien and Buffalo mills and in the case of the Nova Scotia it is a combination method of cyanidation and amalgamation. The latter combination is also to be adopted in the new Nipissing mill.

"The following is a list of the mills of the district showing their daily rated capacity:—

Mill.	District.	Capacity per day.	Remarks.
		Tons.	
Buffalo	Cobalt.....	150	Closed down.
Cobalt Central.....	"	100	
Cobalt Lake.....	"	70	
Colonial.....	"	30	
Comagas.....	"	160	
Hudson Bay.....	"	50	
King Edward.....	"	30	Operated by City of Cobalt mine.
McKinley-Darragh.....	"	120	Customs Mill.
Nipissing Reduction	"	75	
Northern Customs.....	"	200	" "
Nova Scotia	"	160	" "
O'Brien.....	"	90	Closed down.
Silver Cliff.....	"	80	
Timiskaming.....	"	80	
Trethewey.....	"	100	Closed down.
Millerett.....	Gowganda.....	30	
Reeve Dobie.....	"	30	
<i>Under Construction.</i>		1,555	
Beaver.....	Cobalt.....	60	
Nipissing.....	"	200	
		1,815	

"Following are tables of concentration which illustrate the advance made in this part of the industry during 1911.

Mills and mines.	Tons milled.	CONCENTRATES.			Concentration ratio.
		Jigs.	Tables.	Total.	
Buffalo*	43,930 00	236 00	735 00	971 00	45 - 1
Cobalt Central	1,478 40	3 82	12 37	16 19	91 - 1
Colonial	7,755 00			127 00	61 - 1
Cobalt Lake	3,800 00	39 15	55 15	94 30	40 - 1
Coniagas	53,150 00	318 70	952 40	1,271 10	42 - 1
Hudson Bay	18,294 00	239 00	427 00	666 00	27 - 1
King Edward—					
City of Cobalt	1,047 50	3 00	25 00	28 00	38 - 1
King Edward	12,019 00			16 50	73 - 1
McKinley-Darragh	46,497 00	644 00	1,884 00	2,528 00	18 - 1
Millerett	5,454 00	8 00	82 00	90 00	61 - 1
Nipissing Reduction	14,766 53	87 82	150 73	238 55	62 - 1
Northern Customs—					
City of Cobalt	5,911 08			233 07	25 - 1
Cobalt Townsite	12,569 97		388 39	388 39	33 - 1
Casey Cobalt	362 00			12 00	33 - 1
La Rose	36,264 49		1,721 10	1,721 10	21 - 1
Nancy Helen	519 00		4 80	4 80	108 - 1
Timiskaming	34,720 00	177 44	588 23	765 67	45 - 1
Trethewey	30,925 00	107 68	341 12	448 80	69 - 1
Total	329,462 97			9,620 47	34 - 1

* The mill cyanided 8,804 tons slimes producing 4,565 lbs. of bullion.

Nova Scotia..... 19,152 tons milled, produced 686,406 ozs. bullion.

O'Brien 33,256 " " 273,930 "

52,408

960,336

Total tons milled by water concentrating mills..... 329,462 97

" cyanide mills..... 52,408 00

Total tons milled..... 381,870 97

"From small beginnings and a comparatively insignificant position in the early history of Cobalt, concentration has developed till it is at present one of the dominating features of the situation. In fact, it is hardly too much to say that half the mines now shipping would be closed down if they had to depend on their high grade ore without their mills for their profits."

Sampling.

"The ore sampling works of Campbell and Deyell were in continuous operation throughout 1911 and during that time treated 5,653 tons of high grade ore. This represents about 70% of the capacity of the plant. The plant was designed to sample the high grade silver ores of the Cobalt district and details have been worked out with the greatest care. Machines are being installed which cut out the objectionable feature of floor sampling so that now the plant is practically automatic throughout. The work performed in this plant is equal to the best on the continent and having it located in Cobalt is a decided boon to the camp."

Power.

"The spring break up of 1911 was late in arriving and was not preceded by any considerable temporary thaws.

"So pronounced was the shortage of water that the production of power was materially affected.

"This noticeably cut down the volume of ore shipment during the first three months of the year.

"Towards the end of the year a consolidation took place of the two Montreal River Power Companies, viz.: The Cobalt Power Company and The Cobalt Hydraulic Power Company, under the name of the Northern Ontario Light and Power Company, Limited."

Smelting of Cobalt Ores.

"The following is a list of the smelting companies that received ore from the Cobalt district during 1911 accompanied by some of the schedules on which the purchases were made. As far as possible the tariffs given are those that were in force on January 1, 1912.

"The following is the list:—

Canadian Copper Company, Copper Cliff, Ont.

Canada Refining and Smelting Company, Orillia, Ont.

Coniagas Reduction Company, St. Catharines, Ont.

Deloro Mining and Reduction Company, Deloro, Ont.

American Smelting and Refining Company, New York, N.Y., U.S.A.

Balbach Smelting and Refining Company, Newark, N.J., U.S.A.

Beer, Sondheimer and Company, Frankfort-on-Main, Germany, and
New York, N.Y., U.S.A.

Pennsylvania Smelting Company, Pittsburg, Pa., U.S.A.

Government of Saxony, Saxony, Germany.

United States Metals Refining Company, New York, N.Y., U.S.A.

1. Canadian Copper Company, Copper Cliff, Ont.

"Recent changes have increased the capacity of the plant from 800 to 1,000 tons per month, giving a monthly output of silver of from 1,000,000 to 1,500,000 ounces. Another result of the enlargement and the changes that have been made is the quicker returns to shippers. Formerly the Company paid for 70 per cent of the silver in 35 days, and 30 per cent in 90 days from sampling date. Since December 1, 1910, payments are made 70 per cent in 30 days and 30 per cent in 60 days.

All purchases are made by the Orford Copper Company of New York, and the following is the curtailed schedule for arsenical-cobalt-silver ores.

Purchaser to make payment for:—

84	per cent of silver per ton of ore (2,000 lbs.) when same assays	200- 500	ounces silver.
85	" " " "	500- 600	" "
87	" " " "	600- 800	" "
90	" " " "	800-1,000	" "
92	" " " "	1,000-1,300	" "
93	" " " "	1,300-1,600	" "
93½	" " " "	1,600-2,000	" "
94½	" " " "	2,000-2,500	" "
95	" " " "	2,500-3,000	" "
95½	" " " "	3,000-4,000	" "
96	" " " "	4,000-5,000	" "
96½	" " " "	5,000 and over	" "

Ore to be delivered to the Canadian Copper Company f.o.b. cars, Copper Cliff, Ont. Ore to be at shipper's risk until sampling is undertaken, as purchaser can assume no responsibility for the ore until same has been taken into its sampler.

Purchaser to sample at its expense, purchaser's and seller's representatives to be present. Assays to be made by Ledoux and Company of New York, at seller's expense, which assays are to govern in settlement.

Payment of 70 per cent of the silver returnable to the seller, as per the above scale, to be made at the New York official price for silver on the first settlement date, which shall be 30 days after the date on which sampling of the ore is completed, and the balance, 30 per cent, on the second settlement date, on the New York official price of silver on that day, which shall be 60 days after sampling of the ore is completed. The purchaser, however, reserves the right to deliver upon either or both of the settlement dates above specified, in lieu of cash, at his option, such silver bullion (commercial bar silver) as is due the seller in settlement upon these dates, such delivery to be made in New York city.

2. Coniagas Reduction Company, Limited, St. Catharines, Ont.

"The plant of the Coniagas Reduction Company treated about 6,000,000 ounces of silver during 1911, most of the resulting bullion being shipped to London, England.

The following is in condensed form the smelting schedule that went into effect on November 1, 1911.

Percentage of silver to be paid for on commercial assay of silver content per tons of 2,000 pounds as follows:—

55 per cent for	50 ounces and proportionate increase up to.
73	" 200
78	" 300
84	" 300
91.5	" 1,000
92.5	" 1,500
93.5	" 2,000
95	" 3,000 ounces and over.

Sampling to be at vendor's expense.

All ore purchased to be at a refining charge of $\frac{1}{4}$ cent per ounce of silver content.

Seventy-five per cent of the amount 30 days after date of weighing and sampling report.

Twenty-five per cent of amount 90 days after date of said report. Price of silver to be determined by New York quotation, as given by Messrs. Handy and Harman to Western Union Telegraph Company on dates of settlement.

3. Deloro Mining and Reduction Company, Limited, Deloro, Ont.

"The smelting schedule of this Company published at the beginning of 1911 was still in force on the 1st of January, 1912, and is as follows:—

Treatment charge, \$25 per ton of ore.

Refining charge, three-quarters of a cent per ounce of silver contents on ore assaying 3,000 ounces and over per ton. One cent per ounce of silver contents on ore assaying 2,000 to 3,000 ounces per ton. One and a half cents per ounce of silver contents on ore assaying less than 2,000 ounces per ton.

Terms of payment, 75 per cent of net proceeds at Handy and Harman's New York quotation, 30 days after completion of sampling; 25 per cent of net proceeds at Handy and Harman's New York quotation, 90 days after completion of sampling. Ore to be delivered in carload lots f.o.b., Marmora station, C. O. railway, and to be at shipper's risk until sampling is undertaken.

4. Canada Refining and Smelting Co., Limited, Orillia, Ont.

"This Company blew in its furnace on February 20, 1911, but was closed down later on while the plant was being enlarged. Its present capacity is from 15 to 20 cars monthly or double what it was when operations started.

The smelting schedule remains unchanged and is as follows:—

84 per cent of silver contents by commercial assay	200	ozs. and over per ton,	2,000	lbs.
86	"	"	300	" "
89	"	"	500	" "
91	"	"	750	" "
98	"	"	1,000	" "
93½	"	"	1,500	" "
94½	"	"	2,000	" "
95	"	"	2,500	" "

Ores containing less than 3,000 ounces per ton are subject to a refining charge of $\frac{1}{2}$ cent per ounce, and ores containing less than 1,500 ounces per ton are subject to a refining charge of $\frac{3}{4}$ cent per ounce. Ores containing less than 1,000 ounces per ton are subject to a treatment charge of \$10 per ton in addition to above.

Terms of payment for silver, 75 per cent of amount 30 days after date of weighing and sampling report. 25 per cent of amount 90 days after date of said report.

Price of silver to be New York official quotation.

Ore to be delivered f.o.b., Orillia, carload lots at owner's risk.

Weights to be taken after milling and moisture determination.

When so desired, Campbell and Deyell's sampling and weights will be accepted as final, and in case of dispute on assays, settlement will be made on

assays of Campbell and Deyell as umpire, or such other umpire as may be mutually agreed upon by parties.

5. American Smelting and Refining Company, New York, U.S.A.

"Of the foreign companies receiving silver ores from Cobalt, the American Smelting and Refining Company received the largest tonnage. The ore was consigned to both Perth Amboy, N.J., and Denver, Colo., and consisted of both high and low grades.

The prices offered by this Company vary according to the grade and analysis of the different ores submitted and also as to whether or not occasional shipments are involved or time contracts for entire outputs. Prices are also contingent to some extent upon length of contract and upon operating conditions at the smelter at the time any definite tonnage is offered. An idea of the prices ruling may, however, be gathered from the following contract rates which are now in effect:—

Tariff.—For ores assaying 1,000 ounces or over per ton.

Silver.—Pay for 95 per cent of the silver contents at New York quotation.

Treatment Charge.—\$7 per ton of 2,000 pounds, dry weight.

Arsenic.—An addition to the working charge will be made at the rate of 25 cents per dry ton for each per cent of arsenic in excess of five per cent. Sampling free.

Payment.—Thirty days after agreement of assays.

For ores under 1,000 ounces and over 60 ounces per ton.

Silver.—Payment for 95 per cent of the silver contents at the New York quotation.

Treatment Charge.—\$7 per ton of 2,000 pounds, dry weight.

Arsenic.—An addition to the working charge will be made at the rate of 25 cents per dry ton for each per cent of arsenic in excess of 15 per cent.

Payment.—Cash settlement on agreement of assays.

6. Balbach Smelting and Refining Company, Newark, N.J., U.S.A.

This smelting company has not been offering a regular schedule for silver ores from the Cobalt district. It did, however, make some purchases during the year, returning 93 per cent of the silver contents in ores assaying about 2,000 ounces silver per ton.

7. Beer, Sondheimer and Company, Frankfort-on-Main, Germany.

"At the beginning of 1911, a few purchases of silver ores from Cobalt were made by the New York agency of Beer, Sondheimer and Company, but now the Company is out of the market for these ores.

8. Pennsylvania Smelting Company, Pittsburgh, Pa., U.S.A.

"The smelting schedule of the Pennsylvania Smelting Company, on the 1st of January, 1912, was the same as that which ruled throughout 1911, except that

on ores running over 2,800 ounces of silver per ton a sliding scale is offered which gives a better percentage recovery to the shipper in proportion as the ore increases in silver contents. It is now as follows:—

Schedule for ores below 2,800 ounces.

For ores containing less than 200 ounces of silver to the ton, we will pay the New York silver price, less $\frac{3}{4}$ cent per ounce for 95 per cent of the silver contents, less treatment charge of \$8 per ton.

For ores containing 200 to 400 ounces silver per ton, we will pay the New York silver price, less $\frac{1}{2}$ cent per ounce for 95 per cent of the silver contents, less treatment charge of \$8 per ton.

For ore containing 400 to 2,000 ounces silver to the ton, we will pay the New York silver price, less $\frac{1}{4}$ cent per ounce for 95 per cent of the silver contents, less a treatment charge of \$8 per ton.

For ores and coarse concentrates containing 2,000 ounces and upwards of silver per ton, we will pay the full New York silver price, for 95 per cent of the silver contents, no treatment charge.

For Vanner or Wilfley products, we will pay the New York silver price, less one cent per ounce for 94 per cent of the silver contents, less \$8 per ton treatment charge.

For jig concentrates containing from 400 to 2,000 ounces silver per ton, we will pay the New York silver price, less $\frac{1}{2}$ cent per ounce for 95 per cent of the silver contents, less treatment charge of \$8 per ton.

Low grade 'ores' are expected to run less than 10 per cent arsenic.

All the above f.o.b. cars our works, Carnegie, Pa., P.C.C. and St. Louis railway.

Schedule for ores above 2,800 ounces:—

No treatment or refining charge.

For ores between 2,800 and 3,000 ounces, 95 $\frac{1}{2}$ per cent of the silver contents is paid for, and increase in the percentage of silver paid for by $\frac{1}{16}$ of 1 per cent for every 200 ounces up to 4,800 ounces per ton. For ores assaying over 4,800 ounces the percentage of silver paid for is constant at 96 $\frac{1}{2}$ per cent. All other conditions are the same as for ores below 2,800 ounces.

Settlement assays to be the average of our results and shippers or shippers' representatives, if within splitting limits, otherwise reserve sample to be sent to umpire.

Splitting limits on ores of less than 150 ounces per ton to be 1 $\frac{1}{2}$ ounces, on ores of 150 ounces and less than 500 ounces, 1 per cent of contents, on ores of more than 500 ounces 8-10ths of 1 per cent of contents.

9. Government Smelter, Saxony.

"The Government Smelter of Saxony has been receiving some high grade ore from Cobalt on the following contract basis:—

Pay for 96 per cent silver contents on Hamburg quotation of silver.

Payment, 30 days after arrival in Hamburg.

Ore must assay at least 4,500 ounces silver per ton.

Above contract is made on a minimum of six cars.

10. *United States Metals Refining Company, New York—Works at Chrome, N.J., U.S.A.*

“The silver ores from Cobalt that are being purchased by this Company are comparatively low grade, the richest containing 400 ounces silver per ton. No regular schedule is published, but the prices vary with the character of the ore purchased.”

A number of the shipping companies at Cobalt have published, in annual reports, some details of their operations, from which the following extracts have been taken:—

Coniagas Mines, Limited, Year Ending October 31, 1911.

TOTALS OF SHIPMENTS FROM THE MINE.

Year.	Ore.		Concentrates.		Total.	
	Tons.	Ozs.	Tons.	Ozs.	Tons.	Ozs.
Nov. 1st-Oct. 31st.						
1905-1906.....	289	657,513			289	657,513
1906-1907.....	2,655	1,341,372			2,655	1,341,372
1907-1908.....		*			627·5	1,457,210
1908-1909.....	350	807,253	426	599,975	776	1,407,228
1909-1910.....	330·1	979,630	645·5	949,901	975·6	1,929,531
1910-1911.....	619·1	2,142,536	1,418·4	1,643,616	2,037·5	3,789,274
Total to Oct. 31, 1911. . .	4,243·2	5,928,304	2,489·9	3,193,492	7,360·6	10,582,128

* Ore and concentrates.

A canvas table plant has been installed and operating since January 1, which enables us to recover a low grade concentrate which was previously going to waste.

The total amount milled during the year was 52,320 tons, averaging 36·3 ounces per ton. The average value of tailings from the mill was 4·75 ounces per ton.

Crown Reserve Mining Company, Limited, Year Ending December 31, 1911.

SHIPMENTS.—TOTAL PRODUCTION.

Shipments.	Weight.	Silver.	Gross value.	Treatment.	Net value.
	Tons.	Ozs.	\$ cts.	\$ cts.	\$ cts.
High grade.....	644·561	2,991,404	1,605,568 90	71,937 34	1,533,631 56
Low grade.....	390·256	64,284	33,862 33	8,319 62	25,542 71
Bullion.....	7·952	221,792	114,037 38	1,371 37	112,666 01
	1,042·769	3,277,480	1,753,468 61	81,628 33	1,671,840 28
Milled ore (shipped as bullion).....	5·820	153,422	80,048 19	588 26	79,459 93
Total shipments.....	1,048·589	3,430,902	1,833,516 80	82,216 59	1,751,300 21

TOTAL SHIPMENTS TO DATE.

Year.	Dry wt. Tons.	Gross oz.	Gross value.	Net value.	Cost per oz.
			\$ cts.	\$ cts.	Cts.
1908.....	650·78	1,798,954	910,350 62	854,788 89	7·508
1909.....	3,093·00	4,034,325	2,080,156 08	1,895,484 92	10·31
1910.....	2,753·00	3,248,196	1,757,324 27	1,633,716 66	11·97
1911.....	1,048·59	3,430,902	1,833,516 80	1,751,300 21	10·671
Total.....	7,545·37	12,512,377	6,581,847 77	6,136,290 68	

Mine development to end of 1911:—

Sinking and raising.....	1,790 feet.
Drifting.....	5,247 “
Cross-cutting.....	5,172 “
Total.....	12,209 “

Kerr Lake Mining Company, Year Ending August 31, 1911.

“The total development to August 31, 1911, is 21,946 feet, equal to a little over four miles.

“The costs of production per ounce are as follows:—

Mining and development costs.....	9·71 cents.
Shipment and treatment charges.....	4·59 “
Administration and general.....	0·39 “
Total.....	14·69 “

“The cost has been somewhat increased by reason of a larger proportion of development work compared with stoping during the year.”

The La Rose Consolidated Mines Company, Year Ending December 31, 1911.

TOTAL SHIPMENTS TO DECEMBER 31, 1911.

	Dry tons.	Ounces silver.	Gross value. Silver by-pro- duct paid for.	Net value re- ceived from smelter.
			\$ cts.	\$ cts.
Previous to May 31, 1908....	5,583·0000	2,675,161·00	1,711,422 00	1,504,707 00
May 31, '08, to May 31, '09.	6,063·6705	2,915,706·58	1,516,881 55	1,320,698 25
May 31, '09, to May 31, '10.	6,313·9050	3,100,448·93	1,652,416 76	1,442,192 98
May 31, '10, to Dec. 31, '10.	2,380·6085	2,118,574·25	1,147,276 36	1,040,933 98
During year 1911.....	3,561·4120	4,092,709·33	2,191,524 34	2,014,391 49
Total	23,902·5960	14,902,595·09	8,219,521 01	7,322,923 70

Development work done during 1911, 11,045 feet shafts, drifts, cross-cuts, and raises, stoping 13,589 cubic yards, trenches 15,095 feet.

SUMMARY OF SHIPMENTS.

Dry tons shipped.	3,561·412
Gross ounces of silver contained.	4,092,709·33
Gross silver value.	\$2,191,524·34
Average price received per ounce—cents.	53·55
Smelter deduction freight and treatment.	177,132·85
Net value received from ore sales.	\$2,014,391·49

Nipissing Mines Company, Year Ending December 31, 1911.

TOTAL SHIPMENTS TO DECEMBER 31, 1911.

Year.	Dry weight.	Gross silver.	Gross value silver, plus by- products paid for.	Net value returned from smelter.
	Lbs.	Ozs.	\$ cts.	\$ cts.
1904.....	124,659	32·13	24,163 90	23,887 52
1905.....	929,373	753,153·90	505,638 28	471,666 61
1906.....	4,019,494	2,214,821·60	1,576,852 94	1,421,655 54
1907.....	4,804,426	2,239,551·89	1,373,088 57	1,234,492 35
1908.....	7,009,998	2,893,081·44	1,526,686 32	1,364,478 03
1909.....	12,825,169	4,646,869·21	2,417,767 21	2,180,407 02
1910.....	13,397,860	5,597,778·61	3,008,000 98	2,742,321 23
1911.....	5,829,254	4,678,074·14	2,507,196 98	2,381,712 54
Total	48,950,233	23,023,312·92	12,939,395 18	11,820,620 84

The mill for the treatment of first class ore was started February 1, 1911, and is now successfully treating the entire product of the mine.

The process, which is a new one as far as its application to Cobalt ores is concerned, was devised by Charles Butters and his assistant, G. H. Clevenger;

James Johnston erected the plant and has had charge of it since. The process consists essentially of amalgamation in cyanide solution in a tube mill where more than 97 per cent of the silver in the ore is recovered as amalgam. The residue then undergoes regular cyanide treatment whereby an additional extraction is made. During the summer a refinery was erected, since which time the whole product of the mill has been shipped as fine bullion.

Trenching was confined to the section south and east of Peterson lake.

A force of 25 men completed 13.7 miles of trenches 2.7 feet deep at a cost of \$8,831.58.

Summary of underground work in 1911:—

Drifting, 3,675 feet; cross-cutting, 3,602; raising, 1,208; sinking, 296; total, 8,781 feet. Stopping, 13,841 cubic yards.

McKinley-Darragh Mines of Cobalt, Ltd., Calendar Year, 1911.

“Extent of mining operations:—

McKinley-Darragh to January 1, 1912, 20,066 feet drifts, cross-cuts, raises, winzes, and shafts; Savage, to January 1, 5,955 feet.

“Mill report:—

Total ore treated, 1911, 46,497 tons.

Number stamp days run, 318.66.

Average tons per day, 145.91.

Mill heads, 39,685.

Mill tails, 4,122.

Per cent of extraction, 89.614.

Ounces of silver recovered, 1,653,595.”

Timiskaming Mining Company, Limited, Calendar Year, 1911.

SUMMARY OF PROGRESS.

Class of work.	Year 1911.	Since commencement of operations.
Shaft sinking.....	112.0	958.0
Winzes and raises.....	353.8	1,100.8
Drifting.....	2,184.2	8,549.2
Cross-cutting.....	936.0	2,202.0
	3,586.0	12,810.0

Total depth of No. 2 shaft from collar equals 628.0 feet.

PROSPECTING, DEVELOPMENT, AND MINING COST PER TON.

24,783 tons ore elevated.

40,937 tons ore and waste elevated.

	Cost per ton, ore.	Cost per ton, ore and waste.
	\$ cts.	\$ cts.
Prospecting.....	1 32	0 80
Development.....	1 67	1 01
Mining and timbering.....	2 98	1 80
Hoisting.....	0 88	0 54
Cost to surface.....	6 85	4 15

" No payment was made this year on any of the by-products, cobalt, nickel, or arsenic. On the other hand we were penalized on an excess arsenic content by some of the smelters.

" The 34,720 tons treated in the mill produced 770 tons of shipping product which gives a ratio of concentration of about 45 into 1.

" The stamp duty was about 3.13 tons per 24 hours which is somewhat better than that of last year.

" The milling cost per ton covering all charges..... was \$3.00 per ton as compared with \$3.86 of last year, an improvement of 86 cents per ton."

British Columbia.

The chief sources of the silver production in this Province are the silver-lead ores of East and West Kootenay, supplemented by the silver contained in the gold-copper-silver ores of Rossland, Boundary, and Coast districts. The production in 1911, based on smelter recoveries, was 1,887,147 ounces, valued at \$1,005,924.

The leading silver producers among the mines of the Province in order of importance are the Van Roi, Sullivan, Rambler-Cariboo, St. Eugene, Ruth, and Standard.

The Granby mines at Phoenix on account of their large tonnage of copper ores come fourth as silver producers, with the others maintaining their relative positions.

Considerable attention is being paid to the silver-lead properties of the Slocan district, with probabilities of increased production, from the Sandon, Silvertown, and Ainsworth camps. The following table is taken from the annual report of the Minister of Mines for British Columbia, 1911:—

SILVER.—TABLE 3.

Production in British Columbia by Districts, 1907-1911.*

	1907.	1908.	1909.	1910.	1911.
	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.
Cassiar.....	2,291	14,169	4,569	1,454	29,976
Kootenay East—					
Fort Steele division.....	821,367	641,855	580,240	501,475	330,235
Other divisions.....	3,955	3,384	825	243	
Kootenay West—					
Ainsworth division.....	301,322	314,142	352,555	233,010	77,375
Nelson ".....	236,837	25,067	75,908	45,787	76,774
Slocan ".....	590,998	848,595	738,175	964,634	793,926
Trail Creek ".....	126,661	129,558	80,026	87,833	88,076
Other divisions.....	122,232	173,675	169,435	107,753	67,884
Yale—					
Boundary.....	469,206	451,323	492,333	460,945	326,849
Yale.....	223	23		3	343
Coast and other districts.....	70,356	29,598	38,676	47,104	100,926
Total.....	2,745,448	2,631,389	2,532,742	2,450,241	1,892,364

* From the Minister of Mines Reports, British Columbia.

Yukon.

The figures of silver production of the Yukon, given in Table 2, represent the silver alloyed with the placer gold, together with a small amount from the lode mines of the district. On an average, about one ounce of silver is contained in each five ounces of crude bullion from the alluvial workings. In 1909, the production was 45,000 ounces of silver, all from the placer mines. In 1910, the placer production was 50,000 ounces, valued at \$26,743, and the lode production 37,418 ounces, valued at \$20,013, or a total of 87,418 fine ounces valued at \$46,756. In 1911 the placer production was 50,300 ounces, valued at \$26,812, and the lode production 62,408 ounces, valued at \$33,266, a total of 112,708 fine ounces with a value of \$60,078.

Exports.

The following table shows the statistics of silver contained in ore, matte, or other form exported from Canada since 1886, as compiled from the reports of Trade and Navigation published by the Customs Department. The exports during 1911 were 31,216,725 ounces, valued at \$15,807,366, as against exports of 30,699,270 ounces, valued at \$15,649,537, in 1910.

SILVER.—TABLE 4.

Exports of Silver in Ore, etc.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1886	25,957	1895	994,354	1904	1,904,394
1887	206,284	1896	2,271,959	1905	2,777,218
1888	219,008	1897	3,576,391	1906	5,686,444
1889	212,163	1898	2,902,277	1907	9,941,849
1890	204,142	1899	1,623,905	1908	12,403,482
1891	225,312	1900	2,341,872	1909	15,719,909
1892	56,688	1901	2,026,727	1910	15,649,537
1893	213,695	1902	1,820,058	1911	15,807,366
1894	359,731	1903	1,989,474		

ZINC.

The production of zinc ore in Canada in 1911, as obtained by direct returns from the producers, was 2,590 tons valued at \$101,072, the greater part being from British Columbia. The zinc content of these shipments was returned as 2,346,849 pounds, which if valued at the average New York price of spelter during the year would be worth \$135,132.

The ore shipped from British Columbia contains also a varying silver content, for which payment is made by the smelters and without which on account of the import duty to the United States and the long rail haul, it would not pay to ship. The Richardson, or Long Lake mine, in Olden township, Frontenac county, Ontario, did not ship during 1911.

The British Columbia shipments were seriously reduced as a result of the destruction of mills, mine buildings, and railway facilities by the forest fires of 1910, there being only two shippers in 1911.

The British Columbia zinc ore is exported for treatment to Kansas and Oklahoma smelters, and since the smelters demand over 30 per cent zinc, the maximum rate of the United States customs tariff affects Canadian ores.

The present schedule of the tariff on zinc is as follows:—

Ores containing less than 10 per cent, free of duty.

Ores containing 10 per cent or more, and less than 20 per cent, $\frac{1}{2}$ cent per pound.

Ores containing 20 per cent or more, and less than 25 per cent, $\frac{1}{2}$ cent per pound.

Ores containing 25 per cent or more, 1 cent per pound.

All rates being based on the metallic contents of the zinc.

The United States smelters usually pay on a basis of 45 per cent zinc content. The base price varies with the price of spelter at St. Louis, and a stated amount is added or deducted for every unit of zinc in excess of or less than the base. The silver is settled for at the New York price after making deductions for losses in treatment. Limits are frequently set which lead or iron contents may not exceed.

A typical example may be given. A certain mine was paid \$28.50 per short ton for zinc concentrates carrying 45 per cent zinc, when spelter was quoted at 5 cents per pound at St. Louis. For every unit above or below 45 per cent zinc 85 cents was added or deducted. For every increase or decrease of one cent per pound in the price of spelter at St. Louis, an increase or decrease was allowed of \$7 per ton of 2,000 pounds, and proportionately for fractions thereof. In the case of the silver content, six ounces per ton were deducted and 75 per cent of the remainder paid for at the New York price.

The sellers paid freight, customs duty, and collection charges.

The imports of zinc taken as an index of consumption, show a fairly steady increase. The total imports of zinc in blocks and pigs and spelter were, in 1880, some 744 tons. In 1889 they had risen to 1,427 tons, and remained fairly stationary until about 1899, in which year the imports were 1,213 tons. In the fiscal year ending March, 1909, they had risen to 4,610 tons, and for the calendar year, 1910, they totalled 7,037 tons, in addition to which there were 4,248 tons of zinc white, and zinc manufactures, to the value of \$21,829.

For the calendar year 1911, the total imports were 7,534 tons, in addition to which there were 4,269 tons of zinc white, and zinc manufactures to the value of \$30,862.

Statistics of the production and imports of zinc and the average monthly prices of spelter on the New York and London markets for two years are given in the accompanying tables:—

ZINC.—TABLE 1.
Annual Production of Zinc.

Calendar Year.	ZINC ORE SHIPPED.		METALLIC ZINC IN ORE SHIPPED.	
	Tons.	Spot value.	Lbs.	Final value.
		\$		\$
1898.....	1,162	11,000	788,000	36,011
1899.....	865	18,165	814,000	46,805
1900.....	261	4,810	212,000	9,342
1901.....				
1902.....	158	1,659	142,200	6,882
1903.....	1,000	10,500	900,000	48,660
1904.....	597	3,700	477,568	24,256
1905.....	9,413	139,200	*	*
1906.....	1,154	23,800	*	*
1907.....	1,573	49,100	*	*
1908.....	452	3,215	*	*
1909 (a).....	18,371	242,699	16,468,204	906,245
1910.....	5,063	120,003	4,361,712	240,766
1911.....	2,500	101,072	2,316,845	135,132

* Figures not available.

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

ZINC.—TABLE 2.

Imports of Zinc in Blocks, Pigs, and Sheets.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		\$			\$			\$
1880	13,805	67,881	1891.	17,984	105,023	1902.	34,871	141,560
1881	20,920	94,015	1892.	21,881	127,302	1903.	26,646	142,827
1882	15,021	76,681	1893.	26,446	124,360	1904.	25,553	138,057
1883	22,765	94,799	1894.	20,774	90,680	1905.	25,111	141,514
1884	18,945	77,373	1895.	15,061	63,373	1906.	24,462	153,438
1885	20,954	70,598	1896.	20,223	80,784	1907 (9 mos.)..	18,427	126,221
1886	23,146	85,599	1897.	11,946	57,754	1908.	30,362	191,081
1887	26,142	98,557	1898.	35,148	112,735	1909.	26,222	141,066
1888	16,407	65,827	1899.	18,785	107,477	1910.	35,040	201,777
1889	19,732	83,935	1900.	28,748	156,167	1911.	34,659	206,746
1890	18,236	92,530	1901.	20,527	103,457			

ZINC.—TABLE 3.

Imports of Spelter.*

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		\$			\$			\$
1880	1,073	5,301	1891.	6,249	31,459	1902.	18,356	80,757
1881	2,904	12,276	1892.	13,909	62,550	1903.	23,159	110,817
1882	1,654	7,779	1893.	10,721	49,822	1904.	33,952	164,751
1883	1,274	5,196	1894.	8,423	35,615	1905.	37,941	206,244
1884	2,239	10,417	1895.	9,249	30,245	1906.	50,137	290,686
1885	3,325	10,875	1896.	10,897	40,548	1907 (9 mos.)..	42,465	269,044
1886	5,432	18,238	1897.	8,342	32,826	1908.	65,593	314,369
1887	6,908	25,007	1898.	2,794	13,561	1909.	55,981	310,688
1888	7,772	29,762	1899.	5,450	29,687	1910.	132,001	653,285
1889	8,750	37,403	1900.	5,836	29,416	1911.	98,372	505,447
1890	14,570	71,122	1901.	14,621	58,283			

* Spelter in blocks and pigs.

ZINC.—TABLE 4.

Imports of Zinc, Manufactures of.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880	8,327	1891	7,178	1902	6,688
1881	20,178	1892	7,663	1903	9,754
1882	15,526	1893	7,464	1904	12,682
1883	22,599	1894	6,193	1905	11,912
1884	11,952	1895	5,581	1906	12,917
1885	9,459	1896	6,290	1907 (9 mos.)	12,556
1886	7,345	1897	5,145	1908	19,240
1887	6,561	1898	10,503	1909	15,621
1888	7,402	1899	14,661	1910	15,495
1889	7,293	1900	11,475	1911	24,128
1890	6,472	1901	6,882		
1911 { Zinc seamless drawn tubing				Duty free	\$
" manufactures of, N.O.P.				25%	\$ 24,128
Total					\$ 24,128

World's Production of Spelter in Short Tons.*

Country.	1906.	1907.	1908.	1909.	1910.	1911.
Australia	1,131	1,098	1,198	.....	560	1,120
Austria and Italy	11,883	12,522	14,063	13,931	14,666	15,350
Belgium	168,067	170,307	181,851	184,194	190,233	215,062
France and Spain	59,293	61,438	61,512	61,859	65,191	70,795
Germany—						
Rhine district	75,729	77,459	80,670	82,863	86,823	103,863
Silesia	150,282	152,611	158,328	159,731	154,596	172,161
Great Britain	57,971	61,286	60,029	65,422	69,531	73,808
Holland	16,150	16,526	19,017	21,548	23,121	25,060
Poland	10,595	10,735	9,740	8,758	9,514	10,640
United States	224,770	249,860	210,424	255,760	269,184	286,526
Total	775,871	813,842	796,832	854,066	883,419	974,385

* Mineral Resources of the United States 1911.

World's Consumption of Spelter in Short Tons.*

Country.	1907.	1908.	1909.	1910.
Austria-Hungary	34,171	35,925	36,155	37,258
Belgium	60,627	74,936	68,343	86,531
France	76,720	85,956	73,744	61,949
Germany	192,792	198,580	207,232	196,209
Great Britain	154,653	152,627	171,408	195,989
Holland	4,189	4,188	4,409	4,409
Italy	7,496	9,257	9,039	8,929
Russia	19,290	19,946	20,282	27,447
Spain	5,180	5,290	4,850	4,740
United States	13,228	11,020	6,614	13,228
Other countries	226,969	214,167	270,730	245,884
Total	795,315	811,892	872,806	882,573

* Mineral Resources of the United States, 1910.

Average Price of Spelter in Cents per Pound at New York.*

Month.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
January	4·13	4·27	4·865	4·863	6·190	6·487	6·732	4·513	5·141	6·101	5·462
February	4·01	4·15	5·043	4·916	6·139	6·075	6·814	4·785	4·889	5·569	5·518
March	3·91	4·28	5·349	5·057	6·067	6·209	6·837	4·665	4·757	5·637	5·563
April	3·98	4·37	5·550	5·219	5·817	6·087	6·687	4·645	4·905	5·489	5·399
May	4·04	4·47	5·639	5·031	5·434	5·997	6·441	4·608	5·124	5·191	5·348
June	3·99	4·96	5·697	4·760	5·190	6·096	6·419	4·543	5·402	5·128	5·520
July	3·95	5·27	5·662	4·873	5·396	6·006	6·072	4·485	5·402	5·152	5·695
August	3·99	5·44	5·725	4·866	5·706	6·027	5·701	4·702	5·729	5·279	5·953
September	4·08	5·49	5·686	5·046	5·887	6·216	5·236	4·769	5·796	5·514	5·869
October	4·25	5·38	5·510	5·181	6·087	6·222	5·430	4·801	5·199	5·628	5·102
November	4·29	5·18	5·038	5·513	6·145	6·375	4·925	5·059	6·381	5·976	6·380
December	4·31	4·78	4·731	5·872	6·522	6·593	4·254	5·137	6·249	5·624	6·301
Year	4·07	4·84	5·40	5·100	5·822	6·198	5·962	4·726	5·503	5·520	5·758

* From the statistical publication of the Metallgesellschaft, etc., of Frankfort-on-the-Main, Germany.

Average Prices of Spelter, Ordinary Brands, in London.*

Month.	1902.			1903.			1904.			1905.			1906.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	16	13	..	20	0	8	21	11	2	24	19	9	28	8	2
February	17	14	2	20	15	4	21	16	5	24	10	6	26	2	4
March	17	13	4	22	18	2	21	19	6	23	13	6	24	15	3
April	17	17	..	22	8	7	22	5	1	23	14	3	25	19	3
May	18	9	..	21	2	4	22	2	10	23	11	8	27	0	2
June	18	11	8	20	8	2	21	14	6	23	16	8	27	9	9
July	18	19	11	20	8	5	22	2	9	23	19	6	26	15	11
August	18	16	8	20	9	5	22	7	6	24	14	6	27	0	5
September	19	4	7	20	17	7	22	11	5	26	8	3	27	12	5
October	19	5	4	20	9	4	23	1	7	23	1	7	27	18	10
November	19	11	8	20	14	7	24	12	9	23	5	11	27	15	1
December	19	15	6	20	19	10	24	17	1	28	14	11	27	19	3
Year	18	0	11	20	19	5	22	11	10	25	7	7	27	1	5

Month.	1907.			1908.			1909.			1910.			1911.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	27	7	1	20	6	3	21	6	3	23	4	2	23	17	9
February	26	1	5	21	0	7	21	8	9	23	3	1	23	5	6
March	26	4	8	21	1	5	21	8	8	23	0	7	23	0	4
April	25	17	5	21	6	1	21	10	1	22	9	10	23	14	10
May	25	14	2	20	2	10	21	19	..	22	1	1½	24	7	6
June	24	10	2	19	2	2	21	19	11	22	3	2	24	12	3
July	23	18	11	18	14	1	21	18	9	22	5	5	25	0	1
August	22	1	7	19	6	9	22	0	3	22	14	0	26	6	0
September	21	0	11	19	10	2	22	17	1	25	2	7	27	15	0
October	21	12	11	19	15	1	22	3	4	23	16	6	27	5	1
November	21	8	4	20	17	1	23	2	1	24	1	9	26	15	1
December	20	3	3	20	19	2	23	1	3	24	0	5	26	17	0
Year	23	16	9	20	3	5	22	3	..	23	1	0	25	5	8

* From the annual publication of the Metallgesellschaft, etc., of Frankfort-on-the-Main, Germany.

MISCELLANEOUS METALLIC MINERALS.

ALUMINIUM.

No commercial ores of aluminium have as yet been found in Canada. Aluminium is, however, made in extensive works at Shawenegan Falls, Que., from bauxite ores imported from France, Germany, and the United States, by the Northern Aluminium Company. A wire mill for the manufacture of aluminium wire and cables is also operated by the same firm.

There being but one firm engaged in the manufacture of aluminium, we are precluded from publishing statistics of production.

Imports of alumina, which probably includes bauxite, and exports of aluminium, are, however, published in the reports of the Department of Customs.

During the twelve months ending December 31, 1911, the imports of alumina were 18,607,200 pounds, or 9,304 tons, while the exports of aluminium in ingots, bars, etc., during the same period, were 4,990,100 pounds, or 2,495 tons, besides manufactures of aluminium, valued at \$1,555. The imported alumina was valued at 2.00 cents per pound, and the exported aluminium at 14.98 cents.

The imports of alumina and exports of aluminium during the past eight years are shown in tabular form as follows:—

Annual Imports of 'Alumina' and Exports of Aluminium.

Calendar Year.	Imports of alumina.		EXPORTS OF ALUMINIUM.		
			Ingots, bars, etc.		Manufactures.
	Lbs.	Value. \$	Lbs.	Value. \$	Value. \$
1905	5,360,800	138,765	2,535,386	508,219	1,588
1906	8,975,400	239,136	4,521,486	899,113	2,244
1907	12,705,300	268,502	5,478,203	1,109,353	1,499
1908	1,485,500	29,752	1,713,800	399,785	1,727
1909	11,794,100	234,544	6,134,500	918,195	3,453
1910	19,464,400	403,283	7,722,400	1,160,242	3,741
1911	18,607,200	372,009	4,990,100	747,587	1,555

Prices.—The price of aluminium (No. 1 ingots), in New York, during 1911, varied between the limits of 18½ and 22 cents per pound; during 1910, the price varied between 20 and 24 cents per pound, while practically the same prices ruled during 1909.

In Europe, prices for aluminium for several years have been considerably lower than in the United States.

In 1909, the prices per pound at works in Europe are reported by the 'Metallgesellschaft' as having ranged from 13½ cents to 16 cents; in 1910, from 14 cents to 17½ cents, and in 1911 from 11 to 13½ cents.

ANTIMONY.

A few pounds of refined antimony were produced at Trail, British Columbia, in 1911, but beyond that there was no production from Canada. The West Gore Antimony Company did not operate during the year.

The total production of antimony in 1910, as reported to this Branch, consisted of 364 tons of antimony concentrates, valued at \$13,906, shipped from West Gore, Nova Scotia. In 1909, in addition to the shipment of 35 tons of concentrates, there were produced about 61,200 pounds of antimony metal chiefly at the works of the Canadian Antimony Company, Limited, at Lake George, New Brunswick, a small recovery being also reported from the Consolidated Mining and Smelting Company's refinery at Trail, B.C.

In 1908, customs returns showed an export of 148 tons of antimony ore valued at \$5,443.

In 1907 the production was 2,016 tons of antimony ore shipped, valued at \$65,000, and 63,850 pounds of refined antimony, valued at \$5,108.

In British Columbia, some of the lead ores contain a small percentage of antimony—about one-third of one per cent—and some refined antimony was recovered at Trail in 1907 and 1909, the recovery being somewhat irregular.

The auriferous antimony property at West Gore, Hants county, Nova Scotia, formerly operated by the Dominion Antimony Company, Limited, was taken over in July, 1909, by the West Gore Antimony Company.

The mine and works of the Canadian Antimony Company, Ltd., at Lake George, New Brunswick, have not been in operation since 1909.

Annual Shipments of Antimony Ore.*

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	665	31,490	1899 to 1904	Nil.	Nil.
1887.....	584	10,860	1905 (a).....	527	.....
1888.....	345	3,696	1906 (a).....	782	.....
1889.....	55	1,190	1907*.....	2,016	65,000
1890.....	26½	625	1908 (b).....	148	5,443
1891.....	10	60	1909*.....	35	1,575
1892 to 1897.....	Nil.	Nil.	1910.....	364	13,906
1898.....	1,344	20,000	1911.....	.....	.....

(a) As recorded by the Nova Scotia Department of Mines: no value given.

(b) Exports.

* In addition to the shipments shown in the table, refined antimony was produced in 1907 to the extent of 63,850 pounds valued at \$5,108, and in 1909, 61,207 pounds valued at \$4,285.

Export of Antimony Ore.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1880.....	40	1,948	1890.....	6 $\frac{3}{4}$	190
1881.....	34	3,308	1900.....	210	3,441
1882.....	323	11,673	1901.....	10	1,643
1883.....	165	4,200	1902.....	90	13,658
1884.....	483	17,375	1903.....	33	4,332
1885.....	758	36,250	1904.....	160	7,237
1886.....	665	31,490	1905.....	525	27,118
1887.....	229	9,720	1906.....	420	17,064
1888.....	352 $\frac{1}{2}$	6,894	1907.....	1,327	37,807
1889.....	30	695	1908.....	148	5,443
1890.....	38	1,000	1909.....	4	120
1891.....	3 $\frac{1}{2}$	60	1910.....	239	14,095
1892 to 1897.....	Nil.	Nil.	1911.....	57	4,946
1898.....	1,232	15,295			

Imports of Antimony.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	42,217	5,903	1896.....	163,209	9,557
1881.....		7,060	1897.....	134,661	8,081
1882.....	183,597	15,044	1898.....	156,451	12,350
1883.....	105,346	10,355	1899.....	289,066	16,851
1884.....	445,600	15,564	1900.....	186,997	20,001
1885.....	82,012	8,182	1901.....	350,737	24,714
1886.....	89,787	6,951	1902.....	504,822	39,276
1887.....	87,827	7,122	1903.....	868,146	65,434
1888.....	120,125	12,242	1904.....	418,943	27,112
1889.....	119,034	11,206	1905.....	186,454	12,828
1890.....	117,066	17,439	1906.....	403,918	56,297
1891.....	114,084	17,483	1907 (9 mos.).....	321,385	71,493
1892.....	180,308	17,680	1908.....	484,899	66,484
1893.....	181,823	14,771	1909.....	444,254	32,133
1894.....	139,571	12,249	1910.....	563,662	40,681
1895.....	79,707	6,131	1911.....	640,208	42,234
1911					\$
Antimony, or regulus of, not ground, pulverized or otherwise manufactured.....			Duty free.	567,087	35,796
Antimony salts.....			"	73,121	6,438
Total.....				640,208	42,234

COBALT.

Cobalt is an important constituent of the silver-cobalt-nickel-arsenides of Coleman and adjacent townships, more familiarly known as the Cobalt district, Province of Ontario, and these ores are now said to be the principal source of the world's consumption of cobalt.

With respect to the greater part of the ore shipped in which silver is the chief constituent of value, the purchasing smelters make no allowance for the cobalt content, and the mine owners, therefore, receive nothing for the cobalt.

The recovery of cobalt in Canada so far has been confined to the production of cobalt oxide and mixed cobalt and nickel oxides, by the Coniagas Reduction Company and the Deloro Mining and Reduction Company. During 1911, according to direct returns, there were produced 154,174 pounds of cobalt and nickel oxides and 1,260,832 pounds of cobalt material and mixed oxides of cobalt and nickel, the total value of all these products being \$221,690.

No information is available as to the quantities recovered from ores shipped to smelters outside of Canada.

It is also estimated that the total ore shipments from Cobalt during the past eight years have contained upwards of 5,901 tons of metallic cobalt.

The following table shows the ore shipments, estimated cobalt content, and value received by the shippers for cobalt, as published by the Ontario Bureau of Mines:—

Year.	Ores shipped.	Estimated total cobalt content.	Per cent.	Value received by shippers for cobalt.
	Tons.	Tons.		\$
1904.....	158	16	10.1	19,960
1905.....	2,144	118	5.5	100,000
1906.....	5,335	321	6.0	80,704
1907.....	14,788	739	5.0	104,426
1908.....	25,624	1,224	4.7	111,118
1909.....	30,677	1,533	5.0	94,965
1910.....	34,282	1,098	3.2	54,699
1911.....	26,653	852	3.2	170,890

The production of cobalt has so largely exceeded the demand as to cause a very great fall in the price.

The price of cobalt oxide (78.6 per cent Co) in New York, during 1907, remained uniformly at \$2.50 per pound. In 1908, the price fell to \$1.45 in April, and \$1.40 in November. During the first three months of 1909, from \$1.45 to \$2.60 was quoted, after which the price again fell, quotations ranging from \$1.10 to \$1.75 until December. In the latter part of December there was a further falling off to prices ranging from 80 to 85 cents per pound.

During 1910 the price remained fairly constant at from 80 to 85 cents per pound, while in December, 1911, it fell to from 78 to 80 cents per pound.

In the "Statistique de l'Industrie Minérale en France et en Algérie" for 1910, the following statement is of interest: "The production of cobalt ores which was more than 2,360 metric tons in 1908 and which fell to 548 tons in 1909, was only 54 tons in 1910 with a value of 4,860 francs or an average of 90 francs per ton.

"Thus New Caledonia, which for a long time enjoyed a veritable monopoly of the cobalt ore market, was suddenly supplanted in these markets by Canada as a result of the exploitation of the argentiferous-cobalt ores of the Cobalt district."

In 1907 an Act was passed by the Ontario Legislature, authorizing the payment of bounties on certain nickel, cobalt, copper, and arsenic products mined and refined in the Province. The Act and Amendment are quoted following:—

AN ACT TO ENCOURAGE THE REFINING OF METALS IN ONTARIO.

Whereas it is desirable to encourage the refining of nickel, cobalt, copper and arsenic ores within the Province;

Therefore His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. This Act may be cited as "The Metal Refining Bounty Act."

2. The treasurer of the Province may, under the authority of such regulations as may from time to time be made in that behalf by the Lieutenant-Governor in Council, pay in each year to the refiners of the metals or metal compounds hereinafter specified, when refined in the Province from ores raised and mined in the Province, a bounty upon each pound of such metal or compound so refined as follows:—

Class 1.—On refined metallic nickel or on refined oxide of nickel, 6 cents per pound on the free metallic nickel or on the nickel contained in the nickel oxide; but nickel upon which a bounty has already been paid in one form of product shall not be entitled to any further bounty in any other form; and the amount to be paid as bounty on the nickel products herein mentioned is not to exceed in all \$60,000 in any one year.

Class 2.—On refined metallic cobalt or on refined oxide of cobalt, 6 cents per pound on the free metallic cobalt or on the cobalt contained in the oxide of cobalt; but cobalt upon which a bounty has already been paid in one form of product shall not be entitled to any further bounty in any other form; and the amount to be paid as bounty on the cobalt products herein mentioned is not to exceed in all \$30,000 in any one year.

Class 3.—On refined metallic copper or on refined sulphate of copper, 1½ cents per pound on the free metallic copper or on the copper contained in the sulphate of copper; or on any copper product carrying at least 95 per cent of metallic copper, one-half cent per pound; but copper upon which a bounty has

already been paid in one form of product shall not be entitled to any further bounty in any other form; and the amount to be paid as bounty on the copper products herein mentioned is not to exceed in all \$60,000 in any one year.

Class 4.—On white arsenic, otherwise known as arsenious acid, produced from mispickel ores and not from ores carrying smaltite or niccolite or cobaltite, one-half cent per pound; but the amount to be paid as bounty on the arsenic compound herein mentioned is not to exceed in all \$15,000 in any one year.

(1) Provided, however, that if so much of any of the above-mentioned classes of refined products is refined in the Province in any one year that the amount hereby set apart in respect of the said class would be insufficient to pay the bounties herein provided therefor, then the bounty payable to the refiners of such class of refined products shall abate and be payable upon a *pro rata* basis so that not more than the maximum amount herein specified for any of the said classes shall be paid in respect of said class in any one year.

(2) Provided, also, that the bounties herein provided for shall cease and determine with the payment of any sum or sums which shall have been earned during the period of five years from the passing of this Act.

(3) No person, firm or company shall be entitled to claim or receive any of the bounties in this Act provided for unless such person, firm or company shall have been at all times prepared and ready and willing during the period for which the bounty is claimed, to smelt, treat and refine ores from which the same product as that on which the bounty is claimed can be produced, belonging to any other person, firm or company, at rate and on terms and conditions approved by the Lieutenant-Governor in Council, or shall have been ready to purchase such ores at rates approved by the Lieutenant-Governor in Council as current market rates.

AN ACT TO AMEND THE ACT TO ENCOURAGE THE REFINING OF METALS IN ONTARIO.

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. Subsection 2 of Section 2 of The Metal Refining Bounty Act is amended by striking out the word "five" where the same appears in the last line of the said Subsection, and substituting therefor the word "ten".

MERCURY.

There has been no production of mercury since 1897. The small production reported in 1895 and 1897 was derived from the deposits at the western end of Kamloops lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar. These veins are in a zone of decomposed volcanic rock of Tertiary age.

During 1911 some development work was done by the Mercury Mines, Ltd., at Sechart, Vancouver island. Some ore was taken out but was piled on the dump for future treatment.

Production of Mercury.

Calendar Year.	Flasks. (76½ lbs.)	Price per flask.	Value.
		\$ cts.	\$
1895.....	71	33 00	2,343
1896.....	58	33 44	1,940
1897.....	9	36 00	324

Imports of Mercury.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$			\$
1882.....	2,443	965	1892.....	30,936	15,038	1902.....	97,283	56,615
1883.....	7,410	2,991	1893.....	50,711	22,998	1903.....	164,968	91,625
1884.....	5,848	2,441	1894.....	36,914	14,483	1904.....	151,107	80,658
1885.....	14,490	4,781	1895.....	63,732	25,703	1905.....	103,330	48,412
1886.....	13,316	7,142	1896.....	77,869	32,353	1906.....	150,364	69,505
1887.....	18,409	10,618	1897.....	76,058	33,534	1907 (9 mos.)...	98,368	45,662
1888.....	27,951	14,943	1898.....	59,759	36,425	1908.....	178,411	76,549
1889.....	22,931	11,844	1899.....	103,017	51,695	1909.....	92,220	46,217
1890.....	15,912	7,677	1900.....	85,342	51,987	1910.....	283,980	146,914
1891.....	29,775	20,223	1901.....	140,610	94,564	1911 Duty free.	123,980	74,956

MOLYBDENUM.

Although there are numerous occurrences of molybdenite in Canada of more or less undetermined value, there has been very little production of the mineral.

In 1902, about 6,500 pounds of molybdenum, valued at \$400, were reported as having been taken from a deposit in the township of Laxton, county of Victoria, by John Webber, of Toronto.

In 1903, Mr. A. W. Chisholm, of Kingston, reported the shipment to the United States and elsewhere of 85 tons of molybdenum ore, valued at \$1,275, culled from about 500 or 600 tons of rock taken from the east half of lot 5, concession XIV, Sheffield township, Addington county.

According to "The Mineral Industry," published in New York: "The market for molybdenum ores is very narrow. The price fluctuates widely, and is generally subject to special negotiations at each particular sale. American buyers require concentrates to contain 90 to 95 per cent molybdenite, for which they will pay \$400 to \$450 per ton. The principal purchasers in the U.S. are Electrometallurgical Co. of America, New York; Primos Chemical Company, Primos, Penn.; DeGolia & Atkins, San Francisco, Cal. In Germany, Friederich Krupp, of Essen, is a large user of molybdenum."

During the year a report on the molybdenum ores of Canada was issued by the Mines Branch.¹

¹ No. 93, Report on the Molybdenum Ores of Canada, by T. L. Walker, Ph.D., Mines Branch, Dept. of Mines, Ottawa, 1911.

PLATINUM AND PALLADIUM.

Although no production of platinum or palladium is reported for 1910, it seems probable that some recovery of platinum may have been made from placer mining on the Tulameen river, B.C.

In the former years the chief source of the platinum production in Canada was the placer gravels of British Columbia, principally in the Similkameen district.

The nickel-copper ores of the Sudbury district also carry small quantities of the metals of the platinum group, and from 1902 to 1906 considerable quantities of these metals were recovered from accumulated residues resulting from the treatment of the mattes from Sudbury. This recovery, however, has apparently ceased.

The Tulameen district of British Columbia was visited in 1910 by Mr. Charles Camsell of the Geological Survey, who reports that "A few Chinese miners were again placer mining on a part of the bed of the Tulameen river between the mouths of Eagle and Champion creeks. This particular portion of the stream bed has been worked over a great many times since the first discovery of gold on it. Within the last twelve years it has been mined at least eight times, and the old cabins, gravel dumps, and abandoned machinery, show that it had already been worked over years before. Gold and platinum are obtained here in about equal proportions. The evidence suggests that the gold and platinum on the stream bed are replenished annually from some nearby source. What this source is, has not yet been determined. There are no prominent gravel deposits directly above this point, but it is significant that it lies immediately below a sheared and broken zone formed in the bed-rock, on the contact of pyroxenite with green schists. The method of working is to divert the water by wing dams to one side of the stream bed, and mine the other by sluicing. The amount of gold and platinum actually recovered was not ascertained, but it appears to have been satisfactory to the miners."

Annual Production of Platinum.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1887.....	5,600	1894.....	950	1901.....	457
1888.....	6,000	1895.....	3,800	1902.....	46,502
1889.....	3,500	1896.....	750	1903.....	33,345
1890.....	4,500	1897.....	1,600	1904.....	10,872
1891.....	10,000	1898.....	1,500	1905.....	500
1892.....	3,500	1899.....	825	1906.....	*
1893.....	1,800	1900.....	Nil.		

* See under Palladium.

Annual Production of Palladium.

	Ozs.	Value.
1902 Palladium.....	4,411	\$86,014
1903 ".....	3,177	61,952
1904 ".....	952	18,564
1905 Metals of the platinum group.....	1,562	28,116
1906 ".....	314	5,652
1907-1910.....	* Nil	Nil.

*Ontario Bureau of Mines Report, 1910.

Imports of Platinum.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1883.....	113	1893.....	14,082	1903.....	21,251
1884.....	576	1894.....	7,151	1904.....	28,112
1885.....	792	1895.....	3,937	1905.....	61,719
1886.....	1,154	1896.....	6,185	1906.....	54,494
1887.....	1,422	1897.....	9,031	1907 (9 mos.).....	113,485
1888.....	13,475	1898.....	9,781	1908.....	60,390
1889.....	3,167	1899.....	9,671	1909.....	45,534
1890.....	5,215	1900.....	57,910	1910.....	84,435
1891.....	4,055	1901.....	20,263	1911*.....	137,241
1892.....	1,952	1902.....	19,357		

* Platinum wire and platinum in bars, strips, sheets or plates; platinum retorts, pans, condensers, tubing and pipe, imported by manufacturers of sulphuric acid for use in their works; crucibles. Duty free.

TIN.

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

The occurrence of tin ore has been reported from several localities, the most important, perhaps, being the recent discovery of cassiterite, near New Ross, Lunenburg county, Nova Scotia. This occurrence has not yet been found of economic value. It has been visited by several officers of the Geological Survey, and reports upon it may be found in the Summary Report of the Geological Survey Branch, of the Department of Mines, for 1907, pages 77, and 80 to 83, and in the report for 1908, page 154.

In further reference to the New Ross occurrences, Mr. Faribault, in his summary report for 1910, states that: "At New Ross, Lunenburg county, some distance east of the district surveyed last summer, two important veins, one bearing manganese and the other tin and copper, were opened last summer.

"A tin-bearing vein, also recently discovered by Ernest Turner, at Mill Road, four miles north of New Ross, has been prospected under the management of A. L. McCallum. It has been proved to a depth of 20 feet, and for a length of 250 feet, while the float has been traced half a mile towards the north. The vein is 24 inches wide, mostly made up of quartz, merging with granite at the sides, and carries at the middle a streak of rich ore from three to five inches wide. Several assays of the ore made by Mr. McCallum have given from 10 to 30 per cent tin, and 8 per cent copper, present in the form of cassiterite and chalcopyrite, with association of tungsten-bearing zinc minerals."

The imports of tin and manufactures thereof into Canada are shown in the following table:—

Imports of Tin and Tinware.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	281,880	1891.....	1,206,918	1902.....	2,293,958
1881.....	413,924	1892.....	1,594,205	1903.....	2,712,186
1882.....	790,285	1893.....	1,242,994	1904.....	2,380,557
1883.....	1,274,150	1894.....	1,310,389	1905.....	2,791,757
1884.....	1,018,493	1895.....	973,397	1906.....	3,336,948
1885.....	1,060,883	1896.....	1,237,684	1907 (9 mos.).....	2,719,813
1886.....	1,117,368	1897.....	1,274,108	1908.....	4,059,231
1887.....	1,187,312	1898.....	1,550,851	1909.....	2,985,361
1888.....	1,164,273	1899.....	1,372,813	1810.....	3,822,443
1889.....	1,243,794	1900.....	2,418,455	1911.....	4,647,784
1890.....	1,239,756	1901.....	2,339,109		

	Duty	Lbs.	\$
1911 {	Free.		4,933
	"	3,570,600	1,242,436
	"	88,050,400	2,859,611
	"	1,013,763	133,753
	25%		407,003
	Free.	8,000	48
Total.....			4,647,784

TUNGSTEN.

Reference was made in the report for 1908 to the discovery of scheelite in Halifax county, Nova Scotia. Mr. Faribault of the Geological Survey visited this deposit again in 1909, and a preliminary report thereon will be found in the Summary Report of the Geological Survey for 1909, pages 228-234. During 1910 these deposits were being developed by the Scheelite Mines Company, who are reported to have obtained very satisfactory results. In his summary report for 1910, Mr. Faribault refers to a new discovery in Queens county, as follows: "A new discovery of tungsten ore, in the form of scheelite has been made by A. N. Prest, at Middlefield, Queens county, near the Fifteen-mile Brook gold mine, and prospecting was started last fall in order to trace the float to the parent vein."

During 1911, the Scheelite Mines, Ltd., continued development work and erected a mill.

The occurrence of wolframite has also been noted in association with molybdenite by Dr. Walker in New Brunswick, near the confluence of Burnt Hill brook and the Southwest Miramichi. The property is being tested by Mr. Freeze of Doaktown, N.B., and Mr. Matthew Lodge of Moncton, who are interested therein.

NON-METALLIC PRODUCTS.

ABRASIVE MATERIALS.

The abrasives produced in Canada comprise corundum, the various sandstone abrasives, such as grindstones, pulpstones, whetstones, etc., and tripolite or infusorial earth.

CORUNDUM.

The total shipments of grain corundum from operating mills in 1911, were 2,943,150 pounds, valued at \$161,873, as compared with shipments in 1910 of 3,740,900 pounds, valued at \$198,680. Of the shipments in 1911, 184,000 pounds, or 6 per cent of the total, were sold for consumption in Canada, and 2,759,150 pounds or 94 per cent, were sold for export.

The quantity of rock milled in 1911 was 41,795 tons, from which 3,281,750 pounds of grain corundum were graded, showing a recovery of 3.93 per cent of corundum from the rock. In 1910, 37,183 tons of rock were milled with a recovery of 3,372,800 pounds or 4.5 per cent of grain corundum.

The annual production since 1900 is shown in Table 1 below.

ABRASIVE MATERIALS.—TABLE 1.

Production of Corundum Ore and Corundum.

Cal- endar Year.	Corundum- bearing rock treated.	Grain corundum graded.	Grain corundum sold in Canada.	Grain corundum exported.	Total of grain corundum.	Value.	Average price.
	Tons.	Tons.	Tons.	Tons.	Tons.	\$	Cts.
1900 ..		60	3		3	300	5.00
1901 ..	4,134	444	85	302	387	46,415	5.97
1902 ..	7,996	806	106	662	768	84,465	5.49
1903 .. (a)	8,877	839	85	618	703	77,510	5.51
1904 ..	28,187	1,654	116	877	993	109,545	5.51
1905 ..	23,571	1,681	140	1,504	1,644	149,153	4.48
1906 ..	45,719	2,914	162	2,112	2,274	204,973	4.50
1907 ..	60,532	2,682	164	1,728	1,892	177,922	4.70
1908 ..	2,678	106	99	990	1,089	100,398	4.60
1909 ..	35,894	1,579	129	1,362	1,491	162,492	5.45
1910 ..	37,183	1,686	106	1,764	1,870	198,680	5.31
1911 ..	41,795	1,641	92	1,380	1,472	161,873	5.50

(a) In addition to this amount which was milled in Canada, 267 tons of ore were mined and shipped to the United States for treatment there.

Corundum is found in Faraday, Dungannon, Monteaigle, Carlow, Raglan, and adjacent townships, the operating mines being located in the last two. Mining operations have been in progress since 1900. In the earlier years of the industry, the amount of grain corundum graded averaged about 10 per cent of the rock treated. In more recent years, however, a much lower grade of rock

has been milled, the recovery of corundum in 1911 averaging about 3.926 per cent, in 1910 averaging about 4.5 per cent, and in 1909, 4.4 per cent of the rock treated.

The Manufacturers Corundum Company, Limited, is the only operator at present, working the Craig mine at Craigmont, Renfrew county, and the Burgess mines in Hastings county.

During the year the Company did some development work near Burgess mines and is now taking ore from one of these properties.

The treatment of the ore consists in concentration, magnetic separation of the iron, air separation of mica, and sizing. The magnetic sand is now being sold as a by-product and is used in the manufacture of school blackboards.

The corundum finds a market in Canada, the United States, England, France, Germany, and Belgium. Descriptions of mines and mills will be found in the Annual Report of the Ontario Bureau of Mines, and in Memoir No. 6, Geological Survey Publications.¹

GRINDSTONES, PULPSTONES, ETC.

The manufacture of grindstones is an industry which has been carried on for many years in the Provinces of Nova Scotia and New Brunswick. The output to-day is no greater than it was twenty years ago, and there has been comparatively little variation from year to year. The total production including wood pulpstones, etc., in 1911, was 4,566 tons, valued at \$52,942, as compared with 3,973 tons, valued at \$47,196, in 1910, and 4,275 tons, valued at \$54,664, in 1909.

These abrasives are quarried from the Millstone Grit of the Carboniferous formation, which occupies a large portion of the surface of the eastern half of the Province of New Brunswick and the northern and northwestern parts of Nova Scotia.

The localities at which quarrying operations are chiefly carried on are at Lower Cove, and Quarry island, near Merigomish, in Nova Scotia, and in New Brunswick on Chaleur bay, and at Woodpoint and Rockport on the Bay of Fundy.

The grindstones are all shipped in a finished condition, and are worth from \$10 to \$12 per ton.

About 160 tons of pulpstones, valued at \$3,960, were shipped in 1911, to Canadian pulp and paper mills. These stones weigh about 2½ tons each, and are usually made about 27" face by 54" diameter. About 54 tons of scythe stones, put up in one-quarter gross boxes, thirty pounds to the box, were sold at a value of \$2,000. A small quantity of "marble polishing grit" or a fine sandstone used for the polishing of marble was also sold. At some of the quarries there is a considerable production of foundation and building stone, besides rough stone for breakwater and harbour works.

¹The geology of the Haliburton and Bancroft areas, Province of Ontario, by Frank D. Adams and Alfred E. Barlow.

Most of the pulpstones are made at Quarryville, New Brunswick, by the Miramichi Quarry Company. This quarry also produces an excellent building stone, which finds a market in Quebec, Montreal, and Toronto.

Statistics of the production of grindstones by provinces since 1886 are given in Table 2.

ABRASIVE MATERIALS. —TABLE 2.

Annual Production of Grindstones.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.		Average value per ton.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	
		\$		\$		\$	\$
1886.....	1,765	24,050	2,255	22,495	4,020	46,545	11 58
1887.....	1,710	25,020	3,582	38,988	5,292	64,008	12 10
1888.....	1,971	20,400	3,793	30,729	5,764	51,129	8 87
1889.....	712	7,123	2,692	23,735	3,404	30,863	9 07
1890.....	850	8,536	4,034	33,804	4,884	42,340	8 67
1891.....	1,980	19,800	2,499	22,787	4,479	42,587	9 51
1892.....	2,462	27,610	2,821	25,577	5,283	51,187	9 69
1893.....	2,112	21,000	2,488	17,379	4,600	38,379	8 34
1894.....	2,128	16,000	1,629	16,717	3,757	32,717	8 71
1895.....	1,400	14,000	2,075	17,982	3,475	31,982	9 19
1896.....	1,450	14,500	2,263	18,810	3,713	33,310	8 97
1897.....	1,407	17,500	3,165	24,840	4,572	42,340	9 26
1898.....	1,422	12,350	3,513	32,425	4,935	44,775	9 07
1899.....	1,378	10,300	3,133	32,965	4,511	43,265	9 59
1900.....	1,411	12,600	4,128	40,850	5,539	53,450	9 65
1901.....	358	3,200	4,223	42,490	4,581	45,690	9 97
1902.....	1,074	8,118	3,559	36,000	4,633	44,118	9 52
1903.....	1,337	9,562	4,201	38,740	5,538	48,302	8 72
1904.....	1,029	7,332	3,620	35,450	4,649	42,782	9 20
1905.....	1,020	10,200	4,520	52,175	5,540	62,375	11 25
1906.....	1,023	9,680	4,340	50,134	5,363	59,814	11 15
1907.....	551	4,480	4,863	55,896	5,414	60,376	11 15
1908.....	473	4,803	3,370	43,325	3,843	48,128	12 52
1909.....	312	3,204	3,963	51,460	4,275	54,664	12 79
1910.....	387	3,496	3,586	43,700	3,973	47,196	11 88
1911.....	380	3,382	4,186	49,560	4,566	52,942	11 59

The imports of grindstones into Canada, principally into the Provinces of Ontario and Quebec, reached a total value during the calendar year 1911, of \$123,356; the value of the other abrasives imported during the same period includes: burrstones, valued at \$1,642; emery, \$46,274; manufactures of emery, \$104,170; pumice stone, \$18,779; sandpaper, \$164,474; iron sand for glass or granite polishing or for paving stone, \$8,340; a total value of \$467,035.

In 1910 the value of grindstones imported was \$71,394, and the value of the other abrasives imported during the same period included: burrstones, valued at \$854; emery, \$40,400; manufactures of emery, \$92,890; pumice stone, \$14,829; sandpaper, \$148,384; iron sand for glass or granite polishing or for paving stone, \$6,647; a total value of \$375,398.

ABRASIVE MATERIALS.—TABLE 3.

Exports of Grindstones.*

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1884.....	23,186	1894.....	12,579	1903.....	27,659
1885.....	22,606	1895.....	16,723	1904.....	35,612
1886.....	24,185	1896.....	19,139	1905.....	24,868
1887.....	28,769	1897.....	18,807	1906.....	31,978
1888.....	28,176	1898.....	26,588	1907.....	32,534
1889.....	29,982	1899.....	23,288	1908.....	19,721
1890.....	18,564	1900.....	42,128	1909.....	13,942
1891.....	28,433	1901.....	29,130	1910.....	23,502
1892.....	23,567	1902.....	24,489	1911.....	29,206
1893.....	21,672				

* Including stone for the manufacture of grindstones.

ABRASIVE MATERIALS.—TABLE 4.

Imports.

Fiscal Year.	GRINDSTONES.		Burrstones. (c) Value.	Emery. (a) Value.	Mfrs. of emery. (b) Value.	Pumice stone. (d) Value.
	Tons.	Value.				
		\$	\$	\$	\$	\$
1880.....	1,044	11,714	12,049	.....	.....	.....
1881.....	1,359	16,895	6,337	.....	.....	.....
1882.....	2,098	30,654	15,143	.....	.....	.....
1883.....	2,108	31,456	13,242	.....	.....	.....
1884.....	2,074	30,471	5,365	.....	.....	.....
1885.....	1,148	16,065	4,517	5,066	4,920	9,384
1886.....	964	12,803	4,062	11,877	5,832	2,777
1887.....	1,309	14,815	3,545	12,023	4,598	3,594
1888.....	1,721	18,263	4,753	15,674	4,001	2,890
1889.....	2,116	25,564	5,465	13,565	3,948	3,232
1890.....	1,567	20,569	2,506	16,922	5,313	3,003
1891.....	1,381	16,991	2,089	16,179	6,665	3,696
1892.....	1,484	19,761	1,464	17,782	6,492	3,282
1893.....	1,682	20,987	3,552	17,762	5,606	3,798
1894.....	1,918	24,426	3,029	14,433	2,223	4,160
1895.....	1,770	22,834	2,172	14,569	7,775	3,609
1896.....	1,862	26,561	2,049	16,287	11,913	3,721
1897.....	1,521	25,547	1,827	16,318	11,231	2,903
1898.....	.....	22,217	1,813	17,661	15,478	3,829
1899.....	.....	27,476	1,759	21,454	22,343	5,973
1900.....	.....	34,382	1,546	19,312	25,615	5,604
1901.....	.....	39,068	5,762	16,311	22,190	5,516
1902.....	.....	40,838	2,559	14,476	23,892	7,254
1903.....	.....	53,388	586	18,058	22,177	6,152
1904.....	.....	46,039	35	21,626	29,273	6,557
1905.....	.....	49,747	2,607	21,930	33,250	8,447
1906.....	.....	59,627	2,661	21,781	42,080	9,053
1907 (9 mos.).....	.....	40,780	245	20,498	41,086	5,745
1908.....	.....	65,125	3,396	26,159	57,760	8,917
1909.....	.....	56,692	1,141	25,931	47,700	8,117
1910.....	.....	73,427	1,973	28,482	73,537	12,011
1911.....	.....	64,439	830	42,188	95,932	16,284

(a) Emery in bulk, crushed or ground. Duty free.

(b) Emery and carborundum wheels and manufactures of emery or carborundum.

(c) Burrstones in blocks, rough or unmanufactured, not bound up or prepared by binding into millstones.

(d) Pumice and pumice stone, ground or unground. Duty free.

TRIPOLITE.

A small shipment of 20 tons of tripolite valued at \$122 was reported in 1911 from St. Anns, Cape Breton, by the Premier Tripolite Company of New York.

Statistics of shipments since 1896 are shown in Table 5.

ABRASIVE MATERIALS.—TABLE 5.

Annual Shipments of Tripolite.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1896.....	644	9,960	1904.....	320	6,400
1897.....	15	150	1905.....	200	3,600
1898.....	1,017	16,660	1906.....	Nil.	Nil.
1899.....	1,000	15,000	1907.....	30	225
1900.....	336	1,950	1908.....	30	195
1901.....	850	15,300	1909.....	Nil.	Nil.
1902.....	1,052	16,470	1910.....	22	134
1903.....	835	16,700	1911.....	20	122

ASBESTOS.

Asbestos is mined or quarried in Canada in the Province of Quebec only, from deposits in the Eastern Townships in the districts of Black Lake, Thetford, East Broughton, and Danville. Other occurrences of the mineral have been noted and some shipments were at one time made from the township of Denholm, Ottawa county, north of the city of Ottawa.

The asbestos deposits and the asbestos industries have been described in a special report published by the Mines Branch.¹

For a number of years past the annual output of asbestos has exceeded the sales. In 1911, however, the sales have been greatly increased but at considerably reduced prices. Returns received for the year 1911 show a total output of 96,302 tons, as compared with 100,430 tons in 1910. The sales in 1911 are, however, reported as 101,393 tons valued at \$2,922,062, or an average of \$28.82 per ton, as compared with 77,508 tons valued at \$2,555,974, or an average of \$32.98 per ton, in 1910; an increase of 23,885 tons, or 30 per cent in quantity, but only \$366,088, or 14 per cent in total value. Stocks on hand December 31, 1911, are reported as 34,567 tons, valued at \$1,509,101, as compared with 41,903 tons, valued at \$1,943,846 on December 31, 1910; a decrease of 7,336 tons, or 17.5 per cent.

The average number of men employed in mines and mills during 1911 was 2,707, at a wage cost of \$1,231,896.

The total quantity of asbestos rock sent to mills is reported as 1,484,691 tons, which with a mill production of 91,237 tons, shows an average estimated recovery of about 6.14 per cent.

The following tabulated statement shows the output and sales during 1911 and the stock on hand at the end of the year.

	OUTPUT.		SALES.		STOCK ON HAND DEC. 31	
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.
			\$	\$		\$
Crude, No. 1	1,467.9	1,301.4	342,855	263.45	1,256	327,508
" No. 2.	3,594.5	3,562.7	402,107	112.87	3,222.7	404,198
Mill stock No. 1.	20,379	18,315	916,678	50.05	8,471	380,570
" No. 2.	39,289	47,826	991,370	20.73	17,794	365,458
" No. 3.	31,572	30,388	269,052	8.85	3,823	31,367
Total asbestos	96,302.4	101,393.1	2,922,062	28.82	34,566.7	1,509,101
Asbestic .....	.....	26,021	21,046	0.81	.....	.....

In the absence of a uniform classification of asbestos of different grades the above subdivisions have been adopted purely on a valuation basis; crude No 1,

¹ "Chrysotile-Asbestos: Its Occurrence, Exploitation, Milling, and Uses," by Fritz Cirkel, Mines Branch, Dept. of Mines, Ottawa, 1910.

comprising material valued at \$200 and upwards, and crude No. 2, under \$200; mill stock No. 1 includes stock valued at from \$30 to \$100; No. 2, from \$15 to \$30; No. 3, under \$15.

Output, sales, and stocks, in 1910, were as follows:—

	OUTPUT.		SALES.		STOCK ON HAND DEC. 31.	
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.
			\$	\$		\$
Crude, No. 1.....	2,181	1,817	471,075	259 58	1,702	446,075
" No. 2.....	3,268	1,923	192,833	100 28	3,219	440,571
Mill stock, No. 1.....	16,720	13,480	735,244	54 54	6,978	398,895
" No. 2.....	56,393	43,414	1,013,251	23 34	26,613	628,528
" No. 3.....	21,866	16,874	142,971	8 47	3,391	29,177
Total asbestos.....	100,430	77,508	2,555,974	32 98	41,903	1,943,846
Asbestic.....		24,707	17,629	0 71		

The shipments of crude asbestos and mill stock since 1903 are separately shown in Table 2. The record indicates that during the past nine years there has been but little variation in the quantity shipped as crude, the average price of which, however, nearly doubled between 1903 and 1908.

The shipments of mill stock on the other hand have been increased from 27,995 tons in 1903 to 96,529 tons in 1911, the average price per ton during that time having varied between the limits of \$19.79 and \$29.84.

ASBESTOS.—TABLE 2.

Annual Production of Crude and Mill Stock, 1903-11.

Calendar Year.	CRUDE.			MILL STOCK.		
	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
1903.....	3,134	361,867	115 46	27,995	554,021	19 79
1904.....	4,410	534,874	121 28	31,201	678,628	21 75
1905.....	3,767	472,859	125 53	46,902	1,013,500	21 61
1906.....	3,841	635,345	165 41	56,920	1,401,083	24 61
1907.....	4,327	830,632	191 97	57,803	1,654,135	28 62
1908.....	3,345 5	669,232	200 04	63,202	1,886,129	29 84
1909.....	3,074 3	575,510	187 20	60,275	1,709,077	28 35
1910.....	3,740	664,508	177 66	73,768	1,891,466	25 64
1911.....	4,864 1	744,962	153 15	96,529	2,177,100	22 55

Table 3 shows the total shipments of asbestos and asbestic separately, each year since 1880.

ASBESTOS.—TABLE 3.

Annual Production since 1880.

Calendar Year	ASBESTOS.			ASBESTO.		
	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
1880 (a).....	380	24,700	65 00			
1881 (a).....	540	35,100	65 00			
1882 (a).....	810	52,650	65 00			
1883 (a).....	955	68,750	71 99			
1884 (a).....	1,141	75,097	65 82			
1885 (a).....	2,440	142,441	58 38			
1886 (a).....	3,458	206,251	59 64			
1887.....	4,619	226,976	48 92			
1888.....	4,404	255,007	57 90			
1889.....	6,113	426,554	69 78			
1890.....	9,860	1,260,240	127 81			
1891.....	9,279	999,878	107 76			
1892.....	6,082	390,462	64 20			
1893.....	6,331	310,156	86 81			
1894.....	7,630	420,825	55 15			
1895.....	8,756	368,175	42 05			
1896.....	10,892	423,066	38 84	1,358	6,790	5 00
1897.....	13,202	399,528	29 99	17,240	45,840	2 66
1898.....	16,124	475,131	29 47	7,661	16,066	2 10
1899.....	17,790	468,635	26 34	7,746	17,214	2 22
1900.....	21,621	729,886	33 76	7,520	18,545	2 47
1901.....	32,892	1,248,645	37 96	7,325	11,114	1 52
1902.....	30,219	1,126,688	37 28	10,197	21,631	2 20
1903.....	31,129	915,888	29 42	10,548	13,869	1 31
1904.....	35,611	1,213,502	34 08	12,854	12,856	1 00
1905.....	50,669	1,486,359	29 33	17,594	16,900	0 96
1906.....	60,761	2,036,428	33 52	21,424	23,715	1 11
1907.....	62,130	2,434,767	39 99	28,296	20,275	0 72
1908.....	66,548	2,555,361	38 40	24,225	17,974	0 74
1909.....	63,849	2,284,587	36 06	23,951	17,188	0 72
1910.....	77,508	2,555,974	32 98	24,707	17,629	0 71
1911.....	101,893	2,922,062	28 82	26,021	21,046	0 81

(a) Figures of export taken as production.

EXPORTS AND IMPORTS.

Supplying as it does, the greater part of the world's demand, the Canadian output of asbestos finds a wide distribution.

Exports to Great Britain, United States, Germany, and other countries during the past seven calendar years, as compiled from the reports of the Customs Department, are shown in Table 4, and the total exports each year since 1892 in Table 5.

Attention has been called to the fact that these figures apparently do not accurately indicate the destination of exports, that Germany, for instance, is a much larger consumer of Canadian asbestos than is shown by these figures. This may possibly be explained by the fact that frequently raw materials of this kind are sold in bond to brokers or dealers in New York, and by them resold to consumers in other countries.

The exports in 1911 are reported as 75,120 tons, valued at \$2,067,259, or an average of \$27.52 per ton, and include 7,511 tons valued at \$192,993 exported to

Great Britain, 62,551 tons valued at \$1,732,541 to the United States, 361 tons valued at \$20,494 to Germany, 1,841 tons valued at \$62,737 to Belgium, 2,596 tons valued at \$52,047 to France, and 260 tons valued at \$6,447 to other countries.

ASBESTOS.—TABLE 4.

Exports of Canadian Asbestos by Countries, 1903-1911.

Calendar Year.	TO GREAT BRITAIN.		TO UNITED STATES.		TO GERMANY.		TO OTHER COUNTRIES.		TOTAL EXPORTS.		Average per ton.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	
		\$		\$		\$		\$		\$	\$ cts.
1903	2,743	40,120	21,252	714,781	1,429	25,150	3,356	110,982	31,780	891,033	28 04
1904	6,602	210,175	25,957	762,300	2,463	94,141	2,250	94,271	37,272	1,160,887	31 15
1905	9,731	305,056	29,696	811,080	2,969	100,061	4,635	169,918	47,031	1,386,115	29 47
1906	9,435	318,313	39,767	1,058,513	3,654	82,117	6,998	230,314	59,854	1,689,257	28 22
1907	5,432	200,909	44,861	1,312,582	225	8,195	6,235	147,613	56,753	1,669,299	29 41
1908	5,221	238,290	50,503	1,314,337	341	9,470	5,145	230,606	61,210	1,842,763	30 11
1909	5,227	204,978	45,075	1,243,755	693	17,706	5,376	263,378	56,971	1,729,857	30 36
1910	6,700	280,452	57,939	1,505,477	440	15,925	6,406	306,778	71,485	2,108,632	29 50
1911	7,511	192,993	62,551	1,732,541	361	20,494	4,697	121,231	75,120	2,067,259	27 52

ASBESTOS.—TABLE 5.

Annual Exports, Calendar Years 1892-1911.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		\$	\$ cts.			\$	\$ cts.
1892	5,380	373,103	69 35	1902	31,074	995,071	32 02
1893	5,917	333,707	57 24	1903	31,780	891,033	28 04
1894	7,987	477,837	59 82	1904	37,272	1,160,887	31 14
1895	7,442	421,690	56 66	1905	47,031	1,386,115	29 47
1896	11,842	567,967	47 96	1906	59,854	1,689,257	28 22
1897	15,570	473,274	30 40	1907	56,753	1,669,299	29 41
1898	15,346	494,012	32 19	1908	61,210	1,842,763	30 11
1899	17,833	473,148	26 46	1909	56,971	1,729,857	30 36
1900	16,993	693,105	39 61	1910	71,485	2,108,632	29 50
1901	32,269	1,069,918	33 16	1911	75,120	2,067,259	27 52

Although the chief source for the raw material, Canada does not yet manufacture all the asbestos goods required for home consumption. There is, therefore, a considerable importation of asbestos goods under the import classification, 'Asbestos in any form other than crude and all manufactures of,' the duty being 25 per cent.

The total value of these imports during the calendar year 1911 was \$319,815, as against \$230,489 in 1910, and \$196,742 in 1909.

The annual value of the imports during the fiscal year is shown in Table 6.

ASBESTOS.—TABLE 6.

Imports, Fiscal Years 1885-1911.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1885.....	674	1894.....	20,021	1903.....	75,465
1886.....	6,831	1895.....	26,094	1904.....	83,827
1887.....	7,836	1896.....	23,900	1905.....	116,836
1888.....	8,793	1897.....	19,032	1906.....	137,974
1889.....	9,943	1898.....	26,389	1907 (9 mos.).....	127,509
1890.....	13,250	1899.....	32,607	1908.....	190,980
1891.....	13,298	1900.....	43,455	1909.....	180,598
1892.....	14,090	1901.....	50,829	1910.....	198,710
1893.....	19,181	1902.....	52,464	1911*.....	254,331

* Asbestos in any form other than crude, and all manufactures of. Duty 25 per cent.

The imports of asbestos into the United Kingdom will be of interest, as indicating the possible market in that country for this product.

These imports and the sources of supply, are shown as follows:—

Imports of Raw Asbestos into the United Kingdom, 1909, 1910, and 1911.

Country.	1909.		1910.		1911.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
		\$		\$		\$
Russia.....	599	71,063	961	119,267	1,548	202,049
Germany.....	351	48,681	354	62,011	198	26,888
Portuguese East Africa.....	324	56,526	260	35,016	300	23,988
Italy.....	215	38,369	167	21,379	53	7,042
United States.....	1,549	40,549	1,097	35,814	565	17,948
Other foreign countries.....	167	12,410	82	7,086	123	14,036
Total foreign.....	3,205	267,598	2,921	280,573	2,787	291,951
Cape of Good Hope.....	424	30,519	747	54,000	1,187	83,307
Natal.....	78	9,247	56	7,091	67	4,395
Canada.....	2,727	144,691	4,347	210,873	3,683	169,589
Other British possessions.....	43	5,596	14	1,762	2	34
Total British possessions...	3,272	190,053	5,164	273,726	4,939	257,325
Grand total.....	6,477	457,651	8,085	554,299	7,726	549,276

The following is a list of the principal asbestos companies in Canada:—

Name of operator.	Location of mine.	Address.
Analgamated Asbestos Corporation, Ltd.....	Coleraine, Thetford...	Montreal, 263 St. James St.
Black Lake Consolidated Asbestos Co.....	" " ..	Black Lake, Que.
The Beaver Asbestos Co., Ltd	" Megantic ..	Walkerville, Ont.
Johnston's Asbestos Co., Ltd.....	Thetford, Black Lake..	Thetford Mines, Que.
Bell Asbestos mine.....	" " ..	" "
Robertson Asbestos Mining Co.....	" " ..	" "
Jacob's Asbestos Mining Co., Ltd.....	" " ..	Montreal, 282 St. Catherine St. W.
The Martin-Bennett Asbestos Mines, Ltd.....	" " ..	Thetford Mines, Que.
The B & A. Asbestos Co	" " ..	Robertsonville, Que.
The Berlin Asbestos Co	" " ..	Robertson Sta., Que.
The Asbestos & Asbestic Co., Ltd.....	Shipton	Asbestos, Que.
Broughton Asbestos Fibre Co.....	Broughton	East Broughton Sta., Que.
Eastern Townships Asbestos Co.....	"	" "
Boston Asbestos Co., Ltd. (In liquidation)....	"	" "
The Ling Asbestos Co. (In liquidation).....	"	" "
The Frontenac Asbestos Mining Co., Ltd. (In mortgagees hands)	"	Quebec, 81 St. Peter St.
Montreal Asbestos Co., Ltd. (In liquidation) ..	Broughton East.....	Montreal, 171 St. James St.
Brompton Lake Asbestos Co	Brompton Lake.....	Montreal, 17 Victoria Sq.
W. H. Lambly	"	Inverness, Que.
Belmina Consolidated Asbestos Co., Ltd	Wolfestown.....	Coleraine Sta., Que.

CHROMITE.

Chromic iron ore is mined in the Coleraine and Black Lake districts of the Eastern Townships, Province of Quebec.

The total shipments of chromite in 1911 were reported as 157 tons, valued at \$2,587, and included 137 tons of high grade product, valued at \$2,327, or \$16.98 per ton, and 20 tons of low grade, valued at \$260, or \$13 per ton.

The greater part of the shipments were made by the Dominion Chrome Co. from stock piles, this Company not having operated their mines during the year. The Chrome and Asbestos Mines, Ltd., were engaged on the completion of a concentrating mill and made only small shipments, but expect to start more active work in 1912.

Statistics of production since 1886 are shown in Table 1, following, the total during the last seven years being divided into high and low grade. Material classed as high grade includes both ore and concentrates, ranging from 48 per cent to 50 per cent Cr₂O₃ and higher, while the low grade is composed chiefly of the crude ore.

CHROMITE.—TABLE 1.

Annual Production in Canada, 1886-1911.

Calendar Year.	HIGH GRADE.			LOW GRADE.			TOTAL.		
	Short tons.	Value.	Average price.	Short tons.	Value.	Average price.	Short tons.	Value.	Average price.
		\$	\$ cts.		\$	\$ cts.		\$	\$ cts.
1886							60	945	15 75
1887							38	570	15 00
1888 to								No output.	{
1893									
1894							1,000	20,000	20 00
1895							3,177	41,300	13 00
1896							2,342	27,004	11 53
1897							2,637	32,474	12 31
1898							2,021	24,252	12 00
1899							2,010	21,842	10 86
1900							2,335	27,000	11 56
1901							1,274	16,744	13 14
1902							900	13,000	14 44
1903	2,842	44,230	15 58	667	6,849	10 27	3,509	51,129	14 57
1904	4,650	53,976	16 08	1,424	13,170	9 25	6,074	67,146	11 05
1905				8,575	93,301	10 88	8,575	93,301	10 88
1906	4,975	57,434	11 55	4,060	34,375	8 47	9,035	91,859	10 17
1907	3,545	41,931	11 83	3,651	30,970	8 48	7,196	72,901	10 13
1908	3,472	45,300	13 05	3,753	36,708	9 78	7,225	82,008	11 35
1909	54	720	13 33	2,416	25,834	10 71	2,470	26,604	10 77
1910	25	430	17 20	274	3,304	12 06	299	3,734	12 49
1911	137	2,327	16 98	20	260	13 00	157	2,587	16 48

The chromite finds its chief market in the United States, although a few carloads are occasionally shipped to Canadian points.

There were no exports reported during the calendar year 1911, as against exports of 15 tons, valued at \$150, in 1910.

The following table shows the quantity and value of Canadian chromite imported into the United States during the past eight years.

Imports of Chromite into the United States from Canada.¹

Twelve months ending June 30.	Short tons.	Value.	Twelve months ending June 30.	Short tons.	Value.
		\$			\$
1904.....	2,790	36,322	1908.....	6,505	69,009
1905.....	6,489	70,934	1909.....	4,455	50,042
1906.....	9,951	107,580	1910.....	269	2,892
1907.....	6,179	66,115	1911.....	17	150

¹ The Foreign Commerce and Navigation of the United States, Washington, long ton in original changed to short ton.

Chrome ore is used chiefly for the manufacture of ferro-chrome alloys and chromium salts for pigments, and is also used for linings in steel and copper furnaces.

Prices in New York, during 1911, of New Caledonia ore, carrying 50 per cent chromic oxide, ranged from \$14 to \$16 per long ton. The price of chrome oxides at Pittsburgh was \$175 per thousand throughout the year.

The price of potassium bichromate ranged between 7 and 8 cents per pound during the year, while the price of sodium bichromate varied from 5 to 6½ cents per pound.

As an illustration of the market for chromite in the United States, the imports into that country during the past two years are shown in the following table. The average value of these imports shows an increase of over 70 cents per ton in 1911, as compared with 1910.

CHROMITE.—TABLE 2.

Imports into the United States, years ending June 30, 1910 and 1911, in tons of 2,240 lbs.¹

	1910.			1911.		
	Long tons.	Value.	Per ton.	Long tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
Belgium.....	3,558	49,720	13 97			
Canada.....	241	2,892	12 00	15	150	10 00
France.....				3,400	41,365	12 17
French Oceania....	9,466	89,521	9 46	8,957	114,239	12 75
Greece.....	7,740	68,126	8 80	4,500	48,188	10 71
India.....	231	466	2 02			
Japan.....	2,290	16,959	7 40	449	3,680	8 20
Netherlands.....	125	2,110	16 88			
Portuguese Africa..	19,465	236,691	12 17	16,318	198,538	12 17
Turkey in Asia....	1,100	7,000	6 36	4,500	31,121	6 92
United Kingdom..	747	9,038	12 10			
Total.....	44,953	482,523	10 73	38,139	437,281	11 47

¹ The Foreign Commerce and Navigation of the United States, 1909-19

COAL.

Coal mining both from the point of view of tonnage handled and gross value of output is the most important of Canada's mining industries. The character of coal mined is chiefly bituminous, although anthracite is obtained from one mine in Alberta and a considerable tonnage of lignite is mined in Alberta and Saskatchewan. The total production for all classes in 1911 was, according to returns received, 11,323,388 short tons, as compared with a production of 12,909,152 tons in 1910 and 10,501,475 tons in 1909, the falling off in 1911 as compared with 1910 being 1,585,764 tons or about 12 per cent. The total approximate selling value of the coal at the mines in 1911 was \$26,467,646 or an average of \$2.34 per ton, as compared with a total value of \$30,909,779 or an average of \$2.39 per ton in 1910.

The coal mining industry in Canada has had a fairly steady growth in past years, and the decreased production in 1911 was due entirely to the unfortunate labour troubles which resulted in the closing down from April 1 to November 20 of about 16 important mines in the southern part of Alberta and the eastern part of British Columbia. About 6,000 men ceased work and there was practically no coal mined in the districts affected for a period of nearly eight months. The production by these sixteen companies during the period they were in operation in 1911 was only 1,219,178 tons, as against 3,874,355 tons produced by the same mines in 1910, showing a direct falling off, attributable to the strike, of at least 2,655,177 tons. In fact, if the probable increase of production of these mines under ordinary operating conditions be assumed, it is safe to say that the coal production in 1911 might easily have been 3,000,000 tons in excess of that actually reported. Practically every coal mining district, other than those affected by the strike, showed an increased production in 1911.

With a view to relieving the threatened shortage of coal in the Provinces of Alberta and Saskatchewan, the Dominion Government passed an Order in Council remitting the duty on bituminous coal imported into Canada at the ports on the southern frontier of the Dominion west of Sault Ste. Marie for consumption in the Provinces of Manitoba, Saskatchewan, Alberta, and British Columbia, east of the 122nd meridian of longitude, such remission of duties to become effective on and after August 7. The remission of duties was discontinued on and after December 6. The imports of bituminous coal showed an increase during the year of 2,939,349 tons or nearly 50 per cent over the imports in 1910.

Statistics of the production by provinces during the past three years are shown in Table 1, and Table 2 shows the increases and decreases in each year as compared with the previous year.

It may be explained that the term production in these tables is used to represent the amount of coal actually sold or used by the producer, as distinguished from the term output which is applied to the total coal extracted from the mine and which in some cases includes coal lost or unsaleable or coal carried into stock on hand at the end of the year.

In the Province of Nova Scotia an increased production of 573,278 tons or about 9 per cent is shown in 1911, while a small increase is also shown in New Brunswick. The Province of Saskatchewan shows an increase of 25,623 tons or over 14 per cent. A falling off of over 47 per cent is shown in the Alberta production and of over 23 per cent in the production of British Columbia.

COAL.—TABLE 1.

Production by Provinces, 1909-10-11, in tons of 2,000 lbs.

Province.	1909.		1910.		1911.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Nova Scotia.....	5,652,089	\$11,354,643	6,431,142	\$12,919,705	7,004,420	\$14,071,379
British Columbia..	2,606,127	8,144,147	3,330,745	10,403,580	2,542,532	7,945,413
Alberta.....	1,994,741	4,838,109	2,894,469	7,065,736	1,511,036	3,979,264
Saskatchewan.....	192,125	296,339	181,156	293,923	206,779	347,248
New Brunswick...	49,029	98,496	55,455	110,910	55,781	111,562
Yukon Territory...	7,364	49,502	16,185	110,925	2,840	12,780
Total.....	10,501,475	24,781,236	12,909,152	30,909,779	11,323,388	26,467,646

COAL.—TABLE 2.

Comparison of Production 1909 with 1910, and 1910 with 1911.

Province.	(i) INCREASE OR (d) DECREASE.			
	Years 1909 and 1910.		Years 1910 and 1911.	
	Tons.	Per cent.	Tons.	Per cent.
Nova Scotia	(i) 779,053	13·78	(i) 573,278	8·91
British Columbia.....	(i) 724,618	27·80	(d) 788,213	23·66
Alberta	(i) 899,723	45·11	(d) 1,333,433	47·79
Saskatchewan.....	(d) 10,969	5·71	(i) 25,623	14·14
New Brunswick	(i) 6,426	13·11	(i) 326	0·59
Yukon Territory	(i) 8,821	119·79	(d) 13,345	82·45
Total for Canada.....	(i) 2,407,677	22·93	(d) 1,585,764	12·28

The Province of Nova Scotia in 1911 produced 62 per cent of the total Canadian production; British Columbia 22 per cent; Alberta 13 per cent, and Saskatchewan a little under 2 per cent. The relative importance of the different provinces as coal producers for a number of years past is indicated in the next table, in which is shown the proportional contributions of each province to the total tonnage of coal produced in Canada. The coal fields on the Atlantic seaboard still continue to produce more than half the total, although in 1910 the combined output of the western provinces was only a little less than 50 per cent of the total.

Province.	1874.	1890.	1900.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.
	%	%	%	%	%	%	%	%	%	%	%	%	%
Nova Scotia.....	91	71	62.9	69.4	71.3	68.0	65.5	64.07	60.79	61.40	54.29	50.25	62.35
New Brunswick.....													
Saskatchewan*.....			0.7	0.9	1.5	1.5	1.2	1.11	1.44	1.37	1.83	1.40	1.83
Alberta*.....		4	5.4	5.4	6.2	8.0	10.8	12.77	15.14	15.42	18.99	22.42	13.34
British Columbia.....	8	25	31.0	24.2	21.0	22.5	22.4	21.98	22.50	21.77	24.82	258.0	22.45
Yukon Territory.....				0.1			0.1	0.07	0.13	0.04	0.07	0.13	0.03

* Alberta and Saskatchewan were established as provinces on September 1, 1905. For the purpose of comparison, the coal production during the years previous to that date has been separated according to the present boundaries of these Provinces.

Of the total coal production in Canada during the past year, 8,559,952 tons were reported as sold for consumption in Canada, 1,068,572 tons sold for export to the United States, and 280,235 tons sold for export to other countries, or total sales 9,908,759 tons; 381,840 tons were used by colliery operators in making coke, and 1,033,289 tons were used for colliery purposes and by workmen. In addition to the coal thus disposed of, 42,709 tons were mined and added to stock at the end of the year and 182,567 tons reported as waste; these two items are not included as "Production," but bring the total output up to 11,548,664 tons.

Thus of the total output about 85.8 per cent was placed directly in the market, 3.3 per cent made into coke by the mine operators, 8.9 per cent used in colliery consumption for workmen, and 1.6 per cent reported as waste. The quantities entered as loss due to washing, breakage, etc., do not necessarily include all the losses due to these causes since many companies do not make any returns under this heading. Also the quantity entered as sold for consumption in Canada probably includes a small quantity which is ultimately exported.

Notwithstanding Canada's large coal resources, the total domestic production (including that exported) was equivalent in 1911 to only about 46.7 per cent of the total consumption, there having been imported for home consumption during 1911, 14,558,892 tons. The total consumption of coal as shown in subsequent tables was 24,247,698 tons, or an average of about 3.388 tons per capita, while the production averaged about 1.582 tons per capita of population. The principal coal-fields are located on the extreme east and in the far west, while

the central Provinces of Ontario and Quebec, which contain the great bulk of the population, are without coal deposits. Nova Scotia coal is largely consumed within the Province and also finds a considerable market in Quebec. A little less than 9 per cent of the coal production of this Province was reported as sold for export in 1911. The market in Ontario is almost altogether supplied, and that of Quebec province to a lesser degree, by coal imported from the nearer fields of the adjacent states of the United States. There are no anthracite coals in eastern Canada, and our requirements of this fuel have to be met entirely by imports from Pennsylvania. Manitoba is also supplied largely by importations from the United States.

The Saskatchewan production finds a local market within the Province and also in Manitoba.

Of the Alberta production about 93.2 per cent in 1911 was used by collieries and sold for consumption in Canada, chiefly within the Province; 2.7 per cent sold for export, and 4.1 per cent used for making coke which was marketed in British Columbia and in the United States. British Columbia is the largest producer of coal for export. In 1911 about 68.4 per cent of the production in this Province was used by the collieries and sold for home consumption; 27.0 per cent was sold for export, and 4.6 per cent used in making coke.

Owing to the greatly reduced output in Alberta and British Columbia in 1911, there was a very much smaller proportion of the output used for making coke or sold for exports.

The output by provinces showing the distribution of coal mined in 1910 and 1911 is given in the next two tables.

Coal Output in Canada 1910.

	Nova Scotia.	New Brunswick.	Saskatchewan.	Alberta.	Yukon.	British Columbia.	Total.
Sales in Canada	5,003,933	53,455	173,084	2,309,438	16,135	1,400,405	8,956,450
Sales for export to U. S.	356,089	.....	.....	243,371	.....	1,248,433	1,847,943
Sales for export to other countries.....	223,748	.....	.....	.....	.....	67,525	291,273
Total sales.....	5,583,770	53,455	173,084	2,552,809	16,135	2,716,413	11,095,666
Used by producers in making coke	183,560	.....	.....	196,250	.....	379,893	759,703
Used by producers for colliery consumption and workmen.....	663,812	2,000	8,072	145,410	50	234,439	1,053,783
Stock on hand Jan. 1.....	149,958	.....	.....	10,074	.....	39,937	200,019
" Dec. 31	175,333	.....	.....	8,957	.....	79,376	263,666
Difference.....	+ 25,375	.....	.....	- 1,117	.....	+ 39,339	+ 63,647
Losses due to breakage or other causes	58,645	.....	10,010	14,724	.....	160,337	243,716
Total output*.....	6,515,162	55,455	191,166	2,908,076	16,185	3,530,471	13,216,515

* Production is obtained by adding coal sold and coal used.

Coal Output in Canada, 1911.

	Nova Scotia.	New Brunswick.	Saskatchewan.	Alberta.	Yukon.	British Columbia.	Total.
Sales in Canada.....	5,462,828	53,781	198,768	1,304,778	2,840	1,536,957	8,559,952
Sales for export to U. S. . . .	385,095			40,723		642,754	1,068,572
Sales for export to other countries.	236,609			161		43,465	280,235
Total sales.....	6,084,532	53,781	198,768	1,345,662	2,840	2,223,176	9,908,759
Used by producers in making coke.....	273,548			61,591		117,215	452,354
Used by producers for colliery consumption and workmen.....	646,340	2,000	8,011	103,783		262,141	962,275
Stock on hand Jan. 1.....	173,164			10,675		81,207	265,046
" Dec. 31.....	211,388			15,773		80,644	307,755
Difference.....	+ 38,174			+ 5,098		- 563	+ 42,709
Losses due to breakage or other causes.....	82,957		10,414	49,796		39,400	182,567
Total output †.....	7,125,551	55,781	217,193	1,565,930	2,840	2,581,369	11,548,664

† Production is obtained by adding coal sold and coal used.

Distribution of Coal mined in Canada during the Years 1907-8-9.

	1907..	1908.	1909.
Sales in Canada.....	7,353,135	7,715,203	7,468,880
Sales for export to United States.....	1,514,182	1,218,656	1,173,772
" other countries.....	129,957	297,291	171,888
Total sales.....	9,002,274	9,231,150	8,814,040
Used by producers for the manufacture of coke.....	751,967	708,674	752,976
" colliery consumption and workmen.....	757,185	946,487	934,459
Stock on hand Jan. 1.....	212,559	183,443	202,432
" Dec. 31.....	190,224	230,335	219,569
Difference.....	- 22,335	+ 46,802	+ 17,137
Loss due to washing, breakage, or other causes.....	351,783	157,610	154,162
Total output.....	10,340,374	11,090,813	10,672,774

Statistics of the annual production of coal in Canada since 1784 are shown in Table 3. The total production from 1785 to 1911 has been 183,438,591 tons; of which 122,762,615 tons or 66.9 per cent are to be credited to Nova Scotia and 42,649,441 tons or 23.2 per cent to British Columbia.

The production during the ten years 1871-1880 inclusive was 11,380,416 tons; the following ten year period, 1881-1890, showed a total production of 22,001,394 tons. The production from 1891 to 1900 was 40,381,708 tons and from 1901 to 1910 it was 80,497,726 tons, each decennial period showing a production only a little less than twice that of the previous ten years.

COAL.—TABLE 3.

Annual Production showing the Increase or Decrease each year.

Year.	Tons.	Value.	Average value per ton.	Increase (i) or decrease (d) in tonnage.	Increase (i) or decrease (d) per cent.
		\$	\$		
1785 to 1873.....	*8,591,150				
1874.....	1,063,742	1,763,423	1 66		
1875.....	1,039,974	1,747,016	1 68	(d) 23,768	(d) 2.2
1876.....	994,762	1,729,546	1 74	(d) 45,212	(d) 4.3
1877.....	1,036,670	1,794,415	1 73	(i) 41,908	(i) 4.2
1878.....	1,089,744	1,941,285	1 78	(i) 53,074	(i) 5.1
1879.....	1,126,497	2,050,639	1 82	(i) 36,753	(i) 3.4
1880.....	1,482,714	2,657,194	1 79	(i) 356,217	(i) 31.6
1881.....	1,537,106	2,688,621	1 75	(i) 54,392	(i) 3.7
1882.....	1,843,148	3,243,446	1 76	(i) 311,042	(i) 20.2
1883.....	1,813,684	3,109,635	1 71	(d) 29,464	(d) 1.6
1884.....	1,984,959	3,593,831	1 81	(i) 166,275	(i) 9.1
1885.....	1,920,977	3,417,807	1 78	(d) 63,982	(d) 3.2
1886.....	2,116,653	3,739,840	1 77	(i) 195,676	(i) 10.2
1887.....	2,429,330	4,388,206	1 81	(i) 312,677	(i) 14.8
1888.....	2,602,552	4,674,140	1 80	(i) 173,222	(i) 7.1
1889.....	2,658,303	4,894,287	1 84	(i) 55,751	(i) 2.1
1890.....	3,084,682	5,676,247	1 84	(i) 426,379	(i) 16.0
1891.....	3,577,749	7,019,425	1 96	(i) 493,067	(i) 16.0
1892.....	3,287,745	6,363,757	1 94	(a) 290,004	(d) 8.1
1893.....	3,783,499	7,359,080	1 95	(i) 495,754	(i) 15.1
1894.....	3,847,070	7,429,468	1 93	(i) 63,671	(i) 1.7
1895.....	3,478,344	6,739,153	1 94	(d) 368,726	(d) 9.6
1896.....	3,745,716	7,226,462	1 93	(i) 267,372	(i) 7.7
1897.....	3,786,107	7,303,597	1 93	(i) 40,391	(i) 1.1
1898.....	4,173,108	8,224,268	1 97	(i) 387,001	(i) 10.2
1899.....	4,925,051	10,283,497	2 09	(i) 751,943	(i) 18.0
1900.....	5,777,819	13,742,178	2 38	(i) 852,268	(i) 17.3
1901.....	6,486,325	12,699,243	1 96	(i) 709,006	(i) 12.3
1902.....	7,466,681	15,210,877	2 04	(i) 780,356	(i) 15.1
1903.....	7,960,364	15,942,833	2 00	(i) 493,683	(i) 6.6
1904.....	8,254,595	16,592,231	2 01	(i) 294,231	(i) 3.7
1905.....	8,667,948	17,520,263	2 02	(i) 413,353	(i) 5.0
1906.....	9,762,601	19,732,019	2 02	(i) 1,094,653	(i) 12.6
1907.....	10,511,426	24,381,842	2 32	(i) 748,825	(i) 7.7
1908.....	10,886,311	25,194,573	2 31	(i) 374,885	(i) 3.5
1909.....	10,501,475	24,781,236	2 36	(d) 384,836	(d) 3.5
1910.....	12,909,152	30,909,779	2 39	(i) 2,407,677	(i) 22.93
1911.....	11,323,388	26,467,646	2 34	(d) 1,585,764	(d) 12.28

* The total production for the years 1785 to 1873 is made up as follows:—

Nova Scotia (1785 to 1873)	8,053,670 tons of 2,000 pounds.
British Columbia (1836 to 1873).....	537,480 " 2,000 "

EXPORTS AND IMPORTS.

The statistics of exports and imports of coal as given in tables following have been compiled from the reports of the Department of Customs. The total exports during 1911 were 1,500,639 tons valued at \$4,357,074, or \$2.90 per ton, as compared with exports in 1910 of 2,377,049 tons valued at \$6,077,350, or \$2.56 per ton. A decrease in exports is, therefore, shown in 1911, of 876,410 tons, or about 36.8 per cent. The exports during 1911 are the smallest recorded since 1899.

The total imports during 1911 were 14,558,892 tons valued at \$39,292,591, as compared with imports in 1910 of 10,597,982 tons valued at \$28,450,001, showing an increase in imports of 3,960,910 tons or 37.4 per cent.

Statistics of exports during 1909-10-11 showing the principal countries of destination are given in Table 4, and annual exports since 1873 in Table 5.

COAL.—TABLE 4.

Exports of Coal produced in Canada during 1909-10-11.

Exported to	1909.		1910.		1911.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Great Britain.....	10,671	36,403	5,872	18,901	14,185	48,496
United States.....	1,240,519	3,357,111	1,947,287	4,583,626	1,035,889	2,309,204
Newfoundland.....	175,801	493,040	203,626	574,157	223,553	617,299
Other countries....	161,108	569,788	220,264	900,666	227,012	882,075
Total.....	1,588,099	4,456,342	2,377,049	6,077,350	1,500,639	4,357,074

The United States is the principal market for Canadian coal exported, that country having taken about 69.1 per cent of the total exports in 1911. There were exported to Newfoundland 223,553 tons or 14.9 per cent of the total. Exports to other countries of 227,012 tons include 55,316 tons to Mexico and 46,926 tons to Australia. Considerable tonnages are also exported to Bermuda, St. Pierre, Cuba, Japan, and many other points.

COAL.—TABLE 5.

Exports.

Calendar Year.	Produce of Canada.	Not the produce of Canada.	Calendar Year.	Produce of Canada.	Not the produce of Canada.
	Tons.	Tons.		Tons.	Tons.
1873.....	420,683	5,403	1893.....	960,312	102,827
1874.....	310,988	12,859	1894.....	1,103,694	89,786
1875.....	250,348	14,026	1895.....	1,011,235	96,836
1876.....	248,638	4,995	1896.....	1,106,661	116,774
1877.....	301,317	4,829	1897.....	986,130	101,848
1878.....	327,959	5,468	1898.....	1,150,029	99,189
1879.....	306,648	8,468	1899.....	1,293,169	101,004
1880.....	432,188	14,217	1900.....	1,787,777	62,776
1881.....	395,382	14,245	1901.....	1,573,661	53,894
1882.....	412,682	37,576	1902.....	2,090,268	23,453
1883.....	486,811	44,388	1903.....	1,954,629	27,138
1884.....	474,405	62,665	1904.....	1,557,412	27,308
1885.....	427,937	71,003	1905.....	1,635,287	86,792
1886.....	520,703	78,443	1906.....	1,335,041	44,758
1887.....	530,955	89,098	1907.....	1,394,074	101,778
1888.....	588,627	84,316	1908.....	1,729,833	102,071
1889.....	665,315	89,294	1909.....	1,588,099	161,098
1890.....	724,486	82,534	1910.....	2,377,049	159,859
1891.....	971,269	77,827	1911.....	1,500,639	133,943
1892.....	823,733	93,988			

Coal imported is subdivided into three classes: anthracite, including anthracite dust; bituminous round and run of the mine; and bituminous slack such as will pass through a $\frac{3}{4}$ " screen. The imports of anthracite in 1911 were 4,020,577 tons valued at \$18,794,192, an average of \$4.67 per ton, thus showing an increase of 754,342 tons over the 1910 imports. The imports of bituminous round and run of the mine in 1911 were 8,905,815 tons valued at \$18,407,603, an average of \$2.07 per ton; showing an increase of 2,939,349 tons or 49.3 per cent over the 1910 imports. The imports of bituminous slack in 1911 were 1,632,500 tons valued at \$2,090,796 or an average of \$1.28 per ton, showing an increase of 267,219 tons or 19.6 per cent over the 1910 imports.

COAL.—TABLE 6.
Imports of Coal into Canada.

Fiscal Year.	BITUMINOUS COAL.		ANTHRACITE COAL AND ANTHRACITE DUST.		BITUMINOUS COAL DUST.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1880.....	457,049	1,220,761	516,729	1,509,960	3,565	8,877
1881.....	587,024	1,741,568	572,092	2,325,937	337	666
1882.....	636,374	1,992,081	638,273	2,666,356	471	900
1883.....	911,629	2,996,198	754,891	3,344,936	8,154	10,082
1884.....	1,118,615	3,613,470	868,000	3,851,283	12,782	14,600
1885.....	1,011,875	3,197,539	910,324	3,909,844	20,185	20,412
1886.....	980,949	2,591,554	995,425	4,028,050	36,230	36,996
1887.....	1,149,792	3,126,225	1,100,165	4,423,062	31,401	33,178
1888.....	1,231,234	3,451,661	+2,138,627	5,291,875	28,808	34,730
1889.....	1,248,540	3,255,171	1,201,705	5,190,481	39,980	47,139
1890.....	1,409,282	3,528,959	1,201,335	4,595,727	53,104	29,813
1891.....	1,598,855	4,060,896	1,399,067	5,224,452	60,127	36,130
1892.....	1,615,220	4,099,221	1,479,106	5,640,346	82,091	39,840
1893.....	1,603,154	3,967,764	1,500,550	6,355,285	109,585	44,474
1894.....	1,359,500	3,315,094	1,530,522	6,354,040	117,573	49,510
1895.....	1,444,928	3,321,387	1,404,342	5,350,627	181,318	52,221
1896.....	1,538,489	3,299,025	1,574,355	5,667,096	210,386	53,742
1897.....	1,543,476	3,254,217	1,457,295	5,695,168	225,562	59,609
1898.....	1,684,024	3,179,595	1,460,701	5,874,685	229,445	45,556
1899.....	2,171,358	3,691,946	1,745,460	6,490,509	276,547	44,717
1900.....	2,439,764	4,310,964	1,654,401	6,602,912	380,174	98,349
1901.....	2,516,392	4,956,025	1,933,283	7,923,950	414,432	275,559
1902.....	3,047,392	5,712,058	1,652,451	7,021,939	489,548	264,550
1903.....	3,511,412	7,776,717	1,456,713	7,028,664	550,883	420,317
1904.....	4,053,900	9,108,208	2,275,018	10,461,223	608,041	544,128
1905.....	4,176,274	8,002,896	2,604,137	12,093,371	650,261	343,456
1906.....	4,495,550	8,360,348	2,200,863	10,304,308	747,251	489,180
Calendar Year.	Bituminous round and run of the mine.				Bituminous slack such as will pass through a $\frac{3}{4}$ " screen.	
1907.....	6,370,152	13,232,445	3,141,873	14,506,129	1,139,256	1,121,949
1908.....	6,025,574	12,516,748	3,160,110	14,478,536	1,111,811	1,355,677
1909.....	5,625,063	11,455,818	3,017,844	13,900,152	1,230,017	1,469,389
1910.....	5,966,465	11,919,341	3,266,235	14,735,062	1,365,281	1,795,598
1911.....	(a)8,905,815	18,407,603	(b)4,020,577	18,794,192	(c)1,632,500	2,090,796

(a). Duty, 53c. per ton. (b). Coal, anthracite, and anthracite coal dust; duty free. (c). Duty 14c. per ton.

† In the anthracite column the imports show a very considerable increase in 1888 over 1887, an increase of over 91 per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888, and 1889, were \$4.02, \$2.47, and \$4.03 respectively. Although a duty of 50c. per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation report, no explanation is available.

The total consumption of coal in Canada during 1911, deduced from the records of production, exports and imports, was 24,247,698 tons, as compared with 20,970,226 tons in 1910; an increase of 3,277,472 tons or 15.6 per cent. Of the total consumption during the past year 9,822,749 tons or 40.5 per cent was domestic coal and 14,424,949 imported coal.

The per capita consumption in 1911, based on an estimate of the population made by the Census Office, was approximately 3.388 tons. This is the largest per capita consumption on record. The consumption in Canada is still small when compared with that of the United States, where the production has reached a total of about 5 tons per capita.

Consumption of Coal in Canada, 1910-1911.

	1910.		1911.	
	Tons.	Tons.	Tons.	Tons.
Production, Table 3.....	12,909,152	.....	11,323,385	9,822,749
Exports of Canada, Table 4.....	2,377,949	.....	1,500,639	
Home consumption of Canadian coal.....		10,532,103		14,424,949
Imports, Table 6.....	10,597,982	.....	14,553,892	
Exports not produce of Canada, Table 4.....	159,859	.....	133,943	14,424,949
Canadian consumption of imported coal.....		10,438,123	.....
Total consumption of coal in Canada.....	.....	20,970,226	.....	24,247,698

COAL.—TABLE 7.

Consumption of Coal in Canada, 1886-1911.

Calendar Year.	Canadian.	Imported.	Total.	Percentage Canadian.	Percentage imported.	Consumption per capita.
	Tons.	Tons.	Tons.	%	%	Tons.
1886.....	1,595,950	1,884,161	3,480,111	45.9	54.1	0.758
1887.....	1,843,365	2,192,260	4,040,625	45.7	54.3	0.871
1888.....	2,013,925	3,314,353	5,328,278	37.8	62.2	1.137
1889.....	1,992,938	2,490,931	4,483,919	44.4	55.6	0.946
1890.....	2,360,196	2,581,187	4,941,383	47.8	52.2	1.031
1891.....	2,606,490	2,980,222	5,586,712	46.7	53.3	1.153
1892.....	2,464,012	3,082,429	5,546,441	44.4	55.6	1.133
1893.....	2,823,187	3,110,462	5,933,649	47.6	52.4	1.198
1894.....	2,743,376	2,917,818	5,661,194	48.5	51.5	1.130
1895.....	2,467,109	2,933,752	5,400,861	45.7	54.3	1.066
1896.....	2,639,055	3,206,456	5,845,511	45.1	54.9	1.140
1897.....	2,799,977	3,124,485	5,924,462	47.3	52.7	1.143
1898.....	3,023,079	3,274,981	6,298,060	48.0	52.0	1.200
1899.....	3,631,882	4,092,361	7,724,243	47.0	53.0	1.454
1900.....	3,989,542	4,361,563	8,351,105	47.8	52.2	1.561
1901.....	4,912,664	4,810,213	9,722,877	50.5	49.5	1.797
1902.....	5,376,413	5,165,938	10,542,351	51.0	49.0	1.895
1903.....	6,005,735	5,491,870	11,507,605	52.2	47.8	2.018
1904.....	6,697,183	6,909,651	13,606,834	49.2	50.8	2.325
1905.....	7,932,661	7,343,830	14,376,441	48.9	51.1	2.391
1906.....	7,927,560	7,398,906	15,326,466	51.7	48.3	2.477
1907.....	8,617,352	10,549,503	19,166,855	45.0	55.0	3.034
1908.....	9,156,478	10,195,424	19,351,902	47.3	52.7	2.976
1909.....	8,913,376	9,711,826	18,625,202	47.9	52.1	2.779
1910.....	10,532,103	10,438,123	20,970,226	50.2	49.8	3.031
1911.....	9,822,749	14,424,949	24,247,698	40.5	59.5	3.388

Nova Scotia.

The production of coal in Nova Scotia in 1911 was reported as 7,004,420 tons, as compared with a production of 6,431,142 tons in 1910, showing an increase of 573,278 tons or nearly 9 per cent. This is entirely bituminous coal and represents the output of 14 operating companies, one of which, the Dominion Coal Company, contributed about 62 per cent of the total.

Of the production in 1911, the quantity sold for consumption in Canada was reported as 5,462,828 tons, while 385,095 tons were reported as sold for export to the United States and 236,609 tons sold for export to other countries; 646,340 tons were used for colliery consumption and by workmen, and 273,548 tons were used by colliery operators in making coke and in steel making. A considerable tonnage of coal sold for consumption in Canada was also used in making coke, the total tonnage used for coke making being 846,695 tons.

About 38 per cent only of the total sales were for consumption within the Province itself. Almost an equal quantity was sold for consumption in the Province of Quebec. The adjacent Provinces of New Brunswick and Prince Edward Island, and the colony of Newfoundland, take annually about 1,000,000 tons or 14½ per cent of the present output.

There are five principal coal-fields in the Province, that affording the largest production being the Sydney coal-field in Cape Breton county. The production in Cape Breton county in 1911 was 5,302,477 tons or 75.7 per cent of the total; Pictou county produced 836,776 tons or 12 per cent of the total; Cumberland county 525,925 tons or 7.5 per cent of the total, and Inverness and other counties 339,242 tons or 4.8 per cent of the total.

Annual statistics of the production of coal in Nova Scotia since 1872 are shown in Table 8, the figures being given in both long and short tons; the production by counties during the past six years is shown in Table 9. The record in each case covers the calendar year.

The statistics published by the Provincial Department of Mines cover the fiscal year ending September 30, and the details of colliery output during the year ending Sept. 30, 1911, as published in the Provincial Mines Report, are shown below; while the colliery output during the last three fiscal years is shown in Table 10 and the distribution of coal sold during the same periods in Table 11.

COAL.

Production and Sales by Companies, Nova Scotia, year ending September 30, 1911, in short tons.

Name of company.	Output.	Sales.	Colliery consumption.	Supplied workmen.	Supplied locomotive.	Reported unsaleable.	Tons on bank at close of year.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Dominion Coal Co., Ltd.	4,360,113	3,971,278	246,112	48,939	23,514	.....	125,840
Nova Scotia Steel & Coal Co., Ltd.	848,762	779,316	33,556	20,080	3,925	.....	43,342
Cumberland Railway & Coal Co., Ltd.	214,871	156,537	42,827	4,654	3,269	.....	7,602
Acadia Coal Co.	522,297	417,648	83,898	10,985	1,384	.....	22,498
Maritime Coal, Railway & Power Co.	183,416	16,096	18,664	3,372	1,438	.....	.....
Inverness Railway & Coal Co.	326,577	300,969	20,300	6,015	10,376	.....	3,731
Intercolonial Coal Co.	293,000	268,016	38,049	7,289	802	.....	11,042
Sydney Coal Co.	4,129	3,767	96	153	.....	.....	410
MacKay Colliery	32,571	30,463	1,887	460	.....	.....	.....
North Atlantic Collieries Co.	53,751	40,065	9,690	1,234	.....	2,696	3,143
Port Hood Coal Co.	46,135	33,031	3,798	1,261	.....	.....	297
Minudie Coal Co.	61,019	51,670	3,120	1,267	222	4,961	.....
Atlantic Grindstone & Coal Co.	374	312	25	37	.....	.....	.....
Colonial Mining Co.	5,023	3,517	2,164	141	.....	.....	.....
Great Northern Coal Co.	1,419	692	608	39	.....	.....	79
	6,953,457	6,073,377	509,894	105,926	44,930	7,657	217,984

COAL.—TABLE 8.

Nova Scotia: Output, Sales, Colliery Consumption, and Production.

Calendar Year.	Output, tons, 2,240 lbs.	Sold or used, tons, 2,240 lbs.	Colliery consump- tion, tons, 2,240 lbs.	Production, tons, 2,240 lbs.	Output, tons, 2,000 lbs.	Sold or used, tons, 2,000 lbs.	Colliery consump- tion, tons, 2,000 lbs.	Production* tons, 2,000 lbs.	Price per ton, 2,240 lbs.	Value of production.
									\$ c.	\$
1872.....	880,950	785,914	110,341	896,255	986,664	880,224	123,582	1,003,806	1 75	1,568,446
1873.....	1,051,467	881,106	108,398	989,504	1,177,643	986,839	121,406	1,108,245	1 75	1,731,632
1874.....	872,720	749,127	119,582	868,709	977,446	839,022	133,932	972,954	1 75	1,520,240
1875.....	781,165	706,795	124,110	830,905	874,905	791,610	139,003	930,613	1 75	1,454,084
1876.....	709,646	634,207	113,788	747,945	794,804	710,312	127,443	837,755	1 75	1,308,991
1877.....	757,496	687,065	98,841	785,906	848,396	769,513	110,702	880,215	1 75	1,375,339
1878.....	770,603	693,511	88,627	782,138	863,075	776,732	99,262	875,994	1 75	1,368,741
1879.....	788,271	688,624	84,787	773,411	882,863	771,259	94,961	866,220	1 75	1,353,469
1880.....	1,032,710	954,659	96,831	1,051,490	1,156,635	1,069,218	108,451	1,777,669	1 75	1,840,108
1881.....	1,124,270	1,035,014	107,888	1,142,902	1,259,183	1,159,216	120,834	1,280,050	1 75	2,000,079
1882.....	1,365,811	1,250,179	111,381	1,361,560	1,529,708	1,400,200	124,747	1,524,947	1 75	2,382,730
1883.....	1,422,553	1,297,523	111,949	1,409,472	1,503,259	1,453,226	125,383	1,578,609	1 75	2,466,576
1884.....	1,389,295	1,261,650	116,769	1,373,419	1,556,011	1,413,048	130,781	1,543,829	1 75	2,412,233
1885.....	1,352,205	1,254,510	127,624	1,382,134	1,514,470	1,405,051	142,939	1,547,990	1 75	2,418,735
1886.....	1,502,611	1,373,666	142,421	1,516,087	1,682,924	1,538,506	159,512	1,698,018	1 75	2,653,152
1887.....	1,670,830	1,519,684	139,777	1,659,461	1,871,330	1,702,046	156,550	1,858,596	1 75	2,904,057
1888.....	1,776,128	1,576,692	187,443	1,734,135	1,989,263	1,765,895	176,366	1,942,231	1 75	3,034,735
1889.....	1,756,279	1,555,107	158,131	1,713,238	1,967,032	1,741,720	177,107	1,918,827	1 75	2,998,167
1890.....	1,984,001	1,786,111	161,240	1,947,851	2,222,081	2,000,444	180,589	2,181,033	1 75	3,407,864
1891.....	2,044,784	1,849,945	174,983	2,024,928	2,290,158	2,071,938	195,981	2,267,919	1 75	3,543,624
1892.....	1,942,780	1,752,934	175,092	1,928,026	2,175,913	1,963,286	196,103	2,159,389	1 75	3,374,046
1893.....	2,223,042	1,977,543	205,425	2,182,968	2,489,807	2,214,848	230,076	2,444,924	1 75	3,820,194
1894.....	2,260,631	2,060,920	196,206	2,257,126	2,520,707	2,308,231	219,751	2,527,982	1 75	3,949,970
1895.....	1,999,756	1,793,098	193,639	1,986,737	2,239,727	2,008,270	216,875	2,225,145	1 75	3,476,790
1896.....	2,292,675	2,046,828	192,975	2,239,808	2,537,706	2,202,447	216,132	2,508,570	1 75	3,919,355
1897.....	2,340,031	2,044,672	181,716	2,226,388	2,020,835	2,290,032	203,522	2,403,554	1 75	3,806,170
1898.....	2,262,656	2,121,126	187,428	2,283,554	2,584,175	2,375,661	187,519	2,563,180	1 75	4,004,970
1899.....	2,865,443	2,633,989	177,460	2,811,449	3,209,296	2,950,067	188,775	3,148,822	2 00	5,622,808
1900.....	3,293,791	2,998,737	236,563	3,235,300	3,694,646	3,358,585	264,051	3,623,536	2 50	8,088,250
1901.....	3,321,033	3,411,127	301,434	3,712,561	4,279,557	3,820,462	337,606	4,158,063	1 75	6,496,982
1902.....	4,725,480	4,229,120	379,198	4,608,318	5,292,538	4,736,614	424,702	5,161,316	2 00	9,216,636
1903.....	5,215,562	4,565,720	481,903	5,047,623	5,841,429	5,113,807	539,731	5,653,338	2 00	10,095,246
1904.....	5,131,985	4,551,740	144,904	4,996,644	5,747,823	5,097,949	498,292	5,596,241	2 00	9,993,288

COAL.—TABLE 8—Continued.

Nova Scotia: Output, Sales, Colliery Consumption, and Production.

Calendar Year.	Output, tons, 2,240 lbs.	Sold or used, tons, 2,240 lbs.	Colliery consump- tion, tons, 2,240 lbs.	Production, tons, 2,240 lbs.	Output, tons, 2,000 lbs.	Sold or used, tons, 2,000 lbs.	Colliery consump- tion, tons, 2,000 lbs.	Production* tons, 2,000 lbs.	Price per tons, 2,240 lbs.	Value of production.
1905.....	5,197,877	4,613,818	427,774	5,041,592	5,821,622	5,167,476	479,107	5,646,583	2 00	10,088,184
1906.....	5,844,813	5,093,131	460,891	5,554,022	6,546,191	5,704,307	516,198	6,220,505	2 00	11,108,044
1907.....	5,775,503	5,236,077	437,256	5,673,333	6,468,563	5,864,406	489,727	6,354,133	2 25	12,764,999
1908.....	6,076,330	5,224,787	576,509	5,939,767	6,805,489	5,851,761	645,690	6,652,539	2 25	13,364,476
1909.....	5,106,135	4,524,029	522,479	5,046,508	5,718,871	5,066,912	585,177	5,652,089	2 25	11,354,643
1910.....	5,817,109	5,199,715	542,376	5,742,091	6,515,162	5,823,681	607,461	6,431,142	2 25	12,919,705
1911.....	6,362,099	5,676,857	577,089	6,253,946	7,125,551	6,358,080	646,340	7,004,420	2 25	14,071,379

*This production is obtained by adding sales and colliery consumption.

COAL.—TABLE 9.

Nova Scotia: Coal trade by Counties, in short tons, Calendar Years 1906-7-8-9-10-11.

Calendar Year.	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		Total.	
	Raised.	Sales.	Raised.	Sales.	Raised.	Sales.	Raised.	Sales.	Raised.	Sales.
1906.....	659,734	566,308	769,496	657,310	4,804,407	4,221,293	312,554	259,396	6,546,191	5,704,307
1907.....	534,047	445,288	840,533	729,043	4,698,147	4,346,180	395,836	343,395	6,468,563	5,864,406
1908.....	662,157	530,648	849,802	678,025	4,840,653	4,267,346	452,877	375,742	6,805,489	5,851,761
1909.....	494,919	403,371	743,860	599,743	4,081,333	3,723,135	398,759	340,663	5,718,871	5,066,912
1910.....	350,363	288,706	714,846	588,678	5,035,800	4,571,347	414,153	374,950	6,515,162	5,823,681
1911.....	538,296	436,125	833,956	691,852	5,405,355	4,917,902	347,944	312,201	7,125,551	6,358,080

Sales include coal used for making coke and steel.

COAL.—TABLE 10.

Nova Scotia: Output by Collieries during Fiscal Years ending September 30,
1909-10-11.

Colliery.	1909. Tons of 2,000 lbs.	1910. Tons of 2,000 lbs.	1911. Tons of 2,000 lbs.
<i>Cape Breton County.</i>			
Doninion Coal Company.....	3,119,556	3,634,124	4,360,113
Nova Scotia Steel and Coal Co.....	848,444	936,710	848,762
North Atlantic Collieries.....	81,292	99,687	53,751
McKay Mining Company.....	15,217	19,136	32,571
Sydney Coal Company.....	5,301	4,464	4,129
Colonial Mining Co.....	709	15,625	5,023
<i>Cumberland County.</i>			
Cumberland Railway and Coal Co.....	421,437	60,298	214,871
Maritime Coal, Railway, and Power Co., Chignecto.....	56,392	181,264	183,416
" " " " Joggins.....	55,620		
Minudie Coal Co.....	55,766	61,037	61,019
Strathcona Coal Co.....	7,936		
Great Northern Coal Co.....	4,272	988	1,419
Atlantic Grindstone and Coal Co.....	721	239	374
Eastern Coal Co.....	4,940	7,381	
<i>Colchester County.</i>			
Colchester Coal Co.....	1,490		
<i>Pictou County.</i>			
Acadia Coal Co.....	408,792	397,962	522,297
Intercolonial Coal Co.....	327,576	307,692	293,000
Marsh colliery.....	22,585		
<i>Inverness County.</i>			
Inverness Coal and Railway Co.....	296,546	310,528	326,577
Mabou Coal Co.....	1,804		
Port Hood Coal Co.....	106,669	97,269	46,135

COAL.—TABLE 11.

Nova Scotia: Distribution of Coal Sold.

Markets.	FISCAL YEARS ENDING SEPTEMBER 30.									
	1907.		1908.		1909.		1910.		1911.	
	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.
Nova Scotia—										
Transported by land.....	1,740,736	30·80	1,804,377	29·37	1,642,716	31·77	1,681,052	30·65	2,007,192	32·25
" sea.....	322,773	5·71	380,332	6·19	339,462	6·57	342,787	6·25	354,514	5·70
Total Nova Scotia ..	2,063,509	36·51	2,184,709	35·56	1,982,178	38·34	2,023,839	36·90	2,361,706	37·95
New Brunswick.....	478,383	8·46	571,570	9·30	607,968	11·76	594,288	10·84	606,582	9·74
Prince Edward Island.....	36,792	1·54	70,931	1·15	88,365	1·71	89,031	1·62	90,314	1·45
Quebec Province.....	1,914,743	33·88	2,293,352	37·33	1,689,876	32·69	2,001,382	36·49	2,315,971	37·22
Newfoundland.....	164,082	2·90	231,909	3·77	174,998	3·39	19,224	3·62	206,299	3·32
United States.....	690,269	12·21	559,592	9·11	359,224	6·95	325,548	5·93	372,177	5·98
West Indies.....	2,910	0·05								
Mexico.....	8,502	0·15								
St. Pierre.....			9,976	0·16	11,463	0·22	8,405	0·15	10,107	0·16
Bunker coal.....	229,121	4·05	216,554	3·53	254,681	4·92	243,307	4·45	229,243	3·68
Other countries.....	13,981	0·25	5,261	0·09	846	0·02			*30,841	0·50
Total.....	5,652,292	100·000	6,143,854	100·00	5,169,599	100·00	5,484,524	100·00	6,223,240	100·00

* For time chartered boats.....	Tons.	Per cent.
Other countries.....	28,610	0·46
	2,231	0·04
	30,841	0·50

Number and Classes of Workmen employed at each mine in Nova Scotia, Year ending September 30, 1911.

Company.	UNDERGROUND.				SURFACE.				CONSTRUCTION.			TOTALS.		HORSES.		PIT DAYS.
	Skilled labour.	Labourers	Boys.	Days.	Skilled labour.	Labourers	Boys.	Days.	Skilled labour.	Labourers	Days.	Persons.	Days.	Above.	Below.	Worked.
Dominion Coal Co.	2,729	1,565	269	1,339,746	526	380	61	255,469				5,530	1,595,215	85	514	269
Nova Scotia Steel and Coal Co.	1,050	803	205	530,896	146	205	33	111,816				2,442	642,712	4	110	274
Cumberland Railway and Coal Co.	259	296	32	168,883	87	120	5	62,672	2	2	838	803	232,393	18	40	293
Acadia Coal Co.	343	354	82	251,538	90	275	19	136,940				1,163	388,478	31	47	291
Intercolonial Coal Co.	349	152	84	149,756	92	114	26	57,732	1	1	499	819	207,987	12	33	295
Mar. Coal, Ry. and Power Co., Joggins. . .	269	83	7	106,124	21	49	11	24,086				440	130,210	6	12	293
Inverness Railway and Coal Co.	312	130	21	137,725	42	43	11	29,161				559	166,886	6	23	297
Mar. Coal, Ry. and Power Co., Chignecto	29	8	3	10,357	6	5	2	3,224				53	13,581	1	1	174
Sydney Coal Co.	6	2		1,759	1	2		694	1	3	64	15	2,517	1	1	168
Mackay Mining Co.	36	13		14,506	5	8		4,174	1	3	254	66	18,934	3	3	293
North Atlantic Collieries.	70	29	16	32,623	12	32	7	13,477				166	46,099	7	13	266
Port Hood Coal Co.	196	37	5	22,872	15	21	3	9,973				277	32,845	4	5	183
Great Northern Coal Co.	4	1		1,099	1	2		688	2	1	662	11	2,449			67
Minudie Coal Co.	92	16	15	31,114	14	14	4	9,504	1		440	156	41,058	3	1	246
Atlantic Grindstone and Coal Co.	2			288	2			380				4	668			102
Colonial Coal Co.	9	2		3,249	4	2	1	1,868				18	5,117	1	2	300
	5,755	3,491	739	2,802,534	1,064	1,272	183	721,858	8	10	2,757	12,522	3,527,149	182	810	.....

New Brunswick.

The coal production in New Brunswick is derived from the Grand Lake coal-field, in Queens county, in which a comparatively large number of small mines are intermittently operated. Only about 50 per cent of the production has been reported by the producers.

The actual shipments during 1911 are estimated by the Provincial Department of Works at 53,781 tons. Adding 2,000 tons for colliery consumption, workmen, etc., the production is placed at 55,781 tons, practically the same production as 1910.

COAL.—TABLE 12.

New Brunswick: Production.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		\$	\$ cts.			\$	\$ cts.
1887.....	10,040	23,607	2 35	1900.....	10,000	15,000	1 50
1888.....	5,730	11,050	1 93	1901.....	17,630	51,857	2 94
1889.....	5,673	11,733	2 07	1902.....	18,795	39,680	2 11
1890.....	7,110	13,850	1 95	1903.....	16,000	40,000	2 50
1891.....	5,422	11,030	2 03	1904.....	9,112	18,224	2 00
1892.....	6,768	9,375	1 39	1905.....	29,400	58,800	2 00
1893.....	6,200	9,837	1 59	1906.....	34,076	68,152	2 00
1894.....	6,469	10,264	1 59	1907.....	34,584	77,814	2 25
1895.....	9,500	14,250	1 50	1908.....	60,000	135,000	2 25
1896.....	7,500	11,250	1 50	1909.....	49,029	98,496	2 25
1897.....	6,000	9,000	1 50	1910.....	55,455	110,910	2 00
1898.....	6,160	9,240	1 50	1911.....	55,781	111,562	2 00
1899.....	10,528	15,792	1 50				

Saskatchewan.

Returns were received from 16 separate collieries in this Province during 1911, showing a total production¹ of 206,779 tons of lignite coal valued at \$347,248, an increase of 25,623 tons or 14 per cent over the production reported for 1910.

Of the 1911 production, 198,768 tons were sold for consumption in Canada and 8,011 tons used by the producers for colliery consumption and for workmen.

The output which has hitherto been obtained entirely from the Estevan and Souris fields in the southern portion of the Province, is used mainly for domestic purposes in Saskatchewan and Manitoba.

During 1911 a new colliery was opened on section 60, township 10, range 28, west of the 2nd Meridian, about 40 miles south of Moosejaw and 115 miles west of the Estevan field, by the Consumers Coal Company, Ltd., of Moosejaw. As yet this district has no railway communication and the production is entirely for local consumption. The present plant has a capacity of 75 tons per day.

¹ Figures have since been increased by 1,400 tons valued at \$2,600.

As soon as railway facilities are available, the Company proposes to install a plant with a daily capacity of 500 tons.

The principal operating mines of the Estevan field are the Western Dominion Collieries, Ltd., and the Manitoba and Saskatchewan Coal Company, each with an output close to 100,000 tons. Amongst the other mines the chief operators are: The Estevan Coal and Brick Co., The Maple Leaf Mines, Ltd., The Excelsior Coal Mining Company, Geo. Parkinson, Bastien and Sons, and The Kelly mine.

COAL.—TABLE 13.

Saskatchewan: Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.	Calendar Year.	Tons.	Value.	Average value per ton.
		\$	\$ cts.			\$	\$ cts.
1890.....	200	200	1 00	1901.....	45,000	72,000	1 60
1891.....				1902.....	70,400	112,640	1 52
1892.....	5,400	9,325	1 73	1903.....	116,703	169,618	1 45
1893.....	8,325	12,485	1 50	1904.....	124,885	187,021	1 50
1894.....	†15,051	15,153	1 01	1905.....	107,596	152,334	1 42
1895.....	15,769	31,538	2 00	1906.....	108,398	164,146	1 51
1896.....	16,706	25,059	1 50	1907.....	151,232	252,437	1 67
1897.....	25,000	37,500	1 50	1908.....	150,556	253,790	1 69
1898.....	25,000	37,500	1 50	1909.....	192,125	296,339	1 54
1899.....	25,000	37,500	1 50	1910.....	181,156	293,923	1 62
1900.....	40,500	60,750	1 50	1911.....	206,779	347,248	1 68

† Including a small quantity from the Turtle Mountain district, Manitoba.

Alberta.

The production of coal in Alberta has shown a steady increase each year since 1899 and under ordinary operating conditions the output in 1911 would undoubtedly have been greater than that of 1910. The closing down of the principal bituminous collieries in the southern part of the Province, however, for a period of nearly eight months of the year, due to the coal miners' strike to which reference has already been made, resulted in a greatly reduced output in 1911. The production of marketable coal during this year, according to direct returns received from the operators, was 1,511,036 tons, valued at \$3,979,264, or an average of \$2.63 per ton, as compared with 2,894,469 tons, valued at \$7,065,736, produced in 1910, showing a falling off of 1,383,433 tons or 48 per cent. The coal production of this Province includes the only anthracite mined in Canada, 90,460 tons in 1911, together with bituminous and lignite coals.

Of the total production in 1911, 1,304,778 tons were sold for consumption in Canada and 40,884 tons for export. The producers used 103,783 tons for colliery consumption and for workmen, and 61,591 tons were used in making coke. In 1910, the quantity sold for consumption in Canada was 2,309,438 tons, while

243,371 tons were sold for export to the United States, 145,410 tons were used for colliery consumption and by workmen, and 196,250 tons were used in making coke.

The production of 21 of the principal operating companies is shown in the following table. It will be observed that most of these companies were in operation for from three to four months only during the year and consequently their output is only about one-third or less of their capacity. These 21 companies produced a total of 1,003,035 tons, and 14 other companies, with an output of over 10,000 tons each, from whom permission for publication was not received, produced a total of 310,441 tons. Thus about 87 per cent of the total production was obtained from 35 operators, having an output exceeding 10,000 tons each.

Production of Coal in Alberta in 1911 by Principal Collieries, in short tons.

Name of Company.	Days in operation.	Total sales.	Total for colliery use.*	Total production.
The Davenport Coal Co., Burmis	104	21,669	300	21,969
The Hillcrest Coal and Coke Co., Hillcrest.....	168	44,664	4,025	48,689
Leitch Collieries Ltd., Passburg.....	153	52,315	2,310	54,625
Maple Leaf Coal Co., Bellevue	144	13,150	1,138	14,288
Canadian Coal Consolidated Co., Frank.....	86	24,912	12,514	37,426
West Canadian Collieries, Blairmore mine.....	122	79,604	(c) 36,107	115,711
" " Lille	89			
" " Bellevue	30			
International Coal and Coke Co., Coleman.....	100	92,869	(d) 46,158	139,027
The Cammore Coal Co., Cammore	32	26,673	2,105	28,778
Bankhead Mines, Ltd., Bankhead.....	77	(a) 78,609	(b) 11,851	90,460
Jasper Park Collieries, Pocatontas.....	96	10,619	350	10,969
Breckenridge & Lund Coal Co., Lundbreck.....	252	43,482	1,123	44,605
Alberta Railway & Irrigation Co., Lethbridge..	104	131,859	7,041	138,900
Eureka Coal Co., Taber	273	12,914	2,430	15,344
Rock Springs Sootless Coal Co., Taber.....	264	20,543	3,000	23,543
Red Cliff Brick and Coal Co., Redcliff.....	268	17,652	.....	17,652
Round Hill Collieries, Round Hill	144	12,825	137	12,962
Edmonton Standard Coal Co., Edmonton	300	29,300	900	30,200
Ritchie Coal Co., Edmonton	168	10,000	550	10,550
Messrs. Love & Cameron, Edmonton.....	300	10,000	50	10,050
Alberta Coal Mining Co., Edmonton.....	200	33,708	2,500	36,208
Cardiff Collieries, Ltd., Cardiff.....	300	99,879	1,200	101,079
14 other companies, each producing over 10,000 tons.....	.....	867,246	135,789	1,003,035
Other companies, each producing under 10,000 tons.....	.....	290,527	19,914	310,441
.....	.....	187,889	9,671	197,560
Total production, Alberta.....	.....	1,345,662	165,374	1,511,036

* Includes consumption under boilers, workmen, etc.

- (a) " 47,308 tons of briquettes.
 (b) " 892 " "
 (c) " 23,754 tons used in making coke.
 (d) " 37,837 " "

The annual production in Alberta since 1887 is shown in Table 14.

COAL.—TABLE 14.

Alberta: Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.	Calendar Year.	Tons.	Value.	Average value per ton.
		\$	\$ cts.			\$	\$ cts.
1887.....	74,152	157,577	2 13	1900.....	311,450	778,625	2 50
1888.....	115,124	183,354	1 59	1901.....	340,275	850,687	2 50
1889.....	97,364	179,640	1 85	1902.....	402,819	960,601	2 38
1890.....	128,753	198,298	1 54	1903.....	495,893	1,117,541	2 25
1891.....	174,131	437,243	2 51	1904.....	661,732	1,404,524	2 12
1892.....	178,970	460,605	2 57	1905.....	931,917	1,998,915	2 14
1893.....	230,070	586,260	2 55	1906.....	1,246,360	2,614,762	2 10
1894.....	184,940	473,827	2 56	1907.....	1,591,579	3,836,286	2 41
1895.....	169,885	382,526	2 25	1908.....	1,685,661	4,127,311	2 45
1896.....	209,162	581,832	2 78	1909.....	1,994,741	4,838,109	2 43
1897.....	242,163	630,408	2 60	1910.....	2,894,469	7,065,736	2 44
1898.....	315,088	788,720	2 50	1911.....	1,511,036	3,979,264	2 63
1899.....	309,600	774,000	2 50				

British Columbia.

The same conditions which resulted in the large falling off in coal production in the Province of Alberta were also the cause of a decreased output in British Columbia. The mines of the Crowsnest district, East Kootenay, were closed down for a period of eight months from April to November along with the mines in southwestern British Columbia, owing to the inability of the mine operators and the Labour Union to agree as to wages and working conditions.

The total production in 1911 was 2,542,532 tons, valued at \$7,945,413, as compared with a production of 3,330,745 tons, valued at \$10,408,580, reported in 1910, showing a decrease of 788,213 tons or about 24 per cent.

A large proportion of the coal production of this Province is annually exported; in 1910 nearly 40 per cent or considerably over one-third of the total production was sold for export, while a considerable tonnage, over 11 per cent of the production in 1910, is made into coke. The direct result of the closing down of the Crowsnest Pass, Hosmer, and Corbin collieries was a considerably reduced coke output which in turn seriously affected the operations of the smelting furnaces of the Boundary district and at Trail. A great falling off was also caused in the amount of coal sold for export, only a little more than half as much coal being sold for export in 1911 as in 1910. On the other hand there was a substantial increase in the amount of coal sold for consumption in Canada, and this notwithstanding the keen competition now being given by fuel oil on the coast. Of the total production in 1911, 1,536,957 tons, or 60 per cent, were sold for consumption in Canada, as compared with 1,400,405 tons or 42 per cent similarly disposed of in 1910; 642,754 tons, or 25 per cent of the production, were

sold for export to the United States in 1911, as against 1,248,483 tons or 37.5 per cent in 1910; and 43,465 tons were sold for export to other countries, as against 67,525 tons in 1910. The quantity used by producers in making coke in 1911 was 117,215 tons, only 4.6 per cent of the production, as against 379,893 tons or 11.4 per cent in 1910; and the quantity used by producers under colliery boilers and for workmen in 1911 was 202,141 tons or '8 per cent of the production, as against 234,439 tons in the previous year.

The production of the coast collieries located on Vancouver island, and of the mainland collieries in East Kootenay and Nicola valley is separately shown in the next table. The total production of coal on Vancouver island in 1911 was 1,789,530 tons, as against 1,627,810 tons in 1910, and the production of the Crowsnest Pass and Nicola Valley districts in 1911 was 753,002 tons, as against 1,702,935 tons in 1910. In the latter districts the quantity sold for consumption in Canada in 1911 was 348,188 tons, as against 384,584 tons in 1910, a comparatively small decrease; whereas the quantity sold for export in 1911 was only 237,219 tons, as against 845,113 tons in 1910, or a decrease of nearly 72 per cent.

Coal.	1910.			1911.		
	Coast.	Crowsnest and Nicola valley.	Total.	Coast.	Crowsnest and Nicola valley.	Total.
		Short tons.			Short tons.	
Sold for consumption in Canada	1,015,821	384,584	1,400,405	1,188,769	348,188	1,536,957
Sold for export to United States	403,370	845,113	1,248,483	405,535	237,219	642,754
Sold for export to other countries	67,525	.....	67,525	43,465	.....	43,465
Total sales	1,486,716	1,229,697	2,716,413	1,637,769	585,407	2,223,176
Used for making coke	5,230	374,662	379,892	.....	117,215	117,215
Used for colliery consumption	135,864	98,576	234,440	151,761	50,386	202,141
Production	1,627,810	1,702,935	3,330,745	1,789,530	753,002	2,542,532

The coal production by collieries in British Columbia in 1910 and 1911 is shown in the following tables, while the annual production of coal since 1836 is given in Table 15. The total production to the end of 1911 has been 42,649,441 short tons of which 22,617,371 tons or about 53 per cent has been produced during the past ten years.

Coal Production by Collieries in British Columbia in 1911, in tons of 2,240 lbs.

29976-13

Colliery.	SALES.				Used in making coke.	Used under colliery boilers, etc.	Lost in washing.	STOCKS.		Output.
	In Canada.	To United States.	To other countries.	Total.				First of year.	Last of year.	
1. Protection	240,459	140,162	1,726	382,347	.....	34,332	.....	9,712	4,942	411,909
Northfield	36,145	94,049	2,300	132,494	.....	30,333	.....	1,945	470	161,852
Douglas .....	.....	31	.....	31	.....	1,385	.....	.....	.....	1,416
2. Extension	255,007	62,494	.....	317,501	.....	14,591	.....	1,981	1,465	331,576
Union	321,690	42,640	32,782	397,112	.....	39,250	.....	22,515	23,488	437,335
3. Fiddick and Richardson	138,938	22,709	2,000	163,647	.....	11,441	22,279	30,829	38,510	205,048
Suquash	1,613	.....	.....	1,613	.....	669	.....	.....	.....	2,282
4. New East Wellington	67,549	.....	.....	67,549	.....	3,000	2,069	100	400	72,918
5. Middlesboro	184,182	.....	.....	184,182	.....	6,752	.....	259	615	191,290
6. Princeton	16,336	1,909	.....	18,245	.....	823	4,328	.....	.....	23,396
7. Coal Creek*	26,200	123,377	.....	149,577	44,688	13,709	.....	1,529	111	206,556
Michel*	13,505	51,519	.....	65,024	40,303	9,198	.....	159	18	114,384
8. Hosmer*	10,721	.....	.....	10,721	19,665	11,450	6,503	3,388	1,687	46,638
9. Corbin	44,154	34,998	.....	79,152	.....	2,567	.....	.....	.....	81,719
10. Diamond Vale	5,384	.....	.....	5,384	.....	.....	.....	.....	.....	5,384
11. Coal Hill	10,400	.....	.....	10,400	.....	483	.....	.....	.....	10,883
12. West Wellington .....	.....	.....	.....	.....	.....	.....	.....	90	298	298
Total	1,372,283	573,888	38,808	1,984,979	104,656	180,483	35,179	72,507	72,004	2,304,794

* In operation during three months owing to strike.

1. The Western Fuel Co.
2. The Canadian Collieries (Dunsmuir), Ltd.
3. Pacific Coast Coal Mines, Ltd.
4. The Vancouver-Nanaimo Coal Mining Co., Ltd.
5. Nicola Valley Coal and Coke Co., Ltd.
6. Princeton Coal and Land Co., Ltd.

7. Crownsnest Pass Coal Co., Ltd.
8. Hosmer Mines, Ltd.
9. Corbin Coal and Coke Co., Ltd.
10. Diamond Vale Collieries, Ltd.
11. The Inland Coal and Coke Co., Ltd.
12. Biggs Bros.

Coal Production by Collieries in British Columbia in 1910, in tons of 2,240 lbs.

Colliery.	SALES.				Used in making coke.	Used under colliery boilers, etc.	Lost in washing.	Stocks.		Output.
	In Canada.	To United States.	To other countries.	Total.				First of year.	Last of year.	
1 Protection.....	187,923	133,360	10,583	331,866	.....	31,439	.....	8,327	9,711	364,689
Northfield.....	36,035	77,776	6,535	120,346	.....	23,495	.....	2,605	1,945	148,181
2 Extension.....	251,208	72,920	.....	324,128	.....	12,467	43,812	1,906	1,981	380,482
Union.....	308,266	48,623	25,873	382,762	4,670	37,355	79,790	6,936	20,835	513,426
3 Fiddick.....	92,701	27,473	17,299	137,473	.....	10,305	11,602	13,238	25,829	171,971
Suquash.....	766	.....	.....	766	.....	1,000	.....	1,050	2,123	2,839
4 New East Wellington.....	29,542	.....	.....	29,542	.....	.....	.....	200	100	29,442
5 Middlesboro.....	138,681	.....	.....	138,681	.....	2,987	.....	440	259	141,487
6 Princeton.....	6,278	3,570	.....	9,848	.....	300	.....	.....	†1,720	11,868
7 Coal Creek.....	41,110	431,772	.....	472,882	118,432	29,756	.....	36	1,530	622,564
Michel.....	77,290	204,525	.....	281,815	147,134	23,500	.....	27	159	457,581
Carbonado.....	*	*	*	*	*	*	*	*	*	*
8 Hosmer.....	54,098	.....	.....	54,098	68,953	22,086	11,073	1,475	3,388	158,123
9 Corbin.....	10,080	114,790	.....	124,870	.....	1,981	.....	.....	.....	126,581
10 Diamond Vale.....	2,261	.....	.....	2,261	.....	100	.....	.....	70	2,431
11 Coal Hill.....	2,200	.....	.....	2,200	.....	100	.....	.....	.....	2,300
Total.....	1,238,439	1,114,809	60,290	2,413,538	339,189	206,371	146,277	36,290	69,650	3,139,235

* Not in operation. † Development coal not marketed.

- | | |
|--|-----------------------------------|
| 1. The Western Fuel Co. | 7. Crowsnest Pass Coal Co., Ltd. |
| 2. The Canadian Collieries (Dunsmuir), Ltd. | 8. Hosmer Mines, Ltd. |
| 3. Pacific Coast Coal Mines, Ltd. | 9. Corbin Coal and Coke Co., Ltd. |
| 4. The Vancouver-Nanaimo Coal Mining Co., Ltd. | 10. Diamond Vale Collieries, Ltd. |
| 5. Nicola Valley Coal and Coke Co., Ltd. | 11. Coal Hill Syndicate. |
| 6. Princeton Coal and Land Co., Ltd. | |

COAL.—TABLE 15.

British Columbia: Production.

Calendar Year.	Output, tons. 2,240 lbs.	Home consumption, tons. 2,240 lbs.	Sold for export, tons. 2,240 lbs.	PRODUCTION.*		Price per ton, 2,240 lbs.	Value.
				Tons. 2,240 lbs.	Tons. 2,000 lbs.		
						\$ cts.	\$
1836-52...	10,000				11,200	4 00	40,000
1852-59...	25,398				28,446	4 00	101,592
1859†	1,989				2,228	4 00	7,956
1860	14,247				15,957	4 00	56,988
1861	13,774				15,427	4 00	55,096
1862	18,118				20,292	4 00	72,472
1863	21,345				23,906	4 00	85,380
1864	28,632				32,068	4 00	114,528
1865	32,819				36,757	4 00	131,276
1866	25,115				28,129	4 00	100,460
1867	31,239				34,988	4 00	124,956
1868	44,005				49,286	4 00	176,020
1869	35,080				40,098	4 00	143,208
1870	29,843				33,424	4 00	119,372
1871-2-3...	148,459				166,274	4 00	593,836
1874	81,547				90,788	3 00	243,183
1875	110,145				97,644	3 00	292,932
1876	139,192				140,185	3 00	420,555
1877	154,052				139,692	3 00	419,076
1878	170,846				190,848	3 00	572,544
1879	241,301				232,390	3 00	697,170
1880	267,595				272,362	3 00	817,086
1881	228,357				229,514	3 00	688,542
1882	232,139				232,411	3 00	865,716
1883	213,299				214,353	3 00	643,059
1884	394,070				393,866	3 00	1,181,598
1885	365,596				333,024	3 00	999,072
1886	326,636				335,192	3 00	1,005,576
1887	413,360				434,055	3 00	1,302,165
1888	489,301				481,667	3 00	1,445,001
1889	579,830				568,249	3 00	1,704,747
1890	678,140				685,345	3 00	2,056,035
1891	1,029,097				1,009,176	3 00	3,027,528
1892	826,335				836,802	3 00	2,510,406
1893	978,294				976,768	3 00	2,930,304
1894	1,012,953				993,418	3 00	2,980,254
1895	930,654				944,633	3 00	2,834,049
1896	894,882				896,222	3 00	2,688,066
1897	802,296				910,170	3 00	2,730,510
1898	1,136,485				1,128,286	3 00	3,384,858
1899	1,306,324				1,277,769	3 00	3,833,307
1900	1,590,178				1,599,851	3 00	4,799,553
1901	1,691,557				1,713,829	3 00	5,141,487
1902	1,641,626				1,614,680	3 00	4,844,040
1903	1,450,663				1,496,948	3 00	4,490,844
1904	1,683,698				1,663,058	3 00	4,989,174
1905	1,736,696				1,737,010	3 00	5,211,030
1906	1,899,076				1,916,305	3 00	5,748,915
1907	2,219,602				2,111,516	3 50	7,300,306
1908	2,111,931				2,083,668	3 50	7,292,838
1909	2,388,196				2,326,899	3 50	8,144,147
1910	3,152,207				2,973,880	3 50	10,408,580
1911	2,304,794				2,270,118	3 50	7,945,413

* This production is obtained by adding 'Home Consumption' and 'Sold for Export'.

† 52,935 tons of this amount were exported as sales without the division into 'Home Consumption' and 'Sold for Export'.

‡ Two months only.

The following general summary of the coal potentialities of British Columbia is quoted from the Annual Report of Mr. W. F. Robertson, Provincial Mineralogist for British Columbia.¹

'In addition to the areas actually being worked, there is in the Quatsino Mining Division on Quatsino sound a Cretaceous coal-field now being developed by Thos. Pearson and associates, which gives promise of containing extensive beds of coal; prospecting workings have been in progress here for four or five years, with considerable success.'

'The Saguash area is now being opened up by actual mining by the Pacific Coast Coal Mines, Ltd., and has already made small shipments and it is expected that the output will be increased rapidly.'

'On Graham island coal has been known for forty years. Exploratory workings on coal outcrops have been carried on at Camps Robertson and Wilson; at present systematic boring of the measures of the dip to accurately define the beds is being done at several points, to prove the existence of a commercially workable field; when this is done a railway will be built to convey the coal to tide-water—probably on Skidegate inlet.'

To the north of these camps, areas have been located and considerable boring done, with results which show the field to continue nearly to Masset. The eastern extension of the field has not, as yet, been satisfactorily established.'

'In the Peace River valley extensive coal-fields are located and partly prospected but these also are, as yet, far from transportation.'

'Near Bear lake and river, tributaries of the Fraser river near its most northerly head, and thus near the located line of the Grand Trunk Pacific railway, a coal-area is being developed, which, according to the recent reports of engineers who have examined it, has considerable promise, and being near the railway assumes importance, as it is the only known area near the line in British Columbia.'

Yukon.

The principal coal mining companies operating in the Yukon district are the Five Fingers Coal Co., at Tantalus in the southern Yukon, and the Northern Light, Power, and Coal Co., Ltd., operating the Sourdough mine on Coal creek, 40 miles northwest of Dawson. No report was received from the latter Company respecting their operations during 1911, consequently the only production reported for that year was 2,840 tons, valued at the mine at \$12,780. The total production of the district in 1910 was reported as 16,185 tons, valued at \$110,925.

¹ Annual Report of the Minister of Mines (British Columbia) for the year ending December 31, 1911.

COAL.—TABLE 16.

Yukon Territory: Annual Production.

Calendar Year.	Tons.	Value.	
		\$	\$ cts.
1901.....	*5,864	36,230	14 70
1902.....	4,910	37,280	7 59
1903.....	1,849	29,584	16 00
1904.....			
1905.....	7,000	21,000	3 00
1906.....	7,000	28,000	4 00
1907.....	15,000	60,000	4 00
1908.....	3,847	21,158	5 50
1909.....	7,364	49,502	6 72
1910.....	16,185	110,925	6 85
1911.....	2,840	12,780	4 50

* Part of this production was mined in 1900.

COKE.

The statistics of coke production given herewith do not include coke made as a by-product in the manufacture of illuminating gas, but are restricted to the record of the output of 'oven coke' produced chiefly for metallurgical purposes.

The total output of coke in 1911 was 954,388 tons produced from 1,409,844 tons of coal: of which 671,514 tons were produced from domestic coal and 282,874 tons from imported coal.

In 1910 the total production was 901,269 tons produced from 1,373,793 tons of coal, of which 875,310 tons were produced from domestic coal and 25,959 tons from imported coal. The quantity of coke sold or used by the producers in 1911 was 935,651 tons, as compared with 902,715 tons in 1910.

The consumption of coke in Canada is much in excess of the domestic production, there being a considerable importation of coke chiefly into Ontario and Quebec for use in the metallurgical industries.

The imports of coke during the calendar year 1911 were 751,389 tons and the exports 9,852 tons. These figures taken in conjunction with the production of 935,651 tons (sold or used), would indicate a consumption of 1,677,188 tons. Similarly estimated the consumption in 1910 was 1,581,832 tons, and in 1909, 1,449,369 tons.

The production by provinces in 1910 and 1911 and the distribution of coke sold or used in 1911 are shown in the next three tables. While a small increase is shown in total production, there was a very large decrease in the coke output in Alberta and British Columbia due to the closing down of the collieries and coke ovens for about eight months of the year on account of labour disputes. In so far as the total production of Canada is concerned, however, this decrease is more than balanced by the increased output in Ontario due to the placing in operation of the new by-product ovens at Sault Ste. Marie and by the increased production in Nova Scotia.

Coke Production, 1910.

Province.	Coal changed to ovens.	Output of coke.	STOCK ON HAND.		Coke sold or used.	Value of sales, etc.
			Jan. 1.	Dec. 31.		
	Tons.	Tons.	Tons.	Tons.	Tons.	\$
Nova Scotia.....	756,003	508,025	417	384	508,058	1,655,775
Ontario.....	42,208	25,959	.....	1,274	24,685	148,110
Alberta.....	196,250	123,093	40	1,555	121,578	486,312
British Columbia.....	379,332	244,192	18,759	14,557	248,394	1,172,675
Total.....	1,373,793	901,269	19,216	17,770	902,715	3,462,872

Coke Production, 1911.

Nova Scotia.....	846,695	562,512	210	5,168	557,554	1,814,977
Ontario.....	384,343	282,874	1,274	24,594	259,554	1,318,303
Alberta.....	61,591	35,059	1,785	625	36,216	146,251
British Columbia.....	117,215	73,943	14,557	6,173	82,327	350,879
Total.....	1,409,844	954,388	17,826	36,560	935,651	3,630,410

Distribution of Coke Production, 1911.

	Nova Scotia.	Ontario.	Alberta.	British Columbia.	Total.
Sold in Canada.....	13,541	614	27,882	80,908	122,945
Sold for export.....			7,871	1,419	9,290
Total sales.....	13,541	614	35,753	82,327	132,235
Used by maker in blast furnace or otherwise.	544,013	258,940	463	0	803,416
Total sold or used.....	557,554	259,554	36,216	82,327	935,651
Number of ovens in operation December 31.	664	110	226	650	1,650
Number of ovens idle December 31.....	284	100	40	680	1,104
Number of ovens building December 31....	0	0	101	0	101

The annual production of coke since 1886 is shown in Table 1 and the annual production by provinces since 1897 in Table 2.

COKE.—TABLE 1.

Annual Production, 1886-1911.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		\$	\$ cts.			\$	\$ cts.
1886.....	35,396	101,940	2 88	1899.....	100,820	350,022	3 47
1887.....	40,428	135,951	3 36	1900.....	157,134	649,140	4 13
1888.....	45,373	134,151	2 96	1901.....	365,531	1,228,225	3 36
1889.....	54,539	155,043	2 84	1902.....	502,043	1,519,185	3 03
1890.....	56,450	166,298	2 95	1903.....	561,318	1,734,404	3 09
1891.....	57,084	175,592	3 08	1904.....	554,083	2,032,048	3 66
1892.....	56,135	160,249	2 85	1905.....	700,488	2,436,211	3 48
1893.....	61,078	161,790	2 65	1906.....	782,055	2,863,503	3 66
1894.....	58,044	148,551	2 56	1907.....	842,003	3,583,468	4 26
1895.....	53,356	143,047	2 68	1908.....	858,257	3,449,361	4 02
1896.....	49,619	110,257	2 22	1909.....	862,011	3,484,393	4 04
1897.....	60,686	176,457	2 91	1910.....	902,715	3,462,872	3 84
1898.....	87,600	286,000	3 26	1911.....	935,651	3,630,410	3 88

COKE.—TABLE 2.

Production of Coke by Provinces, 1897-1911.

Calendar Year.	NOVA SCOTIA.		ONTARIO.		BRITISH COLUMBIA.		Alberta.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1897.....	41,532	90,950			19,154	85,507		
1898.....	48,400	111,000			39,200	175,000		
1899.....	62,459	178,767			38,361	171,255		
1900.....	61,767	223,395			95,367	425,745		
1901.....	222,694	590,560			142,837	637,665		
1902.....	363,330	899,930			138,713	619,255		
1903.....	371,745	888,094			189,573	846,310		
1904.....	275,927	808,022			257,172	1,148,090	20,984	78,936
1905.....	386,366	1,054,712			269,256	1,202,035	44,866	179,464
1906.....	476,364	1,540,976			236,205	1,054,485	69,486	268,042
1907.....	524,110	1,688,070			241,572	1,049,432	76,321	297,595
1908.....	603,929	1,658,151			276,683	1,482,191	75,645	309,019
1909.....	492,992	1,608,092			281,786	1,509,567	87,233	366,734
1910.....	508,058	1,655,775	24,685	148,110	248,394	1,172,675	121,578	486,312
1911.....	557,554	1,814,977	259,554	1,818,303	36,216	146,251	32,327	350,879

Coke is made in Nova Scotia principally at Sydney and Sydney Mines, but also at Westville, Stellarton, and Londonderry. This Province in 1911 produced about 59 per cent of the total output for Canada and the output is used almost entirely in the manufacture of iron. In Ontario coke is made by the Atikokan Iron Company at Port Arthur for use in the Company's blast furnace, and by the Algoma Steel Company at Sault Ste. Marie. The latter Company have acquired and are operating coal lands in West Virginia for their supply of coal. In Alberta coke ovens are operated at Coleman and Lille, near Blairmore, and in British Columbia at Fernie, Michel, Carbonado, and Hosmer in the Crowsnest pass, and at Union Bay, Vancouver island. The coke output of these Provinces is used chiefly by the copper and lead smelters; finding a market in the United States as well as in British Columbia.

The total number of ovens in active operation on December 31 was 1,650; while 1,104 were reported idle on the same date and 101 in course of construction. In Nova Scotia the Dominion Iron and Steel Company at Sydney has 620 finished ovens, all of the Otto Hoffman by-product type. The by-products from these ovens include tar and ammonia. The tar is sold to the Dominion Tar and Chemical Company, whose works are contiguous to the coke oven plant, and this product is further treated for the manufacture of refined tar, pitch of various grades, benzole, creosote, carbolic acid, etc. The production of tar in 1911, including the production from the by-product ovens at Sault Ste. Marie, was 6,646,155 gallons, and ammonia liquor containing 7,124 tons of sulphate of ammonia. In 1910 the production of tar was 3,963,591 gallons and of sulphate of ammonia 3,491 tons; and in 1909, tar 4,016,824 gallons, and sulphate of

ammonia, 3,351 tons. The Nova Scotia Steel and Coal Company has 30 ovens of the Bauer type and 120 Bernard ovens; the latter are situated near the blast furnace and the surplus gas is used for the production of steam for the electric power plant. The surplus gas from the Bauer ovens is used in generating steam for general colliery use. The other ovens in this Province number 178 and are all of the beehive type. The Atikokan Iron Co., Ltd., has 100 beehive ovens at Port Arthur, Ontario, and the Algoma Steel Company 110 Koppers by-product regenerative ovens at Sault Ste. Marie.

In Alberta the West Canadian Collieries, Ltd., at Lille, has 50 ovens of the Bernard or Belgian type. The ovens of the International Coal and Coke Company at Coleman, 216 in number, are the ordinary beehive as are also the ovens in British Columbia, comprising 1,420 in the Crowsnest district and 150 on Vancouver island. In Alberta, also, the Leitch Collieries, Ltd., are erecting at Passburg 101 Mitchell rectangular ovens.

The following description of these ovens has been furnished by Mr. W. L. Hamilton, Manager of the Leitch Collieries, Ltd.:—

‘This type of oven is similar to the beehive oven in the method of burning and quality of coke produced. They are rectangular in shape, being 30 feet long; 4 feet 10 inches wide; 4 feet 6 inches high at the doors, and 8 feet high at the middle. About 10,000 nine inch bricks are necessary to build one oven. The ovens are spaced 7 feet 7½ inches centre to centre. The side walls and piers are built of stone—as in other ovens, the tops are covered with clay.’

‘The ovens are operated altogether by machinery, electric power being used. The charge of coal is delivered to the oven through a port at the top of the oven, an electric larry of 10 tons capacity being used. The charge is then levelled by a levelling machine, after which the drafts are set, and the coke is burnt much the same as a beehive oven, except that the oven has two doors and drafts must be set on each of them. When the charge is coked the doors are removed and the coke is quenched in the oven, after which the entire oven is pushed at once into the yard; it is then loaded into the railway cars by hand. The larries, leveller, and pusher, are all manufactured by the Scottdale Foundry & Machine Co., of Scottdale, Pa., who have acquired quite a reputation in designing and building this class of machinery. This equipment is sufficient for a plant of 300 ovens if necessary.’

‘There is a vast saving of time in this type of oven. It requires but two minutes to push out one oven and move to the next, while one man can scarcely draw a beehive oven by hand in less than one hour. As soon as an oven is pushed out it is immediately charged and levelled. The doors are then closed and a great deal of the heat which is lost in a beehive oven is retained, allowing a much larger charge of coal to be coked than in the case of a hand drawn oven.’

‘There is also a large saving in the cost of operation as this machinery does the work of a large number of men. To operate this block of 101 ovens, the following men will be required. One man to charge ovens; one man to operate

COKE.—TABLE 4.

Imports of Oven Coke, 1880-1911.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1880.....	3,837	19,353	1896.....	61,612	203,826
1881.....	5,492	26,123	1897.....	83,330	267,540
1882.....	8,157	36,670	1898.....	135,660	347,040
1883.....	8,943	38,588	1899.....	141,284	362,826
1884.....	11,207	44,518	1900.....	187,878	505,839
1885.....	11,564	41,391	1901.....	308,756	680,138
1886.....	11,858	39,756	1902.....	267,142	842,815
1887.....	15,110	56,222	1903.....	256,723	1,222,756
1888.....	25,487	102,334	1904.....	221,050	765,123
1889.....	29,557	91,902	1905.....	371,593	807,842
1890.....	36,564	133,344	1906.....	480,222	1,311,375
1891.....	38,533	177,605	1907*.....	400,536	1,132,680
1892.....	43,499	194,429	1908.....	619,269	2,166,036
1893.....	41,821	156,277	1909.....	466,292	1,136,624
1894.....	42,864	176,996	1910†.....	702,053	1,695,603
1895.....	43,235	149,434	1911.....	763,114	1,887,473

* For nine months only. † Duty free.

both pusher and leveller; two men to quench ovens; four men to put up doors and set drafts; besides the men to load coke from the yard into the cars.'

'Several types of patent oven doors are being tested and eventually the entire block will be equipped at a great saving of time and brick.'

'The purchase of a coke loader is under consideration at the present time. If a machine for this purpose can be made to work satisfactorily it will further reduce the number of men necessary to operate the plant.'

'The coal used for coke is $\frac{1}{2}$ inch screenings. Before coking it is washed by a Luhrig washery of a capacity of 500 tons per day. Forty-eight hour coke will be made in these ovens, about 300 tons per day being the capacity of the complete plant. At the present time, 25 ovens are being heated up and coke will be made within a couple of weeks.'

Statistics of exports and imports of coke as published by the Customs Department are shown in Tables 3 and 4 following.

The exports during the calendar year 1911 were only 9,852 tons, as against 57,971 tons in 1910 and 74,067 tons in 1909. These exports are almost entirely from British Columbia and Alberta and the falling off in 1911 is, of course, a result of the greatly reduced output of these Provinces.

The record of imports of coke shown in Table 4 covers the fiscal year. The total imports during the calendar year 1911 were 751,389 tons valued at \$1,843,248, as against 737,088 tons valued at \$1,908,725, in 1910.

The operation of the new coke ovens at Sault Ste. Marie would naturally displace a considerable tonnage of coke formerly imported at this point for use in the blast furnaces, but this displacement seems to have been more than balanced by the coke imported to meet the shortage in British Columbia.

COKE.—TABLE 3.

Exports of Coke to the United States, 1897-1911.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1897.....	2,987	6,078	1905.....	116,011	509,908
1898.....	3,774	8,394	1906.....	37,003	168,571
1899.....	5,557	18,726	1907.....	70,617	320,357
1900.....	41,529	131,278	1908.....	58,708	248,759
1901.....	57,505	176,990	1909.....	74,067	329,051
1902.....	62,568	180,920	1910.....	57,971	250,715
1903.....	32,608	135,957	1911.....	9,852	39,823
1904.....	112,463	345,031			

FELDSPAR.

Feldspar is produced in Canada chiefly from deposits situated in Frontenac county near Verona on the Kingston and Pembroke railway. Some shipments were also made in 1911 from the old Villeneuve mine near High Falls, Ottawa county, Quebec. Several properties were being developed from which small shipments were made, including the Long Lake mine in the Township of Conger, District of Parry Sound, Ontario, the Dominion Improvement and Development Company's property on lot 13, con. V, of North Burgess, and the deposit at Quetachu, Manikugan bay, north shore of the Gulf St. Lawrence, owned by the Canadian Feldspar Company, Ltd., of Montreal.

The shipping firms were:—

The Canadian Feldspar Co., Ltd., Montreal, Que.

The Dominion Mining Syndicate (O'Brien & Fowler), Ottawa, Ont.

The Kingston Feldspar & Mining Co., Kingston, Ont.

The McDonald Feldspar Company, Ltd., Verona, Ont.

Ojaipee Silica Feldspar Co., Ltd., 375 Spadina Ave., Toronto, Ont.

The Dominion Improvement & Development Co., Perth, Ont., Box 26.

The total shipments in 1911 were reported as 17,723 tons, valued at \$51,939, or an average of \$2.93 per ton, as compared with shipments of 15,809 tons, valued at \$47,667, or an average of \$3.02 per ton, in 1910.

The greater part of the shipments are exported to the United States, the exports of feldspar in 1911 being reported as 16,150 tons, valued at \$56,085, or an average value per ton of \$3.47.

Practically no feldspar is ground in Canada, the output being exported crude; while Canadian requirements of ground feldspar are imported chiefly from the United States.

The annual imports are not separately shown by the Customs reports but probably exceed 2,000 tons.

Statistics of the production and exports of feldspar are shown in the following table.

Production and Exports of Feldspar.

Calendar Year.	PRODUCTION.		EXPORTS.	
	Tons.	Value	Tons.	Value.
		\$		\$
1890.....	700	3,500		
1891.....	685	3,425		
1892.....	175	525		
1893.....	575	4,525	50	500
1894.....	Nil.	Nil.	Nil.	Nil.
1895.....		*2,545		2,545
1896.....	972	*2,583	972	2,583
1897.....	1,400	3,290	3,078	5,637
1898.....	2,500	6,250	1,542	4,396
1899.....	3,000	6,000	1,757	5,126
1900.....	318	1,112	379	1,116
1901.....	5,350	10,700	4,367	10,973
1902.....	7,576	15,152	7,374	13,708
1903.....	13,928	18,966	13,760	23,319
1904.....	11,083	22,166	13,960	29,263
1905.....	11,700	23,400	9,161	27,660
1906.....	16,948	40,890	18,183	60,312
1907.....	12,584	29,819	12,068	37,932
1908.....	7,877	21,099	9,524	34,045
1909.....	12,783	40,383	10,834	35,234
1910.....	15,809	47,667	15,601	47,962
1911.....	17,723	51,939	16,150	50,085

* Exports.

GRAPHITE.¹

The total shipments of graphite in 1911 were returned as 1,269 tons, valued at \$69,576, being all refined or milled graphite. The average price per ton was \$54.83, or 2.74 cents per pound.

In 1910 the total shipments of graphite were 1,392 tons, valued at \$74,087, comprising 245 tons of crude graphite, valued at \$2,450, and 1,147 tons of refined graphite, valued at \$71,637, an average of \$62.46 per ton, or 3.12 cents per pound for the refined.

In 1909, the shipments were 864 tons of refined product, valued at \$47,800, an average of \$55.32 per ton. The 1908 shipments totalled 251½ tons, valued at \$5,565, comprising 250 tons of crude, valued at \$5,400, and 1½ tons of refined graphite, valued at \$165; while the 1907 shipments included 459 tons of crude mineral, valued at \$11,000, and 120 tons of refined product, valued at \$5,000.

Statistics of annual production since 1886 are shown in Table 1.

GRAPHITE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	500	4,000	1899.....	1,130	24,179
1887.....	300	2,400	1900.....	1,922	31,040
1888.....	150	1,200	1901.....	2,210	38,780
1889.....	242	3,160	1902.....	1,095	23,300
1890.....	175	5,200	1903.....	728	23,745
1891.....	260	1,560	1904.....	452	11,760
1892.....	167	3,763	1905.....	541	16,735
1893.....	Nil.	Nil.	1906.....	387	18,300
1894*.....	3	223	1907.....	579	16,000
1895.....	220	6,150	1908.....	251½	5,565
1896.....	139	9,455	1909.....	864	47,800
1897.....	486	16,240	1910.....	1,392	74,087
1898.....		13,698	1911.....	1,269	69,576

* Exports.

The graphite shipments in 1911 comprised 374 tons, valued at \$33,084, from mills in the Buckingham district, Province of Quebec, and 895 tons, valued at \$36,492, from mills at Calabogie and Port Elmsley, Ontario.

The total value of the exports of graphite in 1911 are reported as \$77,205. The exports are classified as crude ore and concentrates and manufactures of plumbago. The ore and concentrates exported in 1911 are given as 813 tons, valued at \$43,249, and manufactures of plumbago, valued at \$33,956. Of the ore and concentrates exported 30 tons, valued at \$3,631, were reported as shipped

¹A special bulletin on graphite has been published by the Mines Branch, entitled "Graphite: its Properties, Occurrences, Refining, and Uses," by Fritz Cirkel, Mines Branch, Department of Mines, 1907.

to Great Britain; 752 tons, valued at \$36,295, to the United States, and 31 tons, valued at \$3,323, to other countries.

The manufactures of plumbago exported included \$2,289 to Great Britain, \$30,062 to the United States, and \$1,605 to other countries.

GRAPHITE.—TABLE 2.
Exports of Graphite.

Year.	CRUDE ORE AND CONCENTRATES.		MANUFACTURES.	Total value.
	Tons.	Value.	Value.	
		\$	\$	\$.
1886				3,586
1887				3,017
1888				1,080
1889				538
1890				1,529
1891				72
1892				3,952
1893	1	38	10	48
1894	3	223		223
1895	544	4,803	30	4,833
1896	136	9,126	354	9,480
1897	205	2,988	1,337	4,325
1898	591	11,527	1,571	13,098
1899	1,237	19,326	3,164	22,490
1900	1,550	40,132	6,065	46,197
1901	1,194	30,535	4,567	35,102
1902	886	23,097	1,742	24,839
1903	412	26,230	17,412	43,642
1904	177	9,609	6,958	16,567
1905	254	7,596	518	8,114
1906	106	2,468	5,274	7,742
1907	121	3,036	2,847	5,883
1908	385	10,158	876	11,034
1909	1,004	52,438	864	53,302
1910	788	53,008	66,658	119,666
1911	813	43,249	33,956	77,205

Statistics of imports of graphite into Canada, given in Table 3, show an importation principally of manufactured graphite products, to a value of \$111,869 during the fiscal year 1911, and a valuation of \$99,997 during the previous fiscal year.

The imports of graphite during the calendar year 1911 were valued at \$112,946, and comprised: plumbago, not ground, \$4,940; black lead, \$14,172; plumbago, ground, and manufactures, \$37,042; and crucibles, clay or plumbago, \$56,814.

The imports of graphite during the calendar year 1910 were valued at \$112,853, and comprised: plumbago, not ground, \$4,867; black lead, \$10,048; plumbago, ground, and manufactures, \$45,042; and crucibles, clay or plumbago, \$52,896.

GRAPHITE.—TABLE 3.

Imports of Raw and Manufactured Graphite.

Fiscal Year.	Plumbago not ground.	Black lead.	Ground and manufactures.	Crucibles, clay or plumbago.	Total.
	\$	\$	\$	\$	
1880.....	1,677	18,055	2,738		22,470
1881.....	2,479	26,544	1,202		30,225
1882.....	1,028	25,132	2,181		28,341
1883.....	3,147	21,151	2,141		26,439
1884.....	2,891	24,002	2,152		29,045
1885.....	3,729	24,487	2,805		31,021
1886.....	5,522	23,211	1,408		30,141
1887.....	4,020	25,766	2,830		32,616
1888.....	3,802	7,824	22,604		34,230
1889.....	3,546	11,852	21,789		37,187
1890.....	3,441	10,276	26,605		40,322
1891.....	7,217	8,292	26,201		41,710
1892.....	2,938	13,560	23,085		39,633
1893.....	3,293	18,595	23,051		42,939
1894.....	2,177	17,614	15,196	1,490	36,477
1895.....	2,586	13,922	16,361	5,627	38,496
1896.....	2,865	18,434	12,090	7,407	40,796
1897.....	1,406	17,863	14,768	5,906	39,943
1898.....	1,862	19,638	20,120	12,533	54,153
1899.....	4,979	21,334	22,140	14,350	62,803
1900.....	4,437	22,078	17,869	20,571	64,955
1901.....	2,357	25,646	11,016	33,874	77,893
1902.....	3,649	20,467	15,021	23,635	67,772
1903.....	2,870	22,559	12,493	34,024	72,546
1904.....	1,802	26,053	12,737	23,773	69,365
1905.....	2,499	30,743	13,192	31,353	77,787
1906.....	2,791	33,907	19,058	32,950	88,706
1907 (9 mos.).....	3,176	16,646	13,740	27,271	60,833
1908.....	3,030	9,042	31,428	40,092	83,592
1909.....	1,408	11,009	26,918	37,213	76,548
1910.....	5,223	11,930	39,815	43,029	99,997
1911.....	4,300	10,728	43,733	53,108	111,869

The market for graphite in Great Britain is to some extent indicated by the imports into that country which are shown as follows:—

Imports of Plumbago into Great Britain,¹ 1910 and 1911.

	1910.			1911.		
	Tons (short.)	Value.	Value per ton.	Tons (short.)	Value.	Per ton.
		\$	\$		\$	\$
Germany.....	2,989	109,636	36.7	3,020	119,301	39.5
France.....	462	46,394	100.4	1,209	116,795	96.6
Italy.....	1,054	20,328	19.3	986	18,523	18.8
Austria-Hungary.....	381	17,053	44.7	226	9,193	40.7
Japan.....	3,615	95,801	26.5	2,893	79,015	27.3
United States.....	476	83,392	112.2	284	29,677	104.5
Other foreign countries.....	339	11,967	36.3	823	32,826	39.9
British India.....	2,035	127,288	62.6	1,827	104,336	57.1
Ceylon and dependencies.....	6,837	577,420	84.5	6,426	598,746	95.8
Australia.....	18	3,407	189.2	16	720	46.0
Canada.....	138	13,620	134.9	76	7,388	97.2
Other British possessions.....	8	306	38.2	11	448	40.7
Total.....	18,352	1,081,612	58.9	17,797	1,116,968	62.7

¹ British Trade Report, 1911.

Prices of refined graphite in London, as quoted in the "Mining Journal" of December, 1911, were as follows:—

PURIFIED MILLED AND GROUND.

Ceylon,	97 to 99 per cent	£59 to £63 per ton	f. o. b. London.
"	90 to 91 "	40 to 42 "	" "
"	80 to 81 "	30 to 32 "	" "
"	70 to 71 "	27 to 28 "	" "
American, large flake,		45 to 49 "	" "
" small "		35 to 45 "	" "

Following is a list of the principal firms operating graphite mines:—

Operator.	Location of mine.	Address.
Graphite Limited.....	Amherst Tp., Que.....	Montreal, Que., Board of Trade Bldg.
The Bell Graphite Co., Ltd....	Buckingham Tp., Que....	Buckingham, Que., Box 185.
Buckingham Graphite Co., Ltd.	" "	Buckingham, Que.
Dominion Graphite Co., Ltd...	" "	Toronto, 7 & 9 King St., East.
Peerless Graphite Co.....	" "	Rochester, N. Y., 205 Main West.
The Canadian Graphite Co., Ltd.	Wentworth Tp., Que.....	Montreal, Que., 207 Coristine Bldg.
Black Donald Graphite Co., Ltd.....	Brougham Tp., Ont.....	Calabogie, Ont.
Globe Refining Co.....	N. Burgess Tp., Ont.....	Ottawa, Ont., 175 Cooper St.
The Virginia Graphite Co.....	Monmouth Tp., Ont.....	Wilberforce, Ont.
The Black Prince Graphite Mining Co.....	Renfrew Co., Ont.....	Ottawa, 'Citizen' Bldg.

ARTIFICIAL GRAPHITE.

The manufacture of artificial graphite in electric furnaces has been carried on for some years at Niagara Falls, New York, by the International Atcheson Graphite Company. A plant has also been established on the Canadian side of the river, and the production of artificial graphite, during 1911, is reported as 2,172,098 pounds, as compared with 2,442,166 pounds in 1910 and 513,436 pounds in 1909.

GYPSUM.

Gypsum has been extensively quarried or mined for many years in the Provinces of Nova Scotia and New Brunswick and to a lesser extent in the Province of Ontario. During the past twelve years the gypsum deposits north of Lake St. Martin, Manitoba, have been operated with a growing annual production. The existence of several gypsum deposits in British Columbia has been known for some years, and in 1911 some development work was done and the first shipments made.

The total shipments of gypsum products in 1911, including crude, ground, and calcined gypsum, were 518,383 tons, valued at \$993,394, as compared with 525,246 tons, valued at \$934,446, in 1910, a slight decrease in quantity, and an increase of 6 per cent in total value.

The total quantity of crude gypsum mined in 1911 was 515,979 tons, as compared with 548,019 tons in 1910. The quantity calcined in 1911 was reported as 76,718 tons, compared with 69,889 tons in 1910. The total shipments in 1911 included 449,823 tons of crude gypsum, valued at \$481,077, or an average value of \$1.07 per ton; 7,149 tons of ground gypsum, valued at \$23,125, or an average value of \$3.23 per ton; and 61,411 tons of calcined gypsum, valued at \$489,192, or an average value of \$7.97 per ton. The total shipments in 1910 included 469,573 tons of crude gypsum, valued at \$508,686, or an average value of \$1.08 per ton; 6,121 tons of ground gypsum, valued at \$17,390, or an average of \$2.84 per ton; and 49,552 tons of calcined gypsum, valued at \$408,370, or an average value of \$8.24 per ton.

The total quantity of gypsum mined and the total quantity calcined during the past seven years are shown hereunder.

Year.	Total gypsum mined.	Gypsum calcined.
	Tons.	Tons.
1905.....	443,569	26,855
1906.....	492,759	28,831
1907.....	489,962	34,752
1908.....	375,444	48,727
1909.....	493,086	63,670
1910.....	548,019	69,889
1911.....	515,979	76,718

A very large part of the gypsum mined is shipped in lump form as quarried to calcining mills in the United States. From 8,000 to 10,000 tons are ground for use as land plaster, etc., while the balance, nearly 15 per cent, in 1911, is calcined in Canada for the manufacture of plaster of Paris, wall plaster, and other products. Crude gypsum is also used in the manufacture of Portland cement.

The United States tariff on gypsum was reduced in August, 1909, that on crude gypsum from 50 cents a ton to 30 cents a ton, and on ground or calcined gypsum from \$2.25 per ton to \$1.75 per ton.

The present United States tariff on gypsum and gypsum products is defined in the following clause:—

“Plaster rock or gypsum, crude, thirty cents per ton; if ground or calcined, one dollar and seventy-five cents per ton; pearl hardening for paper makers' use, twenty per centum ad valorem; Keen's cement or other cement of which gypsum is the component material of chief value; if valued at ten dollars per ton or less, three dollars and fifty cents per ton; if valued above ten dollars and not above fifteen dollars per ton, five dollars per ton; if valued above fifteen and not above thirty dollars per ton, ten dollars per ton; if valued above thirty dollars per ton, fourteen dollars per ton.”

Detailed statistics of the production and sales of crude, crude ground, and calcined gypsum, during the past seven years, are shown in Table 1; while the total annual sales of gypsum products since 1886, are shown in Table 2, and the sales by provinces in Table 3.

GYPSUM.—TABLE 1.

Sales and Shipments of Crude, Ground, and Calcined Gypsum, 1905-1911.

Calendar Year.	CRUDE (LUMP).			CRUDE GROUND.		
	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
1905.....	412,155	409,146	0 99	3,255	8,779	2 70
1906.....	442,132	473,960	1 07	3,195	9,823	3 07
1907.....	454,668	473,831	1 04	6,782	16,268	2 42
1908.....	298,188	307,532	1 03	9,504	25,468	2 68
1909.....	423,474	457,038	1 08	8,814	26,159	2 97
1910.....	469,573	503,686	1 08	6,121	17,390	2 84
1911.....	449,823	481,077	1 07	7,149	23,125	3 23

Calendar Year.	CALCINED.			TOTAL SALES.		
	Tons.	Value.	Per ton.	Tons.	Value	Per ton.
		\$	\$ cts.		\$	\$ cts.
1905.....	26,748	168,243	6 29	442,158	586,168	1 32
1906.....	23,695	159,511	6 73	469,022	643,294	1 37
1907.....	24,521	156,815	6 40	485,921	646,914	1 33
1908.....	33,272	242,701	7 29	340,964	575,701	1 69
1909.....	40,841	326,435	7 99	473,120	809,632	1 71
1910.....	49,552	408,370	8 24	525,246	934,446	1 78
1911.....	61,411	489,192	7 97	518,333	993,394	1 92

GYPSUM.—TABLE 2.

Annual Production of Gypsum Products.

Calendar Year.	Tons.	Value.	Per ton.	Calendar Year.	Tons	Value.	Per ton.
		\$	\$ cts.			\$	\$ cts.
1886.....	162,000	178,742	1 10	1899.....	244,566	257,329	1 05
1887.....	154,008	157,277	1 02	1900.....	252,101	259,009	1 02
1888.....	175,887	179,393	1 01	1901.....	295,799	340,148	1 16
1889.....	213,273	205,108	0 96	1902.....	333,599	379,479	1 14
1890.....	226,509	194,033	0 86	1903.....	314,489	388,459	1 24
1891.....	203,605	206,251	1 01	1904.....	345,961	373,474	1 08
1892.....	241,048	241,127	1 00	1905.....	442,158	586,168	1 32
1893.....	192,568	196,150	1 02	1906.....	469,022	643,294	1 37
1894.....	223,631	202,031	0 90	1907.....	485,921	646,914	1 33
1895.....	226,178	202,608	0 89	1908.....	340,964	575,701	1 69
1896.....	207,032	178,061	0 86	1909.....	473,129	809,632	1 71
1897.....	239,091	244,531	1 02	1910.....	525,246	934,446	1 78
1898.....	219,256	232,515	1 06	1911.....	518,383	993,394	1 92

GYPSUM.—TABLE 3.

Annual Production by Provinces.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		MANITOBA..		BR. COLUMBIA.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$		\$
1887....	116,346	116,346	29,102	29,216	8,560	11,715				
1888....	124,818	120,429	44,369	48,764	6,700	10,200				
1889....	165,026	142,850	40,866	49,130	7,332	13,128				
1890....	181,285	154,972	39,024	30,986	6,200	8,075				
1891....	161,934	153,955	36,011	33,996	5,660	18,300				
1892....	197,019	170,021	39,709	65,707	4,320	5,399				
1893....	152,754	141,111	36,916	41,846	2,898	10,193				
1894....	168,300	147,644	52,902	48,200	2,369	6,187				
1895....	156,809	133,929	66,949	63,839	2,420	4,340				
1896....	136,590	111,251	67,137	59,024	3,305	7,786				
1897....	155,572	121,754	82,653	118,116	1,461	4,661				
1898....	132,096	106,610	86,083	121,704	1,087	4,201				
1899....	126,754	102,055	116,792	151,296	1,020	3,978				
1900....	133,712	108,828	112,294	145,850	1,095	4,331				
1901....	170,100	136,947	121,595	189,709	1,504	5,692	600	7,900		
1902....	206,087	181,425	121,041	170,163	1,917	7,699	1,554	20,202		
1903....	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510		
1904....	218,580	153,600	190,991	187,524	2,390	13,350	4,000	14,000		
1905....	272,252	298,248	163,553	232,586	1,853	23,834	4,500	31,500		
1906....	333,312	345,414	131,246	250,960	2,965	24,420	3,200	22,500		
1907....	357,411	380,859	118,106	213,638	10,404	52,417				
1908....	234,455	230,433	81,620	191,312	10,389	42,466	14,500	111,500		
1909....	345,682	364,379	98,716	226,975	11,731	48,278	17,000	170,000		
1910....	400,455	438,638	90,236	213,579	15,055	67,229	19,500	195,000		
1911....	353,999	406,459	93,205	115,044	27,399	98,018	43,000	372,000	780	1,875

Exports and Imports.—Statistics of exports and imports of gypsum as compiled from the Reports of Trade and Navigation are shown in Tables 4, 5, and 6. The exports of gypsum during the calendar year 1911 were 362,102 tons valued at \$425,161, or an average value of \$1.17 per ton, as compared with exports of 346,081 tons, valued at \$416,725, or an average of \$1.15 per ton, in 1910.

There was also an export of ground gypsum in 1911 valued at \$4,429, as compared with an export valued at \$12,306 in 1910. The exports of crude gypsum since 1874 are shown in Table 4 and of ground gypsum since 1890 in Table 5.

The imports of gypsum during the calendar year 1911 totalled 32,234 tons, valued at \$205,782, and included: crude gypsum 2,035 tons, valued at \$11,792, or \$5.79 per ton; ground gypsum 1,681 tons, valued at \$3,619, or \$2.15 per ton; and plaster of Paris 28,518 tons, valued at \$190,371, or \$6.68 per ton.

The imports during the calendar year 1910 totalled 38,006 tons, valued at \$169,798, and included: crude gypsum, 12,271 tons, valued at \$21,073, or \$1.72 per ton; ground gypsum, 6,690 tons, valued at \$13,242, or \$1.98 per ton, and plaster of Paris, 19,045 tons, valued at \$135,483, or \$7.11 per ton. The record given in Table 6 covers the fiscal year.

The imports of gypsum previous to 1905 were comparatively small; since that year, however, the imports, particularly of plaster of Paris, have increased considerably. During the past six years the imports of plaster of Paris have increased from 6,000 tons to 28,500 tons per annum, whereas formerly the imports ranged from 150 to 720 tons annually. The imports classed as "crude" and "ground" have varied considerably, not only in quantity but also in grade of product judging by the difference in average values.

GYPSUM.—TABLE 4.
Exports of Crude Gypsum.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1874.....	67,830	68,164					67,830	68,164
1875.....	86,065	86,193	5,420	5,420			91,485	91,613
1876.....	87,720	87,590	4,925	6,616	120	180	92,765	94,386
1877.....	106,950	93,867	5,030	5,030			111,980	98,897
1878.....	83,631	76,695	16,335	16,435	489	675	105,455	93,805
1879.....	95,623	71,353	8,791	8,791	579	720	104,993	80,864
1880.....	125,685	111,833	10,375	10,987	875	1,240	136,935	124,060
1881.....	110,303	100,234	10,310	15,025	657	1,040	121,270	116,349
1882.....	133,426	121,070	15,597	24,581	1,249	1,946	150,272	147,597
1883.....	145,448	132,834	20,242	35,557	462	837	166,152	169,228
1884.....	107,653	100,446	21,800	32,751	688	1,254	130,141	131,451
1885.....	81,887	77,898	15,140	27,730	525	787	97,552	100,415
1886.....	118,985	114,116	23,498	40,559	350	538	142,833	155,213
1887.....	112,557	106,910	19,942	39,295	225	337	132,724	146,542
1888.....	124,818	120,429	20	50	670	910	125,508	121,389
1889.....	146,204	142,850	31,495	50,862	483	692	178,182	194,404
1890.....	145,452	139,707	30,034	52,291	205	256	175,691	192,254
1891.....	143,770	140,438	27,536	41,350	5	7	171,311	181,795
1892.....	162,372	157,463	27,488	43,623			189,860	201,086
1893.....	132,131	122,556	30,061	36,706			162,192	159,262
1894.....	119,569	111,586	40,843	46,538			160,412	158,124
1895.....	133,369	125,651	56,117	67,593			189,486	193,244
1896.....	115,331	109,034	64,946	77,535			181,277	186,539
1897.....	122,984	116,665	66,222	80,485			189,206	197,150
1898.....	99,215	93,474	70,309	81,433			169,614	174,907
1899.....	104,795	99,934	96,831	108,094	3 ¹ / ₂	12	201,626	208,090
1900.....							188,262	201,912
1901.....							236,247	231,594
1902.....							289,600	295,215
1903.....							237,496	311,530
1904.....							298,211	316,436
1905.....							359,246	388,474
1906.....							404,464	462,814
1907.....							375,026	424,794
1908.....							290,091	324,574
1909.....							315,201	372,286
1910.....							346,081	416,725
1911.....							362,102	425,161

* Exported from British Columbia.

GYPSUM.—TABLE 5.
Exports of Ground Gypsum.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1890.....	105	1898.....	6,448	1905.....	2,673
1891.....	588	1899.....	8,123	1906.....	2,934
1892.....	20,255	1900.....	19,834	1907.....	557
1893.....	22,132	1901.....	15,337	1908.....	9,765
1894.....	20,054	1902.....	5,101	1909.....	2,737
1895.....	22,233	1903.....	12,457	1910.....	12,306
1896.....	21,267	1904.....	2,333	1911.....	4,429
1897.....	6,763				

GYPSUM.—TABLE 6.

Imports of Gypsum.

Fiscal Year.	CRUDE GYPSUM.		GROUND GYPSUM.		PLASTER OF PARIS.	
	Tons.	Value.	Lbs.	Value.	Lbs.	Value.
		\$		\$		\$
1880.....	1,854	3,203	1,606,578	5,948	667,676	2,376
1881.....	1,731	3,442	1,544,714	4,676	574,006	2,864
1882.....	2,132	3,761	759,460	2,576	751,147	4,184
1883.....	1,384	3,001	1,017,905	2,579	1,448,650	7,867
1884.....		3,416	687,432	1,936	782,920	5,226
1885.....	1,353	2,354	461,400	1,177	689,521	4,809
1886.....	1,870	2,429	224,119	675	826,273	5,463
1887.....	1,557	2,492	13,266	73	594,146	4,342
1888.....	1,236	2,193	106,068	558	942,338	6,662
1889.....	1,360	2,472	74,390	372	1,173,996	8,513
1890.....	1,050	1,928	494,400	2,136	693,435	6,004
1891.....	376	640	36,500	215	1,035,605	8,412
1892.....	626	1,182	310,250	2,149	1,166,200	5,595
1893.....	496	1,014	140,830	442	552,130	3,143
1894.....		1,660	23,270	198	422,700	2,386
1895.....	603	960	20,700	88	259,200	1,619
1896.....	1,045	848	64,500	198	297,000	2,000
1897.....		772	45,000	123	969,900	4,439
1898.....	1,147	1,742	35,700	293	329,600	2,025
1899.....	325	692	33,900	338	496,300	3,120
1900.....	77	958	6,300	69	849,100	6,492
1901.....	286	1,125	65,400	1,097	502,200	3,978
1902.....	541	1,697	56,700	249	475,300	2,641
1903.....	1,076	2,187	68,700	228	630,800	3,599
1904.....	249	663	106,800	559	625,100	2,385
1905.....	2,344	7,336	2,255,700	2,681	7,924,100	37,643
1906.....	6,332	22,008	1,968,600	1,799	12,866,500	43,742
1907 (9 mos).....	9,189	23,410	609,600	1,619	19,849,400	58,364
1908.....	9,393	36,510	382,500	1,781	15,020,000	51,328
1909.....	10,317	35,268	6,286,200	5,765	17,009,000	64,849
1910.....	3,790	12,137	21,417,000	17,402	42,095,700	123,965
1911.....	12,500	22,372	13,764,300	12,298	38,562,800	135,837

Crude gypsum, duty free. Ground gypsum, duty 15 per cent. Plaster of Paris, duty 12½c. per 100 lbs.

The Province of Nova Scotia is the largest producer of gypsum. In both this Province and New Brunswick, the deposits are extensive and the facilities for water shipment to United States ports unexcelled. The total quantity of crude gypsum mined in Nova Scotia in 1911, was 337,605 tons, as compared with 438,131 tons in 1910; 357,813 tons in 1909; 254,540 tons in 1908, and 351,611 tons in 1907: of the total in 1911, about 86 per cent was mined from quarries in Hants county at Windsor, Walton, Cheverie, Noel, etc., the balance being quarried at St. Ann, Victoria county, and Cheticamp, Inverness county. The greater part of the gypsum ground was shipped crude, chiefly to United States mills. Two calcining mills were operated in the Province; one at Windsor and the other at Eastern Harbour, C.B., and the total shipments of calcined gypsum were 14,272 tons, as against 7,028 tons in 1910.

In New Brunswick the principal operating quarries are located at Hillsborough, some production being also made from the Tobique-River deposits at Plaster Rock, in Victoria county. The total crude gypsum mined in the Province in 1911, was 92,446 tons, as against 97,867 tons in 1910 and 99,539 tons in 1909. About 98 per cent of the output was shipped crude, either in lump or ground, and the balance calcined, the calcined product finding a market throughout Canada.

The production of both crude and calcined gypsum was greatly reduced in New Brunswick, in 1911, owing to the unfortunate destruction by fire of the mill of the Albert Manufacturing Company at Hillsborough, the re-building of which was not completed during the year.

In Ontario, 32,148 tons were reported as having been mined during 1911, as compared with 12,021 tons in 1910. The total sales in 1911, including crude, ground, calcined gypsum, were 27,399 tons, valued at \$98,018. The sales include a quantity of alabastine manufactured by one firm, and valued at about \$50 per ton.

The production of gypsum in Manitoba has continued to increase steadily each year, and in 1911 the value of the shipments was second only to those of Nova Scotia. A second mill has been constructed in this Province by the Dominion Gypsum Company of Winnipeg, but was not placed in operation until the last month of the year. The total quantity of gypsum mined in 1911 was 53,000 tons, as against 25,000 tons in 1910, and 22,000 tons in 1909. The shipments in 1911 were 43,000 tons chiefly calcined gypsum, valued at \$372,000, as against 19,500 tons, valued at \$195,000, in 1910.

It is interesting to note that a production is reported for the first time from British Columbia, the shipments being 780 tons, valued at \$1,875. The deposits worked are situated near Merritt, B.C., and were operated by Mr. Geo. Schumacker, 703 Bower Bldg., Vancouver. The shipments were sent out as trial lots to cement works at Calgary and Blairmore, Alberta, and Tod Inlet, B.C.

It is proposed to erect a calcining plant and plaster mill in 1912.

Following is a list of the principal active operators.

Location of quarry.	Name of operator.	Address.
St. Ann, N.S.	Victoria Gypsum Mining and Mfg. Co.	Quarry, St. Ann, N.S.
Cheticamp, N.S.	Great Northern Mining and Ry. Co., Ltd.	Eastern Harbour, N.S.
Cheverie and Walton, N.S.	Albert Parsons	Walton, N.S.
Newport Station, N.S.	Windsor Gypsum Co.	Windsor, N.S.
Eagle Swamp, N.S.	Wentworth Gypsum Co., Ltd.	"
Bartons, N.S.	Windsor Plaster Co., Ltd.	"
Threemile Plains, N.S.	Nova Scotia Gypsum Co., Ltd.	Threemile Plains, N.S.
Nappau, N.S.	Maritime Gypsum Co., Ltd.	New York, 381 Fourth Ave.
Noel, N.S.	Noel Plaster Co.	Noel, N.S.
Avondale, N.S.	Newport Plaster Mining and Mfg. Co.	Windsor, N.S.
McKinnon Harbour, N.S.	Newark Plaster Co.	McKinnon Harbour, N.S.
Hillsborough, N.B.	Hillsboro Plaster Co.	Windsor, N.S.
Hillsborough, N.B.	Albert Manufacturing Co.	Hillsborough, N.B.
Tobique River, N.B.	John E. Stewart	Andover, N.B.
Plaster Rock, N.B.	The Stinson-Reeb Builders Supply Co.	Montreal, Que.
Caledonia, Ont.	Alabastine Co., Paris, Ltd.	Paris, Ont.
"	The Caledonia Gypsum Co., Ltd.	Hamilton, 501 Bk. of Ham- ilton Bldg.
"	Wm. Smith	Caledonia, Ont., Box 83.
Oneida, Ont.	The Crown Gypsum Co.	" " 14.
Gypsumville, Man.	Dominion "	Winnipeg, Man., 407 Mc- Arthur Bldg.
"	Manitoba " Ltd.	Winnipeg, Man.
Merritt, B. C.	Dr. Geo. Schumacher	Vancouver, B. C., 708 Bower Bldg.

MANGANESE.

The only production of manganese reported in 1911 was that of the Nova Scotia Manganese Company at their mine at New Ross, Nova Scotia. This Company began operations in 1910 and during 1911 was engaged in the development of the mine and the construction of a mill. The only shipments made were 5½ tons of high grade pyrolusite, valued at \$300. A considerable tonnage of ore was mined and remained in stock during the year.

The manganese industry was at one time of considerable magnitude in the Provinces of Nova Scotia and New Brunswick, particularly during the decade between 1880 and 1890, the annual value of shipments ranging from \$30,000 to nearly \$50,000.

Pyrolusite or manganese peroxide is used as an oxidizer in the manufacture of chlorine, bromine, and oxygen, and of potassium ferromanganate; as a drier in paints and varnishes; as a decolorizer of glass; and in the manufacture of the dry and the Leclanche cells. As a colouring material, manganese is used in colouring glass, bricks, and pottery. Several manganese salts are used in drying cloth and as paints.

Statistics of the annual production of manganese ore are shown in Table 1, and of exports in Table 2.

The annual imports of oxide of manganese are shown in Table 3.

The exports in 1911 are reported as 4 tons, valued at \$225. The imports of manganese oxide during the calendar year 1911 were 1,924,520 pounds or 962 tons, valued at \$22,612, an average of \$23.50 per ton.

MANGANESE.—TABLE 1.
Annual Production.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		\$	¢			\$	¢
1886.....	1,789	41,499	23 20	1899.....	1,581	20,004	12 65
1887.....	1,245	43,658	35 07	1900.....	30	1,800	60 00
1888.....	1,801	47,944	26 62	1901*.....	440	4,820	10 95
1889.....	1,455	32,737	22 50	1902*.....	172	4,062	23 62
1890.....	1,323	32,550	24 51	1903.....	91	2,775	30 49
1891.....	255	6,694	26 25	1904.....	66	2,740	41 51
1892.....	115	10,250	89 13	1905*.....	22	1,720	78 18
1893.....	213	14,578	68 44	1906*.....	93	925	9 95
1894.....	74	4,180	56 49	1907*.....	1	22	22 00
1895.....	125	8,464	67 71	1908.....	Nil.		
1896*.....	123½	3,975	32 19	1909.....	Nil.		
1897*.....	15½	1,166	76 46	1910.....	Nil.		
1898.....	50	1,600	32 00	1911.....	5½	300	54 55

* Exports.

MANGANESE.—TABLE 2.
Exports of Manganese Ore.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1873.....	1,031	20,192	1893.....	133	12,521
1874.....	732	16,973	1894.....	56	3,120
1875.....	203	5,514	1895.....	108 3/8	6,351
1876.....	412	8,039	1896.....	123 5/8	3,975
1877.....	891	15,909	1897.....	15 3/8	1,166
1878.....	626	10,860	1898.....	11	325
1879.....	1,886	27,436	1899.....	70	2,410
1880.....	2,179	34,797	1900.....	34	1,720
1881.....	1,704	40,554	1901.....	440	4,820
1882.....	894	25,747	1902.....	172	4,062
1883.....	1,326	25,343	1903.....	135	1,889
1884.....	603	20,089	1904.....	123	2,706
1885.....	1,684	34,649	1905.....	22	1,720
1886.....	(a) 1,818	58,338	1906.....	93	925
1887.....	1,415	34,802	1907.....	1	22
1888.....	1,181	21,832	1908.....		
1889.....	1,436	29,350	1909.....	3	434
1890.....	1,906	36,831	1910.....	4	160
1891.....	255	6,694	1911.....	4	225
1892.....	143	8,205			

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

MANGANESE.—TABLE 3.
Imports:—Oxide of Manganese.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1884.....	3,989	258	1898.....	130,456	5,047
1885.....	36,778	1,794	1899.....	141,356	5,539
1886.....	44,967	1,753	1900.....	126,725	4,155
1887.....	59,655	2,933	1901.....	272,134	8,176
1888.....	65,014	3,022	1902.....	476,331	5,360
1889.....	52,241	2,182	1903.....	279,611	8,051
1890.....	67,452	3,192	1904.....	275,696	7,051
1891.....	92,087	3,743	1905.....	235,289	6,832
1892.....	76,097	3,530	1906.....	244,620	5,508
1893.....	94,116	3,696	1907 (9 mos.).....	386,404	11,087
1894.....	101,863	4,522	1908.....	732,242	17,863
1895.....	64,151	2,781	1909.....	382,137	6,561
1896.....	108,590	4,075	1910.....	810,529	13,048
1897.....	70,663	2,741	1911.....	1,471,462	18,347

MICA.

Mica is mined in Canada in the Provinces of Quebec and Ontario. In Quebec the deposits being worked are situated chiefly in the region to the north of the city of Ottawa, in the townships of Hull, Wakefield, Buckingham, Portland, and Templeton. The Ontario deposits being worked are included in an area lying directly east of the Kingston and Pembroke railway and are located chiefly in the townships of North Burgess and South Sherbrooke in Lanark county; South Burgess in Leeds county, and in Bedford and Loughborough in Frontenac county. Some considerable development has also been done on deposits in British Columbia, particularly at Big Bend on the Columbia river north of Donald, B.C.

These latter deposits, however, are not as yet provided with transportation facilities and consequently have not yet made any production.

Phlogopite or amber mica is the variety chiefly found and mined, although muscovite or white mica is also produced in small quantities.

The mica deposits of Canada have been the subject of a special monograph recently published by the Mines Branch.¹

The total production of mica in 1911 as reported by the producers was 590 tons, valued at \$128,677, comprising 217 tons, valued at \$69,465, from the Province of Quebec, and 373 tons, valued at \$59,212, from Ontario; the average value per ton of the Quebec shipments being \$320 and of the Ontario shipments, \$158.75. In 1910, the total production was reported as 758 tons valued at \$190,385, being 316 tons, valued at \$87,295, from Quebec, and 442 tons, valued at \$103,090, from Ontario.

These statistics represent as far as possible the quantities and values of mica shipped from the mines.

It should be pointed out, however, that the condition in which the mica is shipped, varies greatly in different mines. Thus, one operator may ship his output cleaned and trimmed while another may ship his in a rough cobbled state. Some operators, also, particularly those shipping to their own trimming works, place a merely nominal value upon the product as shipped from the mine. This explains in a measure the apparent anomaly of the exports having a higher value than the production.

¹ Mica, Its Occurrences, Exploitation, and Uses, by Hugh S. DeSchmid, M.E., Mines Branch, Department of Mines, 1912.

Mica, Rough and Thumb-trimmed, Reported as Shipped during 1909 and 1910.

Province.	1910			1911		
	Tons.	Value.	Value per ton.	Tons.	Value.	Value per ton.
		\$	\$ cts.		\$	\$ cts.
Quebec.....	316	87,295	276 25	217	69,465	320 12
Ontario.....	442	103,090	233 24	373	59,212	158 75
Total	758	190,385	251 17	590	128,677	218 10

MICA.—TABLE 1.
Annual Production.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1886.....	29,008	1895.....	65,000	1903.....	177,857
1887.....	29,816	1896.....	60,000	1904.....	160,777
1888.....	30,207	1897.....	76,000	1905.....	178,235
1889.....	28,718	1898.....	118,375	1906.....	303,913
1890.....	68,074	1899.....	163,000	1907.....	312,599
1891.....	71,510	1900.....	166,000	1908.....	139,871
1892.....	104,745	1901.....	160,000	1909.....	147,782
1893.....	75,719	1902.....	135,904	1910.....	190,385
1894.....	45,581			1911.....	128,677

Table 2 following gives the exports of mica from Canada since 1887 as compiled from the reports of the Customs Department.

MICA.—TABLE 2.
Exports.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Tons.	Value.
	\$		\$			\$
1887.....	3,480	1896.....	47,756	1904.....		198,482
1888.....	23,563	1897.....	69,101	1905.....		179,049
1889.....	30,597	1898.....	110,507	1906.....	912	581,919
1890.....	22,468	1899.....	158,002	1907.....	558	422,172
1891.....	37,590	1900.....	146,750	1908.....	290	198,839
1892.....	86,562	1901.....	152,553	1909.....	359	256,834
1893.....	70,081	1902.....	391,812	1910.....	469	330,903
1894.....	38,971	1903.....	196,020	1911.....	347	242,548
1895.....	48,525					

The destination of exports during the calendar years 1909, 1910, and 1911, was as follows: showing that United States continues to be the chief market for Canada's mica.

	1909		1910		1911	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
To Great Britain.....	31	24,316	87	37,787	67	53,203
To United States.....	325	229,689	378	291,533	278	188,201
To other countries.....	3	2,829	4	1,583	2	1,144
Total.....	359	256,834	469	330,903	347	242,548

For the purpose of illustrating the relative importance of the imports of Canadian mica into the United States, as compared with those from other countries which also supply part of the mica consumed in that country, the following table is given, while the market available in Great Britain is indicated by the statistics given in Table 4.

MICA.—TABLE 3.
Imports of Mica into the United States.¹

Year ending June 30.	IMPORTS FROM CANADA.		TOTAL IMPORTS FROM ALL COUNTRIES.	
	Short Tons.	Value.	Short Tons.	Value.
		\$		\$
1895.....	273	39,637	410	127,515
1896.....	310	57,908	632	214,997
1897.....	208	54,630	441	187,845
1898.....	233	53,854	313	94,294
1899.....	512	131,310	808	259,228
1900.....	549	136,981	1,019	314,882
1901.....	484	161,741	1,011	369,644
1902.....	437	184,287	903	384,818
1903.....	417	196,470	973	414,953
1904.....	287	137,191	693	306,937
1905.....	253	121,560	594	296,362
1906.....	539	323,991	1,206	731,484
1907.....	767	696,321	1,724	1,295,606
1908.....	172	140,166	655	567,550
1909.....	167	132,941	403	313,525
1910.....	434	333,196	1,008	682,539
1911.....	316	239,964	872	612,936

¹The Foreign Commerce and Navigation of the United States.

MICA.—TABLE 4.
Imports of Mica into Great Britain.*

	1909		1910		1911	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
		\$		\$		\$
Germany.....	75,264	13,349	131,152	22,333	108,752	20,204
German East Africa.....	68,320	15,009	10,864	1,859	.....	.....
United States.....	142,352	9,441	216,832	18,255	183,456	8,658
Brazil.....	4,032	793	224	212	.....	.....
Other foreign countries..	22,848	4,804	112,560	20,727	141,904	25,501
British India.....	2,604,224	480,700	2,513,056	453,685	2,889,152	496,410
Canada.....	67,424	30,791	152,992	49,566	119,168	39,561
Other British possessions	2,352	886	10,976	2,910	4,368	1,012
Total.....	2,986,516	555,773	3,148,656	560,449	3,446,800	591,436

* British Trade Report.

Following is a list of the principal firms engaged in mica mining:—

Operator.	Location of mine.	Address.
<i>Ontario:—</i>		
Kent Bros. & J. Stoness.....	Frontenac Co., Bedford Tp.....	Kingston.
H. & C. Campbell.....	" ".....	Perth Road.
S. H. Orser.....	" ".....	" "
J. W. Trousdale.....	" Loughboro Tp.....	Sydenham.
Kingston Feldspar and Mining Co., Ltd.....	" ".....	Kingston.
The Loughboro Mining Co., Ltd.	" ".....	Sydenham.
Scriven and Whyte.....	" ".....	" "
Wood, Solliday, and Freeman.....	" ".....	" "
The Birch Lake Mining Co.....	" ".....	" "
Sewell & Smith.....	Lanark Co., Burgess Tp.....	Micaville.
Dominion Improvement & Development Co.....	" ".....	Perth, Box 26.
R. McConnell.....	" ".....	Ottawa.
W. L. McLaren.....	" ".....	Perth.
John Mahon.....	" ".....	Rideau Ferry.
Thompson, Donnelly, & Gemmill.	" ".....	Perth.
Brockville Mining Co., Ltd.....	Leeds Co., S. Crosby Tp.....	Brockville.
<i>Quebec:—</i>		
W. Argall.....	Argenteuil Co., Wentworth Tp...	Laurel.
W. L. Parker.....	Labelle Co., Bigelow Tp.....	Buckingham.
Wm. Cleland.....	Ottawa Co., Cameron Tp.....	Bouchette.
Emile Joanis.....	" Egan Tp.....	Maniwaki.
Vavasour Mining Association...	" Hull Tp.....	Ottawa, Ont.
American Mica and Phosphate Co.....	" ".....	Minneapolis, 242 Temple Court.
R. J. McGlashan.....	" Wakefield Tp.....	Wilson Corners.
Henry T. Flynn.....	" Hull and Cameron Tps	Hull.
Kent Bros.....	" Hull and Wight Tps.	Kingston, Ont.
R. McConnell.....	" ".....	Ottawa, Ont.
O'Brien & Fowler (B. Winning)..	" E. Portland Tp.....	Cummings Bridge, Ont.
John Stewart.....	" Portland W. Tp.....	East Templeton
Mine Products, Ltd.....	" ".....	Toronto, Ont. 4 Richmond E.
Blackburn Bros.....	" Templeton Tp.....	Ottawa, Ont.
Wallingford Mica and Mining Co	" ".....	" "
Wallingford Bros., Ltd.....	" ".....	" "
Laurentide Mica Co., Ltd.....	" ".....	Hull.
Thos. J. Waters.....	" ".....	Ottawa, 155 Stewart St.
J. B. Gauthier.....	" Villeneuve Tp.....	Buckingham, Box 226.
J. B. Gorman.....	" ".....	" " 166.
<i>British Columbia:—</i>		
Big Bend Mica Mines, Ltd.....	12 miles N. of Donald, B.C.....	Calgary, Alta., 318 7th Ave., W.

MINERAL PIGMENTS.

Under this heading is included a record of the production of ochres and barytes.

OCHRES.

The production of ochres in 1911 included 1,622 tons, valued at \$24,333, or an average of about \$15 per ton, used for paint manufacture; and 2,000 tons, valued at \$4,000, shipped to gas works throughout Canada, a total production of 3,622 tons, valued at \$28,333. The production has varied very slightly during the past ten years.

The ochre used for the manufacture of paints is calcined and ground at the place of production, while that used for the purification of illuminating gas is shipped crude to gas companies.

Statistics of production since 1886 are shown in Table 1.

MINERAL PIGMENTS.—TABLE 1.
Annual Production of Ochres and Iron Oxides.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	350	2,350	1899.....	3,919	20,000
1887.....	485	3,733	1900.....	1,966	15,398
1888.....	397	7,900	1901.....	2,233	16,735
1889.....	794	15,280	1902.....	4,955	30,495
1890.....	275	5,125	1903.....	6,266	32,760
1891.....	900	17,750	1904.....	3,925	24,995
1892.....	390	5,800	1905.....	5,105	34,675
1893.....	1,070	17,710	1906.....	6,758	36,125
1894.....	611	8,690	1907.....	5,828	35,576
1895.....	1,339	14,600	1908.....	4,746	30,440
1896.....	2,362	16,045	1909.....	3,940	28,093
1897.....	3,905	23,560	1910.....	4,813	33,185
1898.....	2,226	17,450	1911.....	3,622	28,333

The working of ochre deposits is practically confined in Canada to one district, situated between Champlain and Three Rivers, in the Province of Quebec, a short distance back from the shore of the St. Lawrence river.

Numerous deposits of ochre are found in the Province of Quebec, but are not worked at present. In Ontario small quantities of ochre are occasionally mined from a deposit situated near Campbellville, and during 1911 a production of 10 tons, valued at \$160, was reported.

The following are the firms which are mining ochres in Canada:—

The Canada Paint Company, Ltd., Montreal, Que.

The Champlain Oxide Company, Three Rivers, Que.

Thos. H. Argall, Three Rivers, Que.

Ontario Mineral Paint Company, Campbellville, Ont.

The exports of iron oxides in 1911 were 2,000 tons, valued at \$27,070, as against 1,746 tons, valued at \$29,839, in 1910. The imports of pigments during the calendar year 1911 were: ochres and ochrey earth, and raw siennas, 1,477 tons, valued at \$32,032; oxides, dry fillers, fireproof umbers and burnt siennas, 722 tons, valued at \$21,060, or a total value of \$53,092. During 1910 the imports of the above classes were respectively valued at \$31,926 and \$23,467, or a total value of \$55,393.

MINERAL PIGMENTS.—TABLE 2.

Imports of Ochres and Pigments.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	571,454	6,544	1896.....	1,150,494	16,954
1881.....	677,115	8,972	1897.....	1,504,044	18,504
1882.....	731,526	8,202	1898.....	2,126,592	26,307
1883.....	898,376	10,375	1899.....	2,444,698	31,092
1884.....	533,416	6,398	1900.....	2,474,537	32,017
1885.....	1,119,177	12,782	1901.....	2,092,067	27,267
1886.....	1,100,243	12,267	1902.....	2,530,743	33,909
1887.....	1,460,128	17,067	1903.....	3,215,346	42,243
1888.....	1,725,460	17,664	1904.....	2,767,580	36,636
1889.....	1,342,783	12,994	1905.....	3,122,690	35,837
1890.....	1,394,811	14,066	1906.....	4,321,530	57,397
1891.....	1,528,696	20,550	1907 (9 mos.).....	2,926,528	39,675
1892.....	1,708,645	22,908	1908.....	3,749,132	39,923
1893.....	1,968,645	23,134	1909.....	2,122,781	27,540
1894.....	1,358,326	13,951	1910.....	3,683,344	44,190
1895.....	793,258	12,048	1911.....	4,160,769	54,022

	Duty.	1910.		1911.	
		Lbs.	\$	Lbs.	\$
Ochres and ochrey earths and raw siennas.....	20 %	1,988,758	21,426	2,576,261	31,736
Oxides, dry fillers, fireproofs, umbers and burnt siennas N.E.S.....	25 %	1,694,586	22,764	1,584,508	22,286
Total.....		3,683,344	44,190	4,160,769	54,022

MINERAL PIGMENTS.—TABLE 3.

Exports of Mineral Pigments, Iron Oxides, etc.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1897.....	512	7,706	1905.....	353	7,704
1898.....	283	4,227	1906.....	139	2,379
1899.....	308	5,408	1907.....	191	10,043
1900.....	651	7,154	1908.....	125	4,850
1901.....	401	8,233	1909.....	658	7,956
1902.....	352	6,182	1910.....	1,746	29,839
1903.....	676	12,770	1911.....	2,000	27,070
1904.....	416	7,260			

BARYTES.

The only production of barytes reported for 1911 was from Lake Ainslie, Cape Breton, the shipments being 50 tons, valued at \$400. This district is well known for its deposits of sulphate of barium, considerable shipments having been made in past years of the crude mineral to grinding plants at Halifax, Montreal, and New York. Properties at Scottsville and East Lake Ainslie, have been leased by Barytes Limited, under the management of Mr. H. H. Harrison, and during six months of 1911 the Company was engaged in the development of the mine and in the construction of a refining plant for the manufacture of ground barytes. The refining plant was not placed in operation until late in the year, but it is expected that a considerable tonnage will be ground during 1912. It is claimed that the product assays from 96 to 98 per cent barium sulphate.

The Bass River mine at Five Islands, Nova Scotia, was not operated during the year.

Statistics of production since 1885 are shown in Table 4, and imports in Table 5. Statistics of imports of barytes have not been separately shown by the Customs Department since 1890, but the imports of blanc fixe (artificial sulphate of barium), and satin white, during the twelve months ending March, 1910, amounted to 629 tons, valued at \$14,735, and during the twelve months ending March 1911, 1,212 tons, valued at \$26,797.

MINERAL PIGMENTS.—TABLE 4.

Annual Production of Barytes.

Calendar Year.	Tons.	Value.	Average Value.	Calendar Year.	Tons.	Value.	Average Value.
		\$	\$ cts.			\$	\$ cts.
1885.....	300	1,500	5 00	1899.....	720	4,402	6 11
1886.....	3,864	19,270	4 98	1900.....	1,337	7,605	5 69
1887.....	400	2,400	6 00	1901.....	653	3,842	5 89
1888.....	1,100	3,850	3 50	1902.....	1,096	3,957	3 61
1889.....				1903.....	1,163	3,931	3 38
1890.....	1,842	7,543	4 09	1904.....	1,382	3,702	2 68
1891.....				1905.....	3,360	7,500	2 23
1892.....	315	1,260	4 00	1906.....	4,000	12,000	3 00
1893.....				1907.....	1,344	3,000	2 23
1894.....	1,081	2,830	2 62	1908.....	4,312	19,021	4 41
1895.....				1909.....	179	1,120	6 26
1896.....	145	715	4 93	1910.....			
1897.....	571	2,060	5 36	1911.....	50	400	8 00
1898.....	1,125	5,533	4 92				

MINERAL PIGMENTS.—TABLE 5.

Imports of Barytes.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		\$			\$
1880.....	2,230	1,525	1886.....		62
1881.....	3,740	1,011	1887.....	379	676
1882.....	497	303	1888.....	236	214
1883.....		185	1889.....	1,332	987
1884.....		229	1890.....	1,322	978
1885.....	7	14			

Exports of Barytes.

Calendar Year.	Cwt.	Value.	Calendar Year.	Cwt.	Value.
		\$			\$
1901.....	208	3,320	1907.....	550	2,750
1902.....			1908.....	3,509	13,690
1903.....	406	368	1909.....		
1904.....	13,080	5,178	1910.....	5	150
1905.....	34,488	14,343	1911.....		
1906.....	1,350	6,750			

MINERAL WATER.

The statistics of production given herewith represent, as usual, as closely as can be obtained, the value of mineral water shipped from mineral springs in bottles, barrels, or other containers, and do not include any estimate for the value of mineral water used at the spring 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 1911 was reported as \$223,758, as compared with \$199,563 in 1910 and \$175,173 in 1909.

The imports of mineral and aerated waters during the calendar year 1911 were valued at \$229,367, as against a value of \$202,306 in 1910, and \$184,071 in 1909.

Statistics of production and imports are shown in tables following:—

MINERAL WATERS.—TABLE 1.

Annual Production.

Calendar Year.	Gals.	Value.	Calendar Year.	Gals.	Value.	Calendar Year.	Gals.	Value.
		\$			\$			\$
1888.....	124,850	11,456	1896.....	706,372	111,736	1904.....		100,000
1889.....	424,600	37,360	1897.....	749,691	141,477	1905.....		100,000
1890.....	561,165	66,031	1898.....	555,000	100,000	1906.....		100,000
1891.....	427,485	54,268	1899.....		100,000	1907.....		136,020
1892.....	640,380	75,348	1900.....		75,000	1908.....		151,953
1893.....	725,096	108,347	1901.....		100,000	1909.....		175,173
1894.....	767,460	110,040	1902.....		100,000	1910.....		199,563
1895.....	739,382	126,048	1903.....		100,000	1911.....		223,758

MINERAL WATERS.—TABLE 2.

Imports.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	41,797	1891.....	15,721	1902.....	91,871
1881.....	55,763	1892.....	17,913	1903.....	108,130
1882.....	57,953	1893.....	27,909	1904.....	137,304
1883.....	49,546	1894.....	28,130	1905.....	161,790
1884.....	48,613	1895.....	27,879	1906.....	178,639
1885.....	55,864	1896.....	32,674	1907 (9 months)...	143,416
1886.....	47,006	1897.....	22,142	1908.....	153,831
1887.....	52,989	1898.....	33,314	1909.....	159,221
1888.....	54,891	1899.....	38,046	1910.....	188,559
1889.....	66,331	1900.....	30,343	1911.....	202,659
1890.....	71,521	1901.....	40,802		

Following is a list of mineral water producers:—

Operator.	Location of spring.	Address.
The Havelock Mineral Spring Co. Ltd.	Havelock Springs, N.B.	Havelock Springs, N.B.
The St. Leon Waters, Ltd.	St. Leon, Que.	Toronto, 12 Wellington St.
Radnor Water Co.	Radnor Forges, Que.	Montreal, Que.
Abenakis Mineral Springs Co., Ltd.	Yamaska Co., Que.	Abenakis Springs, Que.
Louis L'Heureux.	Nancy, Que.	Quebec, Que.
Gurd & Co., Ltd.	Varennes, Que.	Montreal, Que.
Caledonia Springs Co., Ltd.	Caledonia Springs, Ont.	"
Lyall, Trenholme & McDonnell.	"	Montreal West, Que.
Gurd & Co., Ltd.	Caledonia, Ont.	Montreal, Que., 74 Bleury.
Robert Allan	"	" 86 Dorchester.
Thos. L. Boyd.	Clarence, Ont.	Toronto, Ontario.
Canada Mineral Waters, Ltd.	Carlsbad, Ont.	Carlsbad Springs, Ont.
Arthur Belanger.	Prescott, Ont.	Papineauville, Que.
Beck & Frank	"	Southampton, Ont.
Sanitaris Ltd.	Pakenham, Ont.	Arnprior, Ont.
St. Davids Mountain Spring Water Co., Ltd.	"	Niagara Falls South, Ont.
Stanley Mineral Springs Co., Ltd.	Stanley, Ont.	Winnipeg, Man., 410 Builders Exchange.
Halcyon Hot Springs Sanitarium	Arrow lake.	Halcyon Hot Springs, B.C.
St. Leon Hot Springs	Upper Arrow lake.	St. Leon Hot Springs, B.C.

NATURAL GAS.

The total value of the production of natural gas in Canada in 1911 was, according to returns received, \$1,907,678, as compared with a value of \$1,346,471 in 1910, and \$1,207,029 in 1909.

The quantity used in 1911, was about 11,644,000 M feet, while in 1910, the quantity used was approximately 8,000,000 M feet, and on this basis an apparent increase in production is shown of about 46 per cent.

The value of the production in Ontario in 1911 was returned as \$1,807,513, and in Alberta, \$110,165. In 1910, the Ontario production was valued at \$1,271,303, and that of Alberta at \$75,168. In 1909, the Ontario production was valued at \$1,145,307, and that of Alberta \$61,722.

The value of the gas as reported by the producers varies from 5 cents to 30 cents per M 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 time re-sell to other pipe line companies for retail distribution; in such cases as these the producer only receives 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 wells whether such producer be the owner of the distribution line or not.

The annual value of the production of natural gas is shown in Table 1.

NATURAL GAS.—TABLE 1.
Annual Production since 1892.

Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$
1892	150,000	1902	195,992
1893	376,233	1903	202,210
1894	313,754	1904	323,376
1895	423,032	1905	379,561
1896	276,301	1906	583,523
1897	325,873	1907	815,032
1898	322,123	1908	1,012,660
1899	387,271	1909	1,207,029
1900	417,094	1910	1,346,471
1901	339,476	1911	1,907,678

Returns received showed 1,027 producing wells in Ontario, of which 244 were completed during the year. Thirty-four non-producing wells were also drilled during 1911.

In this Province the three principal producing fields are known as the Welland county, the Haldimand-Norfolk, and the Essex-Kent. The gas is used for lighting, heating, and manufacturing quite generally throughout the

district in which it is available. Formerly considerable quantities of gas were exported to Detroit and Buffalo, adjacent respectively to the Essex and Welland fields, but this export has now ceased. Under the provisions of Chap. 16, 6-7 Edward VII, entitled; 'An Act to regulate the exportation of electric power and certain liquids and gases,' assented to April 27, 1907, the export of natural gas is prohibited except under special license issued by the Governor in Council.

In order to conserve the supply of natural gas, and as far as possible prevent its waste, the Ontario Legislature in 1908, passed an 'Act to prevent the wasting of natural gas and to provide for the plugging of all abandoned wells' (Edward VII, Chapter 47), by which power was conferred upon inspectors appointed under the Act, to enforce the stopping of waste. The Supplementary Revenue Act, 1907 (Ontario Statutes), also contained provisions which have been even more effective than those of the first mentioned Act, and the enforcement of these laws has, according to the Bureau of Mines, reduced the waste of gas to a minimum.

Gas is supplied in about 56 different towns and villages as well as generally to consumers in a number of townships.

The commercial use of gas in Alberta has hitherto been confined largely to Medicine Hat and vicinity, although the existence of natural gas in large quantities has been demonstrated in widely separated localities.

In Medicine Hat the city now has five deep producing wells in addition to a number of shallow wells not in use. Also one 10" well drilled by the city has been turned over to the Alberta Rolling Mills. The city wells are about 1,000 feet in depth and have a rock pressure of about 550 pounds. The Gas Superintendent reports that the gas shows no diminution in pressure and is perfectly dry. The Canadian Pacific railway has one well at Medicine Hat and one at Suffield, 26 miles west on the main line.

At Redcliff, 6 miles west of Medicine Hat, there are three wells, one owned by the Redcliff Brick & Coal Co., Ltd., and two by the Redcliff Realty Co. The Puralm Brick Company has also one well on section 28 of the Medicine Hat district.

The wells put down by the Canadian Pacific railway at Dunmore Junction, Brooks, Bassano, and Bow Island, together with the well at Calgary owned by the Calgary Natural Gas Co., Ltd., have been taken over by the Canadian Western Natural Gas, Light, Heat & Power Company of Calgary, of which Mr. Eugene Coste is President and Managing Director. The most important wells are those at Bow Island, the rock pressures in which average 800 pounds to the square inch in each well. At the end of March 1912, this Company had 9 wells at Bow Island with a total daily capacity of about 106,000,000 cubic feet. The Company will supply natural gas extensively throughout southern Alberta and is now engaged in the construction of a 16" pipe line, 170 miles long, from the Bow Island field to Calgary, and on branch lines and distributing systems to Lethbridge, McLeod, Granum, Claresholm, Nanton, High River, Okotoks, and other towns and villages in southern Alberta and expects to turn on gas at Calgary on or about September 1, 1912.

Drilling was also being done at Tofield, near Edmonton, in which it has been reported that gas has recently been struck.

Natural gas rights in Manitoba, Saskatchewan, Alberta, the Northwest Territories, the Yukon, etc., are the property of the Crown, and their disposal is now subject to the regulations approved by Order in Council dated the 11th day of March, 1910.

These regulations provide for a rental of 25 cents an acre for the first year and 50 cents an acre each subsequent year, lease to be for twenty-one years, renewable on conditions, and no applicant to be allowed to lease the gas rights under an area of more than 1,920 acres.

In New Brunswick no gas was sold during the year but gas has been used entirely for power for drilling purposes by the Maritime Oilfields, Ltd., who continued drilling operations in the Albert County district. This Company completed 7 wells during the year, of which 4 were producing gas wells, 2 oil wells, and 1 dry well, and has now a total of 17 producing gas wells with a daily flow of over 58,000,000 cubic feet. A pipe line has been laid to Moncton and it is expected that natural gas will shortly be supplied to that city.

The following is a list of the principal firms operating natural gas wells:—

Operator.	Location of wells.	Address.
<i>New Brunswick—</i>		
Maritime Oil Fields, Ltd.,.....	Albert Co., Stony Creek Dist.....	Moncton, Box 196.
<i>Ontario—</i>		
Provincial Natural Gas Co.,.....	Welland Co.....	Niagara Falls.
Bertie Natural Gas Co.,.....	" Bertie Tp.....	Ridgeway.
The United Gas Companies, Ltd.,...	" Wainfleet Tp.....	St. Catharines.
Welland Co. Lime Works Co., Ltd.,	" "	Port Colborne.
The Canadian Steel Foundries, Ltd	" Crowland and Humberstone.	Welland.
Sterling Gas Co., Ltd.....	" Tps.....	
The Port Colborne Welland Natural	" Humberstone Tp.....	Port Colborne.
Gas Co.....	Haldimand Co. Oneida and Caledonia Tps	"
Producers Natural Gas Co., Ltd...	" Rainham and Walpole	Hamilton.
Canboro Natural Gas Co., Ltd.....	" Tps.....	
Dominion Natural Gas Co., Ltd....	" Canboro Tp.....	Canboro.
Selkirk Gas & Oil Co., Ltd.....	" and Norfolk Co.....	Pittsburgh.
The Cheapside Gas Co.....	" Rainham Tp.....	Farmers Bk. Bldg.
The Fisherville Gas Co.....	" Cheapside Tp.....	Selkirk.
The Holmes Gas Co.....	" " "	Cheapside.
David E. Hoover,.....	" Rainham and Walpole	"
Jas. H. Hoover,.....	" Tps.....	Selkirk.
Waines & Root.....	" "	Dunnville.
Alfred Lamb.....	" Walpole Tp.....	Selkirk.
Walter B. Lamb,.....	" "	Nanticoke.
Aldrich Gas & Oil Co., Ltd.....	" "	Selkirk.
Midfield Natural Gas Co.....	" N. Cayuga Tp.....	Hamilton.
Nanticoke Natural Gas Co., Ltd....	" Walpole Tp.....	Nanticoke.
The Volcanic Oil & Gas Co., Ltd..	Kent Co. E. Tilbury and Romney Tp..	Niagara Falls.
The Canadian Gas Co., Ltd.....	" Merser Tp.....	Detroit, 1309.
Beaver Oil & Gas Co., Ltd.....	" " and Romney Tps.....	Ford Bldg.
Aikins, Lalor & Beck.....	Brant, S. Cayuga.....	Brantford.
Maple City Oil & Gas Co., Ltd....	Kent Co. E. Tilbury Tp.....	"
Ridgetown Fuel Supply Co., Ltd..	" Raleigh Tp.....	Chatham.
		Ridgetown.

Operator.	Location of wells.	Address.
The United Fuel Supply Co., Ltd.	Kent Co., Tilbury E.	Sarnia.
The North Shore Gas Co., Ltd.	Haldimand Co.	Hamilton.
The Medina Natural Gas Co., Ltd.	Elgin and Norfolk Co.	Niagara Falls.
The Onondaga Oil & Gas Co., Ltd.	Brant Co., Onondaga Tp.	Brantford.
Standard Natural Gas Co., Ltd.	Kent Co. and Brant Co.	"
Oxford Oil & Gas Co., Ltd.	Oxford Co. E. Zorra Tp.	"
<i>Alberta—</i>		
City of Medicine Hat Gas Commission.	City of Medicine Hat	Medicine Hat.
Redcliff Brick Co.	Redcliff.	Redcliff.
Canadian Pacific Railway.	Medicine-Hat, Suffield.	
The Canadian Western Nat. Gas, Light, Heat & Power Co., Ltd.	Dunmore Junction. Bow Island, Brooks.	Calgary, 128-7th Ave.
	Basano.	
The Redcliff Realty Co.	Redcliff.	Redcliff.
The Pural Brick Co., Ltd.	Medicine Hat.	Medicine Hat.
The Alberta Rolling Mills.	Medicine Hat.	"

PEAT.

Peat fuel was produced in Canada during 1911 from three bogs, viz.: one at Alfred, Prescott county, Ontario, operated by the Dominion Department of Mines as an experimental or demonstration plant; one near London, Ont., operated by the Dorchester Peat Fuel Co., under the management of J. McWilliams; and one near Farnham, Que., operated by Peat Industries, Ltd., of Montreal.

The total shipments in 1911 were 1,463 tons, valued at \$3,817, as compared with shipments, in 1910, of 841 tons, valued at \$2,604.

Part of the product of the Alfred bog was used in the Department's fuel testing station¹ in Ottawa, and the surplus or balance was sold chiefly in Ottawa, where the limited supply was greatly in demand having proven an excellent fuel, particularly for grates and cook stoves. The peat was excavated at the bog with an Anrep machine, cut into blocks on the ground and air dried.

Only a small production was made at the London and Farnham bogs. At London the greater part of the season was spent in testing two steam dryers and in putting in a permanent one which will be operating during 1912. The Farnham bog was operated for a short time only during the season. An Anrep machine equipped with an automatic excavating device was used at this bog.

The annual production of peat during the past 12 years is shown below:—

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1900.....	400	\$1,200	1906.....	474	\$1,422
1901.....	220	600	1907.....	50	200
1902.....	475	1,663	1908.....	60	180
1903.....	1,100	3,300	1909.....	60	240
1904.....	800	2,400	1910.....	841	2,604
1905.....	80	260	1911.....	1,463	3,817

¹ Results of the testing of this peat are shown in the 'Report on the Utilization of Peat Fuel or the Production of Power' by B. F. Haanel, B. Sc., Mines Branch publication, No. 154.

PETROLEUM.

The petroleum industry in Canada has been marked during the past four years by a rapidly decreasing output, the production in 1911 being only a little more than one-third that of 1907. The total production of crude petroleum in 1911 was 291,092 barrels of 35 imperial gallons each, valued at \$357,073 or an average of \$1.22½ per barrel, as compared with a production of 315,895 barrels valued at \$388,550 or an average of \$1.23 per barrel in 1910, and 420,755 barrels, valued at \$559,604, or an average of \$1.33 per barrel in 1909. With the exception of 86,139 gallons in 1911, 51,975 gallons in 1910, and 3,328 gallons in 1909, produced in New Brunswick, the output was entirely from the Ontario oil fields.

The above statistics of production are based on the claims made for the bounty paid by the Dominion government, which was first provided for in 1904 by an Act passed by the Dominion Government authorizing the payment of a bounty of 1½ cents per gallon on crude petroleum produced from wells in Canada. The bounty was continued during 1910 under the 'Petroleum Bounty Act, 1909,' which provides for the payment of bounty on crude petroleum produced from oil-shales mined in Canada, as well as on oil from wells in Canada. Payments are made on claims submitted by the producers of crude oil to the Minister of Trade and Commerce. These claims have to be substantiated as to quantity by the certificate of the receiving stations, tanking companies, refiners or other purchasers, as well as by the supervising officers of the Department of Trade and Commerce.

The bounty paid on the crude petroleum produced gives, therefore, as accurate a basis as is available for a reliable statement of the annual production.

Table 1, following, shows the production of crude oil in Canada since 1901, in barrels of 35 gallons, together with the total value and average price per barrel.

PETROLEUM.—TABLE 1.
Annual Production of Crude Petroleum since 1901.

Year.	Barrels of 35 gallons.	Value.	Average price per barrel.
		\$	\$ cts.
1901.....	622,392	1,008,275	1 620
1902.....	530,624	951,190	1 792
1903.....	486,637	1,048,974	2 155
1904.....	503,474	935,895	1 858
1905.....	634,095	856,028	1 350
1906.....	569,753	761,760	1 337
1907.....	788,872	1,057,088	1 340
1908.....	527,987	747,102	1 415
1909.....	420,755	559,604	1 33
1910.....	315,895	388,550	1 23
1911.....	291,092	357,073	1 225

The figures for the years 1905 to 1911 are deduced from the bounty paid by the federal government, whereas the production for the years 1901 to 1904, is based on direct returns received from refineries and producers. Further details of these figures are given below in tabular form:—

Production of Crude Oil, 1901 to 1904, based on Direct Returns.

Crude oil.	1901.	1902.	1903.	1904.
	Bls.	Bls.	Bls.	Bls.
Received at refineries.....	508,677	443,333	410,280	455,074
Direct sales for industrial purposes.....	113,715	87,291	76,357	48,400
Total sales of crude oil.....	622,392	530,624	486,637	503,474
Total sales in gallons.....	21,783,720	18,571,840	17,032,295	17,621,590

Production of Petroleum estimated on the basis of the bounty of 1½ cents per gallon, paid by the Dominion Government, 1905 to 1911.

Year.	Bounty paid.	Production of crude oil represented.	
		In gallons.	In barrels.
	\$		
1905.....	332,900	22,193,336	634,095
1906.....	299,120	19,941,357	569,753
1907.....	414,158	27,610,526	788,872
1908.....	277,193	18,479,547	527,987
1909.....	220,897	14,726,433	420,755
1910.....	165,845	11,056,337	315,895
1911.....	291,092	10,188,219	291,092

For the years previous to 1901, the production of crude oil was deduced from government inspection returns by assuming a ratio of crude to refined. The statistics of production, on this basis, for the years 1881 to 1900, are given in Table 2.

PETROLEUM.—TABLE 2.

Canadian Oils and Naphtha inspected, and corresponding quantities of
Crude Oil.

Calendar Year.	Refined oils inspected.	Crude equivalent calculated.	Ratio of crude to refined.	Equivalent in barrels of 35 gallons.	Average price per barrel of crude.	Value of crude oil.
	Gals.	Gals.			\$ cts.	\$
1881.....	6,457,270	12,914,540	100:50	368,987		
1882.....	6,135,782	13,635,071	100:45	389,573		
1883.....	7,447,648	16,550,328	100:45	472,866		
1884.....	7,993,995	19,984,987	100:40	571,000		
1885.....	8,225,882	20,564,705	100:40	587,563		
1886.....	7,768,006	20,442,121	100:38	584,061	0 90	525,655
1887.....	9,492,588	24,980,404	100:38	713,728	0 78	556,708
1888.....	9,246,176	24,332,042	100:38	695,203	1 02 $\frac{3}{4}$	713,695
1889.....	9,472,476	24,664,144	100:38	704,690	0 92 $\frac{3}{4}$	653,600
1890.....	10,174,894	26,776,037	100:38	795,030	1 18	902,734
1891.....	10,065,463	26,435,430	100:38	755,298	1 33 $\frac{3}{4}$	1,010,211
1892.....	10,370,707	27,291,334	100:38	779,753	1 26 $\frac{1}{2}$	984,438
1893.....	10,618,804	27,944,221	100:38	798,406	1 09 $\frac{1}{2}$	874,255
1894.....	11,027,082	29,018,637	100:38	829,104	1 00 $\frac{3}{4}$	835,322
1895.....	10,674,232	25,414,838	100:42	726,138	1 49 $\frac{3}{4}$	1,086,738
1896.....	10,684,284	25,438,771	100:42	726,822	1 59	1,155,647
1897.....	10,434,878	24,844,995	100:42	709,857	1 42 $\frac{1}{2}$	1,011,546
1898.....	11,143,348	26,543,685	100:42	758,391	1 40	1,061,747
1899.....	11,927,981	28,399,955	100:42	808,570	1 48 $\frac{3}{4}$	1,202,020
1900.....	13,428,422	24,867,449	100:54	710,498	1 62	1,151,007

The production in Ontario has been obtained altogether from pools situated on the southwestern peninsula of the Province.

An estimate of the production of the various Ontario oil fields during the past five years has been kindly furnished by the Imperial Oil Company, and is shown in the next table.

The falling off in production during the past four years, it will be observed, has been common to all the important fields, although the decrease in Tilbury and Raleigh has perhaps been most pronounced.

The figures do not agree in totals with the statistics of production published in previous tables, but they will probably serve to show the relative importance of the several fields.

Production of Ontario Oil Fields, 1908, 1909, 1910, and 1911.

District.	1908.	1909.	1910.	1911.
	Bls.	Bls.	Bls.	Bls.
Dutton.....	12,268	10,052	7,860	3,598
Leamington (Staples, Comber, and Blytheswood).....	18,117	9,367	243	.....
Bothwell.....	39,820	38,707	36,615	35,094
Richardson (Chatham) including Blakely.....	2,882	2,923	1,698	1,776
Thamesville.....	853	710	141	.....
Moore township.....	25,667	18,033	14,614	.....
Oil Springs.....	61,252	60,868	55,508	56,248
East Tilbury and Raleigh (including Pardo Siding and Sandison).....	170,589	115,862	60,416	49,027
Romney*.....	11,165	1,082	1,070*	12,602
Petrolia (including all districts not enumerated).....	171,019	156,581	129,372	126,089
	513,632	414,185	307,533	284,434

* Denotes production from Onondaga in 1910 and 1911.

Another statement of production by districts is furnished by Mr. W. J. Harvey, the supervisor of petroleum bounties, as follows, the classification being somewhat different from that shown above, but the total agreeing more closely with that given in Table 1.

Field.	1907.	1908.	1909.	1910.	1911.
	Bls.	Bls.	Bls.	Bls.	Bls.
Lambton.....	304,212	265,368	243,123	205,456	184,450
Tilbury and Romney.....	411,588	201,286	124,003	63,058	48,707
Bothwell.....	42,727	39,228	38,092	36,998	35,244
Leamington.....	6,135	9,334	5,929	141	.....
Dutton.....	14,977	13,743	9,513	7,762	6,732
Thamesville.....	237	.....	.....	.....	.....
Comber.....	.....	.....	.....	.....	.....
Onondaga (Brant Co.).....	.....	.....	.....	1,005	13,501
Total.....	779,876	528,959	420,660	314,410	288,634

The oil refineries of Canada, of which there are four, viz.: the Imperial Oil Company, works at Sarnia, head office, Buffalo; the Canadian Oil Company, works at Petrolia, head office, Toronto; the British American Oil Company, works and head office at Toronto; and the Empire Refining Company, Ltd., works at Wallaceburg, use considerable quantities of imported crude oils. There is also a rapidly increasing use of imported crude fuel oils on the Pacific coast. The imports of crude oil in 1911 were 71,637,533 gallons, valued at \$2,187,952, as against 53,603,778 gallons, valued at \$1,639,320, in 1910, and 35,884,103 gallons, valued at \$1,186,400, in 1909.

All refined illuminating oils, and naphtha manufactured and shipped from Canadian refineries, are inspected by the Inland Revenue Department. The total quantities of these oils inspected during the fiscal year ending March 31, 1912, were 26,463,664.05 gallons, as compared with 27,535,283.86 gallons inspected during the previous fiscal year.

There are three inspection districts, known respectively as the London, Toronto, and Windsor districts, the first mentioned covering the refinery plants at Sarnia and Petrolia, the second the Toronto refinery, and the third the Wallaceburg refinery.

The following tables showing the quantities of refined illuminating oils and naphtha inspection in the several districts are quoted from the annual report of the Department of Inland Revenue.

Inspection of Petroleum.

RETURN of Inspected Petroleum and Naphtha shipped from Refineries, during the fiscal Year ending March 31, 1912.

Divisions.	Petroleum.	Naphtha.	Total.
	Gals.	Gals.	Gals.
London, Ont.	19,913,249·47	4,310,258·61	24,253,508·08
Toronto, Ont.	851,220·56	1,183,049·61	2,034,270·17
Windsor, Ont.	121,602·40	54,283·40	175,885·80
	20,886,072·43	5,577,591·62	26,463,664·05

COMPARATIVE Statement of Inspected Petroleum and Naphtha Shipped from Refineries, during the Fiscal Years ending March 31, 1910, 1911, and 1912.

—	Petroleum.	Naphtha.	Total.
1910.			
Ontario	19,100,424·16	4,113,149·46	23,213,573·62
1911.			
Ontario	21,017,628·45	6,517,655·41	27,535,283·86
1912.			
Ontario	20,886,072·43	5,577,591·62	26,463,664·05

The exports of oil from Canada are comparatively small, the available statistics being shown in Table 3. During 1911 the exports as published by the Customs Department included refined oils, 489 gallons, valued at \$73, and naphtha and gasoline, 23,959 gallons, valued at \$4,427, or a total of 24,448 gallons, valued at \$4,500. There was also an export of 745,318 gallons, valued at \$85,634, of "other oils N.E.S." which probably include products of petroleum.

PETROLEUM.—TABLE 3.

Exports of Crude and Refined Petroleum, 1881-1911.

Calendar Year.	CRUDE OIL.		REFINED OIL.		TOTAL.	
	Gals.	Value.	Gals.	Value.	Gals.	Value.
1881.....		\$		\$	501	\$ 99
1882.....					1,119	286
1883.....					13,283	710
1884.....					1,093,090	30,168
1885.....					337,967	10,562
1886.....					241,716	9,855
1887.....					473,559	13,831
1888.....					196,602	74,542
1889.....					235,855	10,777
1890.....					420,492	18,154
1891.....	446,770	18,471	585	104	447,355	18,575
1892.....	310,387	12,945	1,146	100	311,533	12,045
1893.....	107,719	3,696	2,196	304	109,915	4,000
1894.....	53,985	2,773	5,297	513	59,282	3,286
1895.....	22,831	1,044	10,237	2,023	33,068	3,067
1896.....	601	101	7,489	999	8,090	1,100
1897.....			342	49	342	49
1898.....	96	4	12,735	3,001	12,831	3,005
1899.....			8,559	859	3,425	859
1900.....	40	2	8,559	394	8,559	2,396
1901.....	14,168	691	375	66	14,543	757
1902.....	400	40.	626	146	1,026	186
1903.....	350	15	1,013	190	1,363	205
1904.....	4,207	213	2,126	470	6,333	683
1905.....	35	2	7,228	2,078	7,263	2,080
1906.....	900	141	8,938	1,401	9,338	1,542
1907.....	1,125	102	3,132	575	4,257	677
1908.....			296	71	296	71
1909.....			7,768	934	7,768	934
1910.....			2,818	462	2,818	462
1911*.....			24,448	4,500	24,448	4,500

*Includes naphtha and gasoline.

The imports of petroleum and petroleum products into Canada have been rapidly increasing while the domestic production has been decreasing. The imports during the calendar year 1911 totalled 116,892,689 gallons of petroleum oil crude and refined, valued at \$6,009,730, in addition to 1,959,787 pounds of wax and wax candles, valued at \$106,424. The oil imports included: crude oil, 71,653,251 gallons, valued at \$2,188,870; refined and illuminating oils, 13,690,962 gallons, valued at \$722,403; gasoline, 23,338,773 gallons, valued at \$1,976,032; lubricating oils, 5,308,917 gallons, valued at \$806,452, and other petroleum products, 2,900,786 gallons, valued at \$315,973.

The total imports in 1910 were 84,629,334 gallons of petroleum oil crude and refined, valued at \$4,826,763, and 1,362,235 pounds of wax and candles, valued at \$80,106.

Details of the imports of oils during 1910 and 1911 are shown in Table 4.

There was an increase in the imports of crude oils of 18,049,198 gallons, or 33½ per cent. An increase in the imports of refined illuminating oils of 6,034,235 gallons, or 78.8 per cent. An increase in the imports of lubricating oils of 1,227,660 gallons, or 30 per cent, and an increase in the imports of gasoline 6,659,082 gallons or 33 per cent.

PETROLEUM.—TABLE 4.

Imports of Petroleum and Products thereof, during the Calendar years 1910 and 1911.

Products.	1910.		1911.	
	Gals.	Value.	Gals.	Value.
		\$		\$
(a) Petroleum crude, fuel and gas oils (0.8235 specific gravity or heavier).....	53,603,778	1,639,320	71,637,533	2,187,952
(b) Crude petroleum, gas oils (other than benzine naphtha and gasoline).....	275	38	15,718	918
(c) Coal and kerosene, distilled, purified, or refined.....	7,639,070	494,723	13,527,816	658,035
(d) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale, or lignite, costing more than 30 cents per gallon.....	17,657	7,641	163,146	64,368
(e) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon.....	3,272,101	450,884	4,326,871	523,558
(f) Products of petroleum, N.O.P.....	2,607,606	273,364	2,900,786	315,973
(g) Lubricating oils, N.O.P.....	809,156	267,497	982,046	282,894
(h) Gasoline.....	16,679,691	1,693,296	23,333,773	1,976,032
Total.....	84,625,334	4,826,763	116,892,689	6,009,730

(a) Free. (b) Duty 1½c. per gal. (c), (e), and (f) Duty 2½c. per gal. (d) 20 per cent.
 (g) Duty 20 per cent. (h) Free.

The total annual imports of petroleum oils and products, excluding the imports of paraffin wax and candles, are shown in Table 5. The imports of paraffin wax are shown in Table 7, and of wax candles in Table 8, while the total imports of crude and manufactured oils, other than illuminating, are shown in Table 6.

PETROLEUM.—TABLE 5.

Imports of Petroleum and Products thereof, years 1880-1911.

Fiscal Year.	Gals.	Value.	Fiscal Year.	Gals.	Value.
1880.....	687,641	131,359	1896.....	8,005,891	735,913
1881.....	1,437,475	262,168	1897.....	8,415,302	697,169
1882.....	3,007,702	393,031	1898.....	9,074,311	724,519
1883.....	3,086,316	358,546	1899.....	10,394,203	763,303
1884.....	3,160,282	380,082	1900.....	9,633,647	864,833
1885.....	3,767,441	415,195	1901.....	11,082,322	982,640
1886.....	3,819,146	421,836	1902.....	13,220,005	1,107,207
1887.....	4,290,003	467,003	1903.....	18,799,312	1,043,371
1888.....	4,523,056	408,025	1904.....	24,521,115	2,152,623
1889.....	4,650,274	484,462	1905.....	35,296,332	2,151,614
1890.....	5,075,650	515,852	1906.....	32,624,410	1,908,177
1891.....	5,071,386	498,330	1907 (9 mos.).....	23,645,861	1,480,261
1892.....	5,649,145	475,732	1908.....	40,213,542	2,577,059
1893.....	6,002,141	446,389	1909.....	51,700,476	3,219,243
1894.....	6,597,108	439,938	1910.....	60,017,066	3,442,604
1895.....	7,577,874	525,372	1911.....	87,245,133	4,901,608

PETROLEUM.—TABLE 6.

Imports of Crude and Manufactured Oils, other than Illuminating, 1881-1911.

Fiscal Year.	Gals.	Fiscal Year.	Gals.
1881.....	960,691	1897.....	802,286
1882.....	1,656,290	1898.....	1,047,026
1883.....	1,895,488	1899.....	1,017,278
1884.....	2,017,707	1900.....	1,406,700
1885.....	2,489,326	1901.....	1,838,966
1886.....	2,491,530	1902.....	2,296,353
1887.....	2,624,399	1903.....	4,316,010
1888.....	2,701,714	1904.....	7,141,109
1889.....	2,882,462	1905.....	25,002,047
1890.....	3,054,908	1906.....	23,365,674
1891.....	3,049,384	1907 (9 mos.).....	16,761,713
1892.....	3,047,199	1908.....	33,915,853
1893.....	1,481,749	1909.....	41,085,997
1894.....	1,860,829	1910.....	51,354,396
1895.....	1,106,993	1911.....	77,966,543
1896.....	1,079,965		

PETROLEUM.—TABLE 7.

Imports of Paraffin Wax, 1883-1911.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1883.....	43,716	5,166	1898.....	103,570	6,987
1884.....	39,010	6,079	1899.....	92,242	4,025
1885.....	59,967	8,123	1900.....	47,400	3,529
1886.....	62,035	7,953	1901.....	118,848	9,639
1887.....	61,132	6,796	1902.....	225,885	12,750
1888.....	53,862	4,930	1903.....	592,642	28,674
1889.....	63,229	5,250	1904.....	418,967	18,440
1890.....	239,229	15,844	1905.....	81,992	7,795
1891.....	753,854	50,275	1906.....	112,612	9,721
1892.....	733,873	48,776	1907 (9 mos.).....	55,021	5,922
1893.....	452,916	38,935	1908.....	62,308	8,041
1894.....	203,099	15,704	1909.....	129,631	12,795
1895.....	163,817	11,579	1910.....	429,801	27,290
1896.....	150,287	10,042	1911.....	1,856,049	81,189
1897.....	138,703	7,945			

PETROLEUM.—TABLE 8.

Imports of Paraffin Wax Candles, 1880-1911.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	10,445	2,269	1896.....	25,787	4,072
1881.....	7,494	1,683	1897.....	25,114	2,929
1882.....	5,818	1,428	1898.....	60,802	4,427
1883.....	7,149	1,734	1899.....	62,331	5,856
1884.....	8,755	2,229	1900.....	27,663	3,671
1885.....	9,247	2,449	1901.....	44,562	3,588
1886.....	12,242	2,587	1902.....	51,120	5,752
1887.....	21,364	3,611	1903.....	83,377	9,025
1888.....	22,054	2,829	1904.....	83,471	9,078
1889.....	8,038	1,337	1905.....	137,353	15,293
1890.....	7,233	1,186	1906.....	148,808	15,804
1891.....	10,598	2,116	1907 (9 mos.).....	38,900	5,088
1892.....	9,259	1,952	1908.....	156,931	20,035
1893.....	8,351	1,735	1909.....	110,848	14,806
1894.....	10,818	1,685	1910.....	164,822	20,842
1895.....	19,448	2,541	1911.....	131,541	22,426

Regulations have been adopted by the Dominion Government for the disposal of petroleum and natural gas rights, and of tar sands, which are outlined as follows:—

Petroleum Regulations.

‘Regulations for the disposal of petroleum and natural gas rights, the property of the Crown, in Manitoba, Saskatchewan, Alberta, and Northwest Territories, the Yukon Territory, and within the tract containing three and one-half (3½) million acres of land acquired by the Dominion government from the Province of British Columbia, and referred to in sub-section (b) of section 3 of the Dominion Lands Act, approved by Order in Council, dated the 11th day of March, 1910.’

These regulations provide for the leasing of petroleum and gas rights under an area of not more than 1,920 acres to one applicant for a period of twenty-one years, subject to a rental of twenty-five (25) cents an acre for the first year, and fifty (50) cents an acre for each subsequent year.

The lessee is required to have upon the lands leased, within one year of the date of the lease, such machinery as the minister may consider necessary for the carrying on of prospecting operations, and is required to begin boring operations within 15 months of the date of the lease, which shall be continued with reasonable diligence, with a view to the discovery of oil or natural gas.

Tar Sand Regulations.

Regulations for the disposal of the tar sands, the property of the Crown in that portion of the Province of Alberta lying north of township 80 and between the 4th and 5th initial meridians, were approved by Order in Council, dated 14th day of February, 1910.

These provide for the leasing of an area not exceeding 1,920 acres to one applicant for a period of twenty-one years, subject to an annual rental of fifty (50) cents per acre.

After the lease has been in existence one year, the lessee may, on one year's notice, be required to begin active operations, and may be required to excavate and produce ready for shipment or treatment, a quantity not exceeding ten tons per annum, for each acre leased. Copies of the full text of the regulations may be obtained from the Department of the Interior.

PHOSPHATE.

The production of phosphate or apatite in Canada during the past fifteen years, which has averaged only about 1,000 tons per annum, has been obtained almost altogether as a by-product in connexion with the mining of mica. The shipments during 1911 were reported as 621 tons, valued at \$5,206 at the mines, an average of \$8.38 per ton. These shipments were made from properties situated in the townships of Templeton, Wakefield, Derry, and Portland East, county of Ottawa, Quebec, and North Burgess township, county of Lanark, Ontario, and were used at Buckingham, Quebec, in the manufacture of ferro-phosphorus, phosphorus, and of fertilizers.

For a number of years previous to 1892, there was a considerable production of apatite from the district north of Buckingham, the annual output varying from 20,000 tons to 30,000 tons. The introduction of the cheaply mined phosphates of the southern states, however, resulted in the collapse of the Canadian industry, though it was claimed at the time of closing down that there was no diminution in the available supply of mineral.

Statistics of production and exports are shown in Tables 1 and 2, following:—

PHOSPHATE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value	Average value per ton.	Calendar Year.	Tons.	Value.	Average value per ton.
		\$	\$ cts.			\$	\$ cts.
1886	20,495	304,338	14 85	1899	3,000	18,000	6 00
1887	23,690	319,815	13 50	1900	1,415	7,105	5 02
1888	22,485	242,285	10 77	1901	1,033	6,280	6 07
1889	30,938	316,662	10 21	1902	856	4,953	5 79
1890	31,753	361,045	11 37	1903	1,329	8,214	6 18
1891	23,588	241,603	10 24	1904	817	4,590	5 62
1892	11,932	157,424	13 20	1905	1,300	8,425	6 48
1893	8,198	70,942	8 65	1906	850	6,375	7 50
1894	6,861	41,166	6 00	1907	824	6,018	7 30
1895	1,822	9,565	5 25	1908	1,596	14,794	9 26
1896	570	3,420	6 00	1909	998	8,054	8 07
1897	908	3,984	4 39	1910	1,478	12,578	8 51
1898	733	3,665	5 00	1911	621	5,206	8 38

PHOSPHATE.—TABLE 2.

Exports.

Calendar Year.	ONTARIO.		QUEBEC.		TOTAL.	
	Tons.	*Value.	Tons.	*Value.	Tons.	*Value.
		\$		\$		\$
1878	824	12,278	9,919	195,831	10,743	208,109
1879	1,842	20,565	6,604	101,470	8,446	122,035
1880	1,387	14,422	11,673	175,664	13,060	190,086
1881	2,471	36,117	9,497	182,339	11,968	218,456
1882	568	6,338	16,585	302,019	17,153	308,357
1883	50	500	19,666	427,168	19,716	427,668
1884	763	8,890	20,946	415,350	21,709	424,240
1885	434	5,962	28,535	490,331	28,969	496,293
1886	644	5,816	19,790	337,191	20,460	343,007
1887	705	8,277	22,447	424,940	23,152	433,217
1888	2,643	30,247	16,133	268,362	18,776	298,609
1889	3,547	38,833	26,440	355,935	29,987	394,768
1890	1,866	21,320	26,591	478,040	28,457	499,369
1891	1,551	16,646	15,720	368,015	17,271	384,661
1892	1,501	12,544	9,981	141,221	11,482	153,765
1893	1,930	11,550	5,748	56,402	7,738	67,952
1894	1,930	10,560	3,470	20,610	5,450	40,170
1895			250	2,500	250	2,500
1896	1	5	299	2,990	300	2,995
1897	70	450	165	400	235	350
1898	21	240	702	8,000	723	8,240
1899	215	1,850	93	1,725	308	3,575
1900					Nil	Nil
1901					6	120
1902					70	1,880
1903					1	20
1904					191	5,348
1905					40	1,253
1906						
1907						
1908					1	30
1909					895	15,735
1910					0	0
1911					3	100

* These values do not compare with those in Table 1; the spot value is adopted for the production, while the exports are valued upon quite a different basis.

The imports of phosphate rock (fertilizer) in 1911 were valued at \$46,217; phosphorus, 14,818 pounds, valued at \$4,384, and manufactured fertilizers, valued at \$386,645. The imports in 1910 included phosphate rock (fertilizer), valued at \$72,950; phosphorus, 6,752 pounds, valued at \$2,065, and manufactured fertilizers, valued at \$388,467.

Phosphorus is manufactured at Buckingham by the Electric Reduction Company. The exports of phosphorus during the twelve months ending December 31, 1911, were 524,370 pounds, valued at \$76,608.

PYRITES.

The total shipments of pyrites in 1911 were reported as 82,666 tons, valued as reported by the producers at \$365,820. The shipments include 39,122 tons of copper pyrites from Quebec mines, valued at \$247,555, and 43,544 tons of iron pyrites, valued at \$118,265, from Ontario properties. In 1910, the total shipments were 53,870 tons, being 24,242 tons of copper pyrites from Quebec, and 29,628 tons of iron pyrites from Ontario.

The total exports of pyrites from Canada in 1911 are reported by the Customs Department as 32,102 tons, valued at \$120,585, as compared with exports in 1910 of 30,434 tons, valued at \$110,071, and in 1909 of 35,798 tons, valued at \$156,644.

The imports of brimstone and crude sulphur during the calendar year 1911, were 21,831 tons, valued at \$446,491, as against 22,835 tons, valued at \$474,619, in 1910.

No record is available of the quantity of sulphuric acid manufactured in Canadian acid plants, but the quantity of sulphuric acid imported during the calendar year 1911, according to customs returns, was 1,031,803 pounds, valued at \$9,281, as compared with 2,474,802 pounds, valued at \$21,702, in 1910.

Statistics of production and exports of pyrites, of imports of brimstone and crude sulphur and of imports of sulphuric acid, are shown in the following tables:—

PYRITES.—TABLE 1.
Annual Production.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.	42,906	193,077	1899.	27,687	110,748
1887.	38,043	171,194	1900.	40,031	155,164
1888.	63,479	285,656	1901.	35,261	130,544
1889.	72,225	307,292	1902.	35,616	138,939
1890.	49,227	123,067	1903.	33,982	127,713
1891.	67,731	203,193	1904.	37,180	134,033
1892.	59,770	179,310	1905.	33,339	125,486
1893.	58,542	175,626	1906.	42,743	169,990
1894.	40,527	121,581	1907.	46,243	212,491
1895.	34,198	102,594	1908.	47,336	224,824
1896.	33,715	101,155	1909.	64,644	222,812
1897.	33,910	110,730	1910.	53,870	187,064
1898.	32,218	128,872	1911.	82,666	365,820

PYRITES.—TABLE 2.

Imports:—Brimstone* and Crude Sulphur.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		\$			\$
1880.....	1,775,489	27,401	1896.....	6,934,190	63,973
1881.....	2,118,720	36,956	1897.....	8,672,751	87,719
1882.....	2,375,821	40,329	1898.....	38,026,798	373,786
1883.....	2,336,085	36,737	1899.....	24,517,026	265,799
1884.....	2,195,735	37,463	1900.....	21,128,656	215,433
1885.....	2,248,986	35,043	1901.....	23,856,651	270,608
1886.....	2,922,043	13,661	1902.....	24,640,735	325,307
1887.....	3,103,644	38,750	1903.....	24,412,737	259,123
1888.....	2,048,812	25,318	1904.....	19,364,730	204,663
1889.....	2,427,510	34,006	1905.....	23,435,140	242,251
1890.....	4,440,799	44,276	1906.....	43,047,672	436,156
1891.....	3,601,748	46,351	1907 (9 mos.).....	25,854,615	277,439
1892.....	4,769,759	67,095	1908.....	51,806,739	517,249
1893.....	6,381,203	77,216	1909.....	44,049,172	426,569
1894.....	5,845,463	61,558	1910.....	42,943,340	430,632
1895.....	4,900,225	56,965	1911.....	50,562,547	524,473

*Brimstone, crude or in roll or flour, or sulphur in roll or flour.

PYRITES.—TABLE 3.

Exports of Pyrites.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1894.....	8,532	33,205	1903.....	21,067	59,604
1895.....	7,705	38,298	1904.....	18,279	49,911
1896.....	15,002	33,837	1905.....	19,755	55,767
1897.....	15,096	30,812	1906.....	26,050	65,349
1898.....	9,804	26,387	1907.....	25,056	80,139
1899.....	15,599	34,084	1908.....	17,283	96,600
1900.....	17,620	41,132	1909.....	35,798	156,644
1901.....	24,971	57,263	1910.....	30,434	110,071
1902.....	18,584	50,178	1911.....	32,102	120,585

PYRITES.—TABLE 4.

Imports of Sulphuric Acid.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		\$			\$
1885.....	774,764	10,791	1899.....	165,637	2,427
1886.....	507,927	7,930	1900.....	740,858	7,066
1887.....	678,603	8,468	1901.....	448,608	5,272
1888.....	2,494,648	35,415	1902.....	420,731	4,626
1889.....	181,652	2,606	1903.....	102,314	2,332
1890.....	211,871	2,927	1904.....	113,407	2,563
1891.....	177,627	2,466	1905.....	920,804	8,227
1892.....	222,628	2,837	1906.....	822,585	8,558
1893.....	172,422	2,367	1907.....	733,151	6,901
1894.....	107,520	1,648	1908.....	650,095	7,582
1895.....	174,605	2,481	1909.....	241,388	3,298
1896.....	114,137	1,430	1910.....	914,058	8,466
1897.....	977,446	8,033	1911.....	2,486,992	21,855
1898.....	665,344	5,536			

Following is a list of the firms operating pyrites mines:—

The Eustis Mining Company, Eustis, Que.

East Canada Smelting Company, Limited, Weedon, Que.

The Nichols Chemical Company of Canada, Limited, Sulphide, Ont.

The Canadian Sulphur Ore Company, Limited, Madoc, Ont.

The Northern Pyrites Company, Dinorwic, Ont.

Lake Superior Power Company, Sault Ste. Marie, Ont.

SALT.

The production of salt in Canada is obtained from the salt fields in south-western Ontario, although there was at one time a very small production in New Brunswick and Manitoba.

The total sales of salt in 1911 were 91,582 tons, valued at \$443,004 exclusive of packages, as compared with sales of 84,092 tons, valued at \$409,624, in 1910, showing a slight increase in production, in 1911.

The average number of men employed during the year was reported as 225, and the amount paid in wages \$123,040. The value of the packages used during the year was \$198,789, and stock of salt in manufacturers' hands at the close of the year was reported as 1,422 tons.

Detailed statistics of the production during the past six years, showing the total sales of salt, the value of the sales exclusive of packages, the values of the packages used, stock in manufacturers' hands at the end of each year, number of men employed and wages paid, are given in Table 1, while the total annual productions since 1886 are given in Table 2.

SALT.—TABLE 1.

Detailed Statistics of Production, 1906-1911.

		1906.	1907.	1908.	1909.	1910.	1911.
Sales of salt	Tons	76,762	72,697	79,975	84,037	84,092	91,582
Value of salt (exclusive of packages)	\$	329,130	342,315	378,798	415,219	409,624	443,004
Value of packages	\$	147,705	149,823	168,019	175,612	173,446	198,789
Stock in manufacturers' hands at end of year	Tons	6,365	3,923	5,631	2,671	2,474	1,422
Men employed	No.	210	215	207	185	208	225
Wages paid	\$	92,000	95,667	95,575	96,116	112,909	123,040

SALT.—TABLE 2.

Annual Production, 1886-1911.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886	62,359	227,195	1899	59,339	254,390
1887	60,173	166,394	1900	62,055	270,458
1888	59,070	185,460	1901	59,428	262,328
1889	32,932	129,547	1902	64,456	292,581
1890	43,754	198,857	1903	62,452	297,517
1891	45,021	161,179	1904	69,477	321,778
1892	45,486	162,041	1905	67,340	320,858
1893	62,324	195,926	1906	76,720	329,130
1894	57,199	170,687	1907	72,697	342,315
1895	52,376	160,455	1908	79,975	378,798
1896	43,960	169,693	1909	84,037	415,219
1897	51,348	225,730	1910	84,092	409,624
1898	57,142	248,639	1911	91,582	443,004

As will be seen by the above table, the salt industry is slowly but steadily developing; the figures of production for 1911 being the highest yet recorded.

The salt fields of western Ontario are very extensive. The salt beds form part of the Onondaga formation, of Silurian age, and the saliferous horizons underlie a territory extending from Kincardine to Lake Erie, bordering Lake Huron and the Detroit river. This basin measures an extreme length of 150 miles, with a maximum width of 40 miles at the centre and tapering towards the ends. This would cover an area of 2,500 square miles. An idea of the immense deposits of salt contained in this area may be gathered from the fact that a bore-hole sunk at Goderich, in Huron county, to a depth of 1,517 feet, went through six beds of salt, ranging in thickness from 6 feet to 35 feet, whereas, at Windsor, in a well 1,672 feet deep, four beds were traversed, one of which is said to measure 250 feet in thickness.

So far the salt industry of western Ontario is confined to the production of salt for the trade, but the Canadian Salt Company at their Sandwich branch, in 1911 installed a plant for the manufacture of caustic soda and bleaching powder and commenced operations during the last week of the year. The imports of some of the soda products during the calendar years 1910 and 1911 are shown in the accompanying table.

	1910.		1911.	
	Lbs. imported.	Value.	Lbs. imported.	Value.
		\$		\$
Soda, ash, or barilla	35,596,006	306,167	44,682,937	375,132
Soda bichromate.....	878,777	32,842	327,307	19,193
Caustic soda in packages, 25 lbs. or more.....	13,848,170	260,938	13,708,922	253,612
Sal soda.....	9,715,272	72,845	10,202,422	64,107
Sulphate of soda.....	17,728,543	95,054	13,782,241	88,761
		767,846		800,805

As at present carried on in western Ontario, the salt industry consists essentially in the production of table, dairy, and coarse salt, and a small quantity of land salt. These are manufactured by forcing water down bore-holes sunk to the rock salt bed, through a casing inside of which is a pipe of smaller diameter. A powerful pump forces water down the outer tube, this dissolves the salt, eventually forming large cavities at the bottom of the well, which offer a great surface of salt to the action of the water.

The water forced downwards is charged to saturation in the salt cavity, and, as the rock is not fissured or porous, this brine is forced upwards through the inner tube. After a process of purification and settling, this brine is evaporated either in vacuum pans or in large open air vats, and after passing through mechanical dryers or over drying floors, the salt is ready for the market.

The following are analyses of brines obtained from wells in these salt fields. The figures are for 1,000 parts by weight:—

Analyses of Brines.¹

	Sodium chloride.	Calcium chloride.	Magnesium chloride.	Sulphate of lime.	Specific gravity.	Degrees of salometer.
Goderich, sample taken August 19, 1866.....	259·000	0·432	0·254	1·882	1·205	100
Goderich, same well as above. November 5, 1868.....	236·410	0·190	0·410	4·858	1·187	92
Clinton well.....	204·070	0·470	0·184	5·583	1·157	80
Kincardine.....	241·350	0·840	0·230	3·264	1·191	94

¹ Analyses by Dr. T. Sterry Hunt, laboratory, Geological Survey of Canada.

EXPORTS AND IMPORTS.

Comparatively small quantities only of salt are now exported from Canada, the exports in 1911 being 454,600 pounds, valued at \$5,055.

The imports of salt on the other hand are quite considerable. For the calendar year 1911, the imports of salt, subject to duty, included salt in bulk, dutiable at 5 cents per 100 pounds, 16,818 tons, valued at \$53,162, and salt in bags, barrels or other packages, dutiable at 7½ cents per 100 pounds, 6,358 tons, valued at \$56,631. Salt imported from the United Kingdom or any British possession, or imported for the use of the sea or gulf fisheries, duty free, was imported to the extent of 101,174 tons, valued at \$326,325, giving total imports of 124,350 tons, valued at \$436,118.

Tables 3, 4, and 5, following, give the statistics of exports and imports of salt, since 1880.

SALT.—TABLE 3.

Exports.

Calendar Year.	Bushels.	Value.	Calendar Year.	Bushels.	Value.
		\$			\$
1880.....	467,641	46,211	1897.....	5,383	1,193
1881.....	343,208	44,627	1898.....	5,202	1,252
1882.....	181,758	18,350	1899.....	11,205	2,773
1883.....	199,733	19,492	1900.....	37,653	8,997
1884.....	167,029	15,291	1901.....	39,224	6,510
1885.....	246,794	18,756	1902.....	9,331	3,798
1886.....	221,943	16,886		Lbs.	
1887.....	154,045	11,526	1903.....	1,915,648	5,027
1888.....	15,251	3,987	1904.....	1,006,036	4,186
1889.....	8,557	2,390	1905.....	1,447,728	6,112
1890.....	6,605	1,166	1906.....	618,707	3,437
1891.....	5,290	1,277	1907.....	2,222,542	7,709
1892.....	2,000	504	1908.....	529,229	3,840
1893.....	4,940	1,267	1909.....	276,765	2,488
1894.....	4,639	1,120	1910.....	275,200	2,618
1895.....	4,865	959	1911.....	454,600	5,055
1896.....	3,842	899			

Consumption of Salt in Canada in 1910 and 1911.

	1910.		1911.	
	Pounds.	Value.	Pounds.	Value.
Canadian salt production.....	168,184,000	409,624	183,164,000	413,004
Less exports.....	275,200	2,618	454,600	5,055
	167,908,800	407,006	182,709,400	437,949
Imports of salt paying duty.....	35,230,000	83,043	39,251,300	94,461
" " free of duty.....	232,559,900	382,210	205,784,700	330,251
	435,698,700	872,259	427,745,400	862,661

The following is a list of operators:—

Operator.	Address.
The Canadian Salt Co., Ltd.....	Windsor, Ont.
" " (Sandwich Branch).....	"
The Western Salt Co., Ltd.....	Mooretown, Ont.
Dominion Salt Co., Ltd.....	Sarnia, Ont.
The Elarton Salt Works, Co., Ltd.....	Hyde Park Corner, Ont.
Parkhill Salt Co.....	Parkhill, Ont.
Exeter Salt Works Co.....	Exeter, Ont.
Western Canada Flour Mills Co., Ltd.....	Goderich, Ont.
North American Chemical Co. (J. Ransford).....	"
Stapleton Salt Works, (Jno. Ransford).....	Clinton, Ont.
Grey, Young & Sparling Co., of Ont., Ltd.....	Wingham, Ont.
Ontario People's Salt & Soda Co., Ltd.....	Kincardine, Ont.

MISCELLANEOUS NON-METALLICS.

ARSENIC.

The only production of arsenic in Canada, in 1911, was that recovered by the smelters at Copper Cliff, Deloro, Thorold, and Orillia, in Ontario, from the ores of the Cobalt district treated at these plants.

The total production of arsenious oxide or white arsenic was 2,097 tons, valued at \$76,237. In 1910, the production of white arsenic was 1,502 tons, valued at \$75,328, in addition to which 547 tons of arsenical ore or concentrates, valued at \$5,716, were shipped from Goldboro, Nova Scotia, by the New England Mining Company. This arsenical concentrate was produced from the residue of the mill concentrates after the gold had been extracted by bromo-cyanide. The New England Mining Company did not operate during 1911.

The exports of white arsenic in 1911 were, according to Customs reports, 4,125,558 pounds (2,062 tons) valued at \$81,761, as compared with 4,512,673 pounds (2,256 tons) valued at \$173,932 exported in 1910.

The imports of arsenious oxide in 1911 were 7,338 pounds, valued at \$158, and of sulphide of arsenic, 330,170 pounds, valued at \$6,665. The 1910 imports were arsenious oxide 260,415 pounds, valued at \$6,891, and sulphide of arsenic, 257,451 pounds, valued at \$8,946.

Under the terms of "An Act to encourage the refining of metals in Ontario," passed in 1907, and an amendment Act passed in 1912, a bounty of one half cent per pound is offered by the Ontario government on white arsenic otherwise known as arsenious acid produced from mispickel ores and not from ores carrying smaltite or niccolite or cobaltite, the total bounty paid not to exceed \$15,000 in any one year—this bounty is available until the year 1917. The full text of the Act will be found reproduced in the chapter on cobalt.

It will be observed that under the terms of this Act, the bounty is not payable on the present production of arsenic which is entirely from the Cobalt district.

In the following tables the production of arsenical ore and white arsenic and the imports and exports of arsenic are shown.

Annual Production of Arsenic.

Calendar Year.	ARSENICAL ORE.		WHITE ARSENIC.	
	Tons.	Value.	Tons.	Value.
1885		\$		\$
1886			440	17,600
1887			120	5,460
1888			30	1,200
1889			30	1,200
1890			Nil.	Nil.
1891			25	1,500
1892-3			20	1,000
1894			Nil.	Nil.
1895-8			7	420
1899			Nil.	Nil.
1900			57	4,372
1901			303	22,725
1902			695	41,676
1903			800	43,000
1904-5			257	15,420
1906			201	14,058
1907	656	11,094	330	36,209
1908	986	17,506	715	41,060
1909	224	3,346	1,129	64,100
1910	547	5,716	1,502	75,328
1911			2,097	76,237

Exports of White Arsenic.

Calendar Year.	Pounds.	Value.	Calendar Year.	Pounds.	Value.
		\$			\$
1902	547,698	16,192	1907	613,504	10,850
1903	395,573	10,533	1908	1,913,732	43,493
1904	146,000	6,900	1909	3,111,249	119,673
1905	103,000	5,400	1910	4,512,673	173,932
1906	271,063	5,981	1911	4,125,558	81,761

Annual Imports of Arsenic, 1880-1906.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		\$			\$			\$
1880	18,197	576	1889	69,269	2,434	1898	291,967	14,270
1881	31,417	1,070	1890	133,509	4,474	1899	582,383	24,293
1882	138,920	3,962	1891	115,248	4,027	1900	230,730	11,035
1883	51,953	1,812	1892	302,958	9,365	1901	159,263	8,361
1884	19,337	773	1893	447,079	12,907	1902	106,857	6,004
1885	49,080	1,566	1894	292,505	10,018	1903	298,375	11,324
1886	30,181	961	1895	1,115,697	31,932	1904	414,065	12,421
1887	32,436	1,116	1896	664,854	27,523	1905	268,274	7,661
1888	27,510	1,016	1897	152,275	8,378	1906 Duty free	446,975	19,169

Imports of Arsenious Oxide and Sulphide of Arsenic.

Fiscal Year.	ARSENIUS OXIDE.*		ARSENIC, SULPHIDE OF.*		Total.
	Pounds.	Value.	Pounds.	Value.	
		\$		\$	\$
1907 (9 mos.)	252,473	16,011	95,843	6,116	22,127
1908	378,174	26,804	125,322	7,531	34,335
1009	123,612	4,064	389,815	14,575	18,639
1910	27,066	1,410	301,563	11,485	12,895
1911	254,347	6,605	257,996	8,093	14,698

*Duty free.

CHALK AND WHITING.

These materials are not produced in Canada, but statistics of their importation are given to show the market for them in Canada.

Annual Imports of Chalk and Whiting, 1880-1911.

Fiscal Year.	CHALK (a)		WHITING (b)		Fiscal Year.	CHALK (a)		WHITING (b)	
	Value.	Cwt.	Value.			Value.	Cwt.	Value.	
	\$		\$			\$		\$	
1880	2,117	84,115	26,092	1896	6,467	113,791	27,322		
1881	2,768	47,480	16,637	1897	7,432	102,453	22,541		
1882	2,882	36,270	16,318	1898	9,338	166,293	25,761		
1883	5,067	76,012	29,334	1899	10,461	134,834	34,310		
1884	2,589	76,268	23,230	1900	12,212	127,455	34,575		
1885	8,003	67,441	23,492	1901	11,629	209,868	60,878		
1886	6,583	65,124	25,533	1902	11,337	153,982	42,136		
1887	5,635	47,246	15,191	1903	16,497	139,804	39,867		
1888	5,865	76,619	20,508	1904	19,163	186,919	42,507		
1889	5,336	84,658	22,735	1905	20,896	198,485	51,215		
1890	7,221	96,243	27,471	1906	23,853	160,030	44,376		
1891	8,193	84,679	27,504	1907 (9 mos.)	17,446	128,018	33,453		
1892	9,558	102,985	26,867	1908	24,122	228,699	63,499		
1893	9,966	88,835	25,563	1909	24,066	150,484	45,314		
1894	11,308	103,633	26,649	1910	29,566	206,641	76,404		
1895	7,730	102,751	25,441	1911	36,776	254,839	97,338		

(a) Chalk prepared. Duty 20 per cent. (b) Whiting or whitening, gilders whiting, and Paris white. Duty free.

FLUORSPAR.

The occurrence of fluorspar has been noted on lot 1, concession IV, of Madoc township, Hastings county, Ontario, and some very fine crystals have been obtained from this deposit. In 1905, the deposit was opened by S. Wellington of Madoc, and a shipment of 12 tons made to Port Hope. In 1910, there were mined 200 tons, of which two tons, valued at \$15, and in 1911, 34 tons, valued at \$238, were shipped to the metallurgical works at Deloro, and the Canadian Steel Foundries, Ltd., at Welland.

Imports of fluorspar are not separately shown in the report of the Customs Department, but considerable quantities are used in steel furnaces, the quantity thus consumed in 1910 being reported as 7,461 tons, and in 1911, 8,067 tons.

The imports of hydro-fluor-silicic acid were:—

	Lbs.	\$
Fiscal year, 1910.	433,680	22,622
do 1911.	234,380	12,324
do 1912.	167,112	9,137

MAGNESITE.

Magnesite is found in Canada in the Eastern Townships of the Province of Quebec, in the township of Grenville, Argenteuil county, of the same Province, and also in the town of Atlin, British Columbia.

The Grenville Township deposits are the only ones being operated, the shipments in 1911 being reported as 991 tons, valued at \$5,531. The deposit is situated about 12 miles from Calumet on the Canadian Pacific railway, and has for several years been operated by the Canadian Magnesite Company of Montreal. Mining operations are being carried on on the north half of lot 18, range XI, and the north half of lot 15, range IX, township of Grenville.

The Superintendent of Mines of Quebec reports that much development work was done on the property during 1911, and it is claimed that there is now a quantity of over 100,000 tons of merchantable magnesite blocked out. A calcining kiln of a capacity of 12 to 15 tons of finished product has been installed on the property as well as a grinding plant. It is expected that shipments of calcined magnesite will begin in May, 1912.

Shipments of the crude mineral in 1910 were, 323 tons, valued at \$2,160; in 1909, 330 tons, valued at \$2,508, and in 1908, 120 tons, valued at \$840.

QUARTZ.

Considerable quantities of quartz are used by the smelters of nickel copper ores. It is also used in the manufacture of ferro-silicon, and ground quartz is used by the manufacturers of sanitary ware and enamelled ware.

The production, in 1911, was reported as 60,526 tons, valued at \$83,865, as compared with 88,205 tons, valued at \$91,951, in 1910, and 56,924 tons, valued at \$71,285, in 1909.

The imports of silex or crystallized quartz, in 1911, were 394 tons, valued at \$7,518, and the imports of flint during the same year were 3,766 tons, valued at \$49,106.

A production of flint in Canada is reported for the first time in 1911. There is but one company operating, viz.: The Canada Pebble Company of Port Arthur, Ont., and the flint pebbles are obtained from near Jackfish, Ontario. The production is included with quartz.

Statistics of the annual production of quartz so far as these have been obtained, are shown in the next table.

Annual Production of Quartz.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1890.....	200	1,000	1900-1905.....		
1891-2.....			1906.....	48,376	65,765
1893.....	100	500	1907.....	56,585	124,148
1894-5-6.....	10	50	1908.....	44,741	52,830
1897.....			1909.....	56,924	71,285
1898.....	284	570	1910.....	88,205	91,951
1899.....	600	1,260	1911.....	60,526	83,865

Imports of Silex:—Crystallized Quartz.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		\$			\$
1880.....	5,252	2,290	1896.....	3,289	2,174
1881.....	3,251	1,659	1897.....	2,564	3,415
1882.....	3,283	1,678	1898.....	3,104	2,773
1883.....	3,543	2,058	1899.....	3,951	2,595
1884.....	3,259	1,709	1900.....	4,021	2,876
1885.....	3,527	1,443	1901.....	3,562	2,106
1886.....	2,520	1,313	1902.....	4,388	3,858
1887.....	14,533	5,073	1903.....	3,514	2,762
1888.....	4,608	2,385	1904.....	5,547	4,409
1889.....	5,130	1,211	1905.....	8,931	4,475
1890.....	1,768	2,617	1906.....	7,465	8,347
1891.....	3,674	1,929	1907 (9 mos.).....	11,964	12,969
1892.....	1,429	1,244	1908.....	24,938	19,166
1893.....	2,447	1,301	1909.....	6,206	6,909
1894.....	2,451	1,521	1910.....	11,460	9,531
1895.....	2,882	1,881	1911 Duty free.....	11,348	10,634

TALC.

Talc is being mined in Canada in the Province of Ontario only, two mines being operated during 1911, in the county of Hastings, at Madoc, and Eldorado, respectively.

The production has increased considerably during the past two or three years, the shipments in 1911 being 7,300 tons, valued at \$22,100, as compared with 7,112 tons, valued at \$22,308, shipped in 1910, and 4,350 tons, valued at \$10,300, shipped in 1909.

Formerly the output was exported to United States points and used chiefly in the manufacture of cosmetics. Recently, however, mills have been erected at Madoc for grinding the crude talc and preparing it for the trade. Most of the finished material is now sold in Canada, a large part being used in the paper trade.

The mine operators are:—

Messrs. Cross & Wellington, Madoc, Ont.

The Canadian Talc & Silica Co., Madoc, Ont.

Messrs. Cross & Wellington have been mining talc for many years. The greater part of their product is now sold to Geo. H. Gillespie & Company, who operate a talc grinding mill in the town of Madoc. The Canadian Talc & Silica Co. began operations in 1910, and erected a grinding mill at Eldorado during the past year.

Annual Production of Soapstone and Talc.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886	50	400	1899	450	1,960
1887	100	800	1900	1,420	6,365
1888	140	280	1901	259	842
1889	195	1,170	1902	689	1,804
1890	917	1,239	1903	990	2,739
1891	Nil	Nil	1904	840	1,875
1892	1,374	6,240	1905	500	1,800
1893	717	1,920	1906	1,234	3,030
1894	916	1,640	1907	1,534	4,602
1895	475	2,138	1908	1,616	3,048
1896	410	1,230	1909	4,350	10,300
1897	157	350	1910	7,112	22,308
1898	405	1,000	1911	7,300	22,100

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

The subjects included under this heading comprise, in the order treated: cement; clay products of various kinds, such as brick, sewerpipe and tile, pottery, etc.; lime; sand-lime brick; sands and gravels; slate; and stone for building and other purposes, including granite, marble, limestone, sandstone, etc. In the case of sands and gravels no complete record of production throughout Canada has been obtained, but statistics of exports are published. The statistics of stone production do not include the stone used in making cement or lime, but are as complete as possible for all other established stone quarries; nevertheless there is undoubtedly a large production of stone for foundation work, road-making, and railway construction of which no record is available.

The total value of the production of these structural products in 1911 according to the record obtained was \$22,709,611, as compared with a value of \$19,627,592 in 1910, an increase of \$3,082,019, or 15.7 per cent. The total production in 1909 was valued at \$16,533,349, as compared with which the 1910 production showed an increase of \$3,094,243, or 18.7 per cent.

The Canadian consumption of products of this class is apparently increasing at an even more rapid rate than the production. The consumption based upon the above figures of production in conjunction with the record of exports and imports was in 1911 only a little less than \$30,000,000, as against about \$25,250,000 in 1910 and \$20,350,000 in 1909, the increase in 1911 being 18 per cent and in 1910, 24 per cent.

The large increase in production and consumption of structural materials is only a natural accompaniment of the great national development taking place in Canada. The normal growth of population supplemented by the large immigration now constantly in progress has resulted in a great wave of construction in the building up of cities, the construction of railways, highways, and public works of all kinds.

The building permits issued in a number of the principal cities and towns are but one proof of this growth.

Building permits in thirty-four cities in 1911 aggregated nearly \$32,000,000 in value, as against \$29,000,000 in 1910, an increase of over 28 per cent, and the year 1910 shows a similar increase over 1909 in permits issued of nearly 46 per cent.

A summary of the production of structural materials and clay products since 1907 is shown following:—

	1907.	1908.	1909.	1910.	1911.
	\$	\$	\$	\$	\$
Cement.....	3,781,371	3,709,954	5,345,802	6,412,215	7,644,537
Clay products.....	5,772,117	4,500,702	6,450,840	7,629,956	8,359,933
Lime.....	974,595	712,947	1,132,756	1,137,079	1,517,599
Sand-lime brick.....	167,795	152,856	201,650	371,867	442,427
Sand and gravels (exports).....	119,853	161,387	256,166	407,974	408,110
Slate.....	20,056	13,496	19,000	18,492	8,248
Stone.....	2,027,262	2,088,613	3,127,135	3,650,019	4,328,757
Total.....	12,863,049	11,339,955	16,533,349	19,627,592	22,709,611

The increase in the value of cement sales in 1911 over 1910 was 19 per cent; clay products show an increased production of 9.6 per cent; stone an increase of 18.6 per cent; lime an increase of nearly 29 per cent; sand-lime brick an increase of 15.6 per cent. The production of slate is at no time large, but shows a falling off in 1911.

The export of products of this class is comparatively small, being valued at only \$484,047 in 1911, of which over 90 per cent was made up of sand and gravel. The imports, on the other hand, aggregated \$7,710,552 in value, and included Portland cement, \$834,876; clay products, \$5,156,544; lime, \$161,985; sand and gravel, \$246,613; slate, \$169,685; and stone, \$1,140,846.

CEMENT.

The production of cement in Canada during the past few years, though all classed as Portland, has included an output of Puzzolan cement, made from blast furnace slag at Sydney, N.S., and a small production of 'natural Portland,' made at Babcock, Manitoba, 75 miles southwest of Winnipeg, on the Canadian Northern railway.

The total quantity of cement made in Canada during 1911, as per reports received from the manufacturers, was 5,677,539 barrels of 350 pounds net each (993,569 tons), as compared with 4,396,282 barrels (769,349 tons) made in 1910—an increase of 1,281,257 barrels, or over 29 per cent.

The total quantity of Canadian Portland cement sold in 1911 was 5,692,915 barrels (996,260 tons), as compared with 4,753,975 barrels (831,946 tons) in 1910—an increase of 938,940 barrels, or nearly 20 per cent.

The total consumption of Portland cement in 1911, including Canadian and imported cement, was 6,354,331 barrels of 350 pounds net (1,112,095 tons) as compared with 5,103,285 barrels (893,075 tons) in 1910—or an increase of 1,251,546 barrels, or nearly 25 per cent.

The cement industry has been rapidly growing in importance, and its output is now exceeded in value amongst non-metallic products by coal and clay products only.

An average of 3,010 men were employed in 1911, the total wages paid being reported as \$2,103,838.

The increase in annual production since 1905 has been nearly four-fold. The production per capita in 1911 was about 278 pounds, as against only 79 pounds in 1905. The approximate consumption per capita has increased during the same period from 115 pounds to 310 pounds.

A similar rapid increase in both production and consumption has taken place in the United States, where the annual production now exceeds 75,000,000 barrels.

The production per capita in the United States was in 1910 about 332 pounds, as against 204 pounds in 1905.

Statistics of the total annual sales of natural rock and Portland cement since 1887 are shown in the following table:—

Annual Production of Cement.*

Calendar Year.	Natural rock cement.		Portland cement.		Totals.	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
		\$		\$		\$
1887					69,843	81,909
1888					50,668	35,593
1889	90,474	69,790	Nil.	Nil.	90,474	69,790
1890	87,521	74,822	14,695	17,583	102,216	92,405
1891	90,846	103,479	2,633	5,082	93,479	108,561
1892	88,187	94,912	20,221	52,751	117,408	147,663
1893	126,073	130,167	31,924	63,848	158,597	194,015
1894	72,965	74,842	35,177	69,795	108,142	144,637
1895	66,219	60,795	62,075	112,880	128,294	173,675
1896	70,705	60,500	78,385	141,151	149,090	201,651
1897	85,450	65,893	119,763	209,380	205,213	275,273
1898	87,125	73,412	163,084	324,168	250,209	397,580
1899	147,387	119,308	255,366	513,983	396,753	633,291
1900	125,423	99,994	292,124	562,916	417,552	662,910
1901	133,323	94,415	317,066	565,615	450,394	660,030
1902	127,931	98,932	594,594	1,028,618	722,525	1,127,650
1903	92,252	74,655	627,741	1,150,592	719,993	1,225,247
1904	56,814	50,247	910,358	1,287,992	967,172	1,338,239
1905	14,184	10,274	1,346,548	1,913,740	1,360,732	1,924,014
1906	8,610	6,052	2,119,764	3,164,807	2,123,374	3,170,359
1907	5,775	4,043	2,436,903	3,777,328	2,441,868	3,781,371
1908	1,044	815	2,665,289	3,709,139	2,666,333	3,709,954
1909	0	0	4,067,709	5,345,802	4,067,709	5,345,802
1910	0	0	4,753,975	6,412,215	4,753,975	6,412,215
1911	0	0	5,692,915	7,644,537	5,692,915	7,644,537

* Quantities sold or shipped.

The production of cement in 1911 was derived from twenty-four operating plants, having a total daily capacity of 28,810 barrels, the operating plants being distributed as follows: one in Nova Scotia using blast furnace slag; one in Manitoba making a natural Portland cement; one in British Columbia; three in Alberta; three in Quebec using limestone and clay; and fifteen in Ontario, of which twelve use marl and three limestone.

A comparison of the principal statistics for 1910 and 1911, showing the increases or decreases, as the case may be, is given in the next table.

Comparison of Production, Sales, and Imports of Portland Cement in 1910 and 1911.

—	1910.	1911.	Increase.	%	De- crease-	%
Cement sold.....Bls.	4,753,975	5,692,915	938,940	19·8		
Cement manufactured,	4,396,282	5,677,539	1,281,257	29·1		
Stock on hand Jan. 1....."	1,189,731	918,965			270,766	22·8
Stock on hand Dec. 31....."	832,038	903,589	71,551	8·6		
Value of cement sold.....\$	6,412,215	7,644,537	1,232,322	19·2		
Average price per barrel	1·35	1·34			0·01	0·9
Wages paid....."	1,409,715	2,103,838	604,123	49·2		
Men employed.....No.	2,220	3,010	790	35·6		
Imports of Portland cement...Bls.	349,310	661,916	312,606	89·5		
Value of cement.....\$	468,046	834,879	366,833	78·4		
Average price per barrel....."	1·34	1·26			0·08	5·9
Total consumption of cement in Canada.....Bls.	5,103,285	6,354,831	1,251,546	24·5		
No. of completed plants operated....	22	24	2	9·1		
Total daily capacity of operating plants as on Dec. 31.....Bls.	25,835	23,810	2,975	11·5		

The large increase in output and sales of cement has already been referred to. It will be observed that the stocks on hand December 31, 1911, were approximately 900,000 barrels. The average price per barrel at the mill for all plants practically remains unchanged, being \$1.34 in 1911. There was a considerable increase in the number of men employed and the total wages paid. The imports of Portland cement in 1911 show a very decided increase, nearly 90 per cent, over those of 1910. The average price per barrel of 350 pounds of imported cement shows, however, a falling off of nearly 6 per cent, being \$1.26 in 1911, as compared with \$1.34 in 1910.

The increase in the number of operating plants and in total daily capacity is not due to the building of new plants, but rather to the resumption of operations at the Exshaw plant in Alberta, and the Point Ann plant of the Canada Cement Company at Belleville, Ontario, neither of which was operated during 1910.

Of the total quantity of cement made in 1911, 1,626,857 barrels were made from marl and 4,050,682 barrels from limestone and slag. In 1910, there were 1,214,479 barrels made from marl and 3,181,803 barrels from limestone and slag, and in 1909, 810,706 barrels were made from marl and 3,336,002 barrels from limestone and slag. Practically all of the newer plants erected during the past few years have been limestone plants. The proportion of cement made from

marl in 1908 was about 45 per cent of the total output, as compared with about 28 per cent in 1911.

Statistics of the annual production of Portland cement since 1897, showing the quantity made, the quantity sold, stocks on hand at the end of the year, value of sales, etc., are shown in the next table.

Annual Production of Portland Cement.

Year.	Number of operating plants.	Quantity made.	Quantity sold.	On hand Dec. 31.	Value of sales.	Average per barrel.	Daily capacity.
		Barrels.	Barrels.	Barrels.	\$	\$ cts.	Barrels.
1897			119,763		209,380	1 75	
1898			163,084		324,168	1 99	
1899			255,366		513,983	2 01	
1900			292,124		562,916	1 91	
1901	4	360,160	317,066	68,094	565,615	1 78	
1902	8	562,335	594,594	33,446	1,023,618	1 73	3,900
1903	9	714,136	627,741	123,386	1,150,692	1 83	4,850
1904	10	903,990	910,358	112,051	1,287,992	1 41	
1905	13	1,541,568	1,346,548	306,466	1,913,740	1 42	8,000
1906	15	2,152,562	2,119,764	302,356	3,164,807	1 49	10,500
1907	17	2,491,513	2,436,093	354,435	3,777,328	1 55	14,400
1908	23	3,495,961	2,665,239	1,214,021	3,709,139	1 39	27,500
1909	22	4,146,708	4,067,709	1,777,238	5,345,802	1 31	23,050
1910	22	4,396,282	4,753,975	832,033	6,412,215	1 35	25,335
1911	24	5,677,539	5,692,915	903,589	7,644,637	1 34	28,810

Imports and Exports.—There has been very little cement exported from Canada during past years. The quantity is not shown in the export records of the Customs Department, but the value of the exports during 1911 was only \$4,067, as against a value of \$12,914 in 1910, and \$113,362 in 1909.

The imports of cement previous to 1901 were larger than Canadian production, but gave way steadily to the increasing domestic output until 1909, during which year the imports amounted to 142,194 barrels, or about 3 per cent of the total Canadian consumption. During the past two years there has been an increase in the importation of cement—the imports for 1911 being 661,916 barrels, as compared with 349,310 barrels in 1910. A duty of 12½ cents per 100 pounds general tariff is levied on cement, and 20 per cent on the value of bags containing the product. The British Preferential and Intermediate tariffs are reduced in proportion. The following items in the Customs tariff of 1907 cover the duty on cement:—

	British Preferential tariff.	Intermediate tariff.	General tariff.
Cement, Portland, and hydraulic or water lime, in barrels, bags, or casks, the weight of the package to be included in the weight for duty per hundred pounds.....	8 cents.....	11 cents.....	12½ cents.
Bags in which cement or lime mentioned in the next preceding item is imported.....	15 per cent....	20 per cent....	20 per cent.

The duty on cement alone is equivalent to $43\frac{1}{2}$ cents per barrel of 350 pounds net, and as bags are valued at 10 cents each, there is a further additional duty of 8 cents per barrel, making a total of $51\frac{1}{2}$ cents. As the weight of the bag is included in taking the weight for duty, the general rate will be practically 52 cents per barrel.

The United States was the principal source of imports during the past two years, supplying about 66 per cent of the imports in 1911, as compared with about 29 per cent from Great Britain.

The imports of cement during 1910 and 1911, by countries, are shown in the next table:—

Imports of Cement.

	1910.			1911.		
	Cwt.	%	Value.	Cwt.	%	Value.
			\$			\$
Great Britain.....	433,578	35·5	130,951	666,771	28·8	210,839
United States.....	591,403	48·4	253,463	1,544,612	66·7	575,768
Belgium.....	66,595	5·4	20,618	9,389	0·4	2,018
Other countries.....	131,010	10·7	63,014	18,727	0·8	7,962
Hong Kong.....	(a)			77,208	3·3	38,292
Totals.....	1,222,586	100·0	468,046	2,316,707	100·0	834,879
Equivalent in barrels of 350 lbs..	349,310			661,916		

(a) In 1910 included "in other countries."

Statistics of the exports of cement since 1891 and of the imports since 1880 are given in the next two tables:—

Exports of Cement.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1891.....	2,881	1898.....	2,117	1905.....	3,143
1892.....	938	1899.....	2,733	1906.....	7,551
1893.....	1,172	1900.....	3,296	1907.....	9,618
1894.....	482	1901.....	1,514	1908.....	34,591
1895.....	937	1902.....	2,267	1909.....	113,362
1896.....	1,328	1903.....	2,851	1910.....	12,914
1897.....	644	1904.....	5,494	1911.....	4,067

Imports of Cement into Canada.

Fiscal Year.	Cement and Mfrs. of, N.E.S.*	Hydraulic cement.		Portland cement.	
		Barrels.	Value.	Barrels.	Value.
	\$		\$		\$
1880.....	28	10,034	10,306	.....	55,774
1881.....	298	7,812	7,821	.....	45,646
1882.....	86	11,945	13,410	.....	66,579
1883.....	548	11,659	13,755	.....	102,537
1884.....	1,236	8,606	9,514	.....	102,857
1885.....	1,315	5,613	5,396	.....	111,521
1886.....	1,851	6,164	6,028	.....	120,398
1887.....	1,419	6,160	8,784	102,750	148,054
1888.....	5,787	5,636	7,522	122,402	177,158
1889.....	10,668	5,835	7,467	122,273	179,406
1890.....	5,443	5,440	9,048	192,322	313,572
1891.....	2,890	3,515	6,152	183,728	304,648
1892.....	3,394	2,214	2,782	187,233	281,553
1893.....	2,909	4,896	8,060	229,492	316,179
1894.....	2,618	1,054	985	224,150	289,841
1895.....	2,112	5,333	7,001	196,281	242,813
1896.....	3,672	5,688	8,948	204,407	242,409
1897.....	4,318	2,494	3,937	210,871	252,587
		Cwt.		Cwt.	
1898.....	3,263	16,033	7,097	1,073,058	355,264
1899.....	8,929	1,678	694	1,300,424	467,994
1900.....	10,452	10,418	4,711	1,301,361	498,607
1901.....	4,890	17,784	6,865	1,612,432	654,695
1902.....	12,234	29,585	17,755	1,871,616	833,657
1903.....	16,281	13,690	6,333	2,316,853	863,131
1904.....	14,305	12,088	5,391	2,476,388	995,017
1905.....	18,489	16,961	10,690	4,228,394	1,234,649
1906.....	27,858	10,794	4,034	2,848,582	963,839
1907.....	16,201	1,192	685	1,551,493	523,120
1908.....	12,418	18,860	6,710	2,427,381	852,041
1909.....	5,733	438	466	1,460,850	475,676
1910.....	7,678	588	553	490,899	158,487
1911.....	6,275	389	365	1,233,121	494,081

* Cement not elsewhere specified and manufactures of cement.

Consumption of Cement.—The consumption of cement is represented practically by the domestic production together with the imports, the exports being so comparatively small as to be negligible. The total consumption of Portland cement in Canada in 1911 was 6,354,831 barrels (1,112,095 tons), made up of 5,692,915 barrels (996,260 tons) of Canadian cement, and 661,916 barrels (115,835 tons) of imported cement; the Canadian cement representing 90 per cent and the imported cement 10 per cent of the total.

In 1910 the total consumption of cement was 5,103,285 barrels (893,075 tons), of which 93 per cent was of domestic production and 7 per cent imported. In 1901 the total consumption was 872,966 barrels (152,769 tons), of which only 36 per cent was made in Canada and 64 per cent imported. The following is an estimate of the annual consumption of Portland cement in Canada during the past eleven years:—

Annual Consumption of Portland Cement.

Calendar Year.	Canadian.		Imported.		Total.
	Barrels.	%	Barrels.	%	Barrels.
1901.	317,066	36	555,900	64	872,966
1902.	594,594	52	544,954	48	1,139,548
1903.	627,741	45	773,678	55	1,401,419
1904.	910,358	54	784,630	46	1,694,988
1905.	1,346,548	59	918,701	41	2,265,249
1906.	2,119,764	76	665,845	24	2,785,609
1907.	2,436,093	78	672,630	22	3,108,723
1908.	2,665,289	85	469,049	15	3,134,338
1909.	4,067,709	97	142,194	3	4,209,903
1910.	4,753,975	93	349,310	7	5,103,285
1911.	5,692,915	90	661,916	10	6,354,831

Nova Scotia.—There is only one cement plant in Nova Scotia located at Sydney and operated by the Sydney Cement Company, Limited. Puzzolan cement is made from a mixture of blast furnace slag and lime. The capacity of the mill is about 500 barrels per day of twenty-four hours.

Quebec.—This Province has three cement mills all operated by the Canada Cement Company, Limited: two situated near Montreal at Longue Pointe and Point aux Trembles, and the third at Hull. The Montreal mills have a combined capacity of 5,300 barrels per day, and the Hull mill, 2,000 barrels. The quantity of cement sold or used during 1911 was 1,614,730 barrels, valued at \$1,963,439.

Ontario.—Ontario is the most important cement producing province, having 15 mills, of which 6, with a total daily capacity of 9,200 barrels, are operated by the Canada Cement Company, and 9 mills, having a total daily capacity of 6,550 barrels, by independent companies. Four plants are operated on limestone and have a daily capacity of 6,800 barrels, while 11 plants with an aggregate daily capacity of 8,950 barrels are utilizing marl deposits.

The names of the operating companies and location of plants are shown in the list of cement producers following.

The total sales of cement in Ontario during 1911 were 3,090,786 barrels, valued at \$3,741,039, as compared with 2,504,650 barrels, valued at \$3,150,479, sold in 1910.

The detailed statistics of production during 1910 and 1911 are shown in the next table.

Cement Production in Ontario, 1910 and 1911.

—		1910.	1911.	Increase.	%	Decrease.	%
Cement sold	Bls.	2,504,650	3,090,786	586,136	23.4		
Cement manufactured....	"	2,496,200	2,973,958	477,758	19.1		
Stock on hand Jan. 1....	"	600,971	682,598	81,627	13.6		
Stock on hand Dec. 31....	"	592,521	565,770			26,751	4.5
Value of cement sold.....	\$	3,150,479	3,741,039	590,560	18.7		
Wages paid.....	"	743,213	945,971	202,758	27.3		
Men employed.....	No.	1,306	1,464	158	12.1		
Total daily capacity of operating plants....	Bls.	15,300	15,750	450	29.4		

Manitoba.—There is as yet only one cement plant in this Province, located at Babcock, 75 miles southwest of Winnipeg on the Canadian Northern railway.

This plant is operated by the Commercial Cement Company of Winnipeg, and a natural Portland cement is manufactured. The capacity of the plant is about 216 barrels a day. The Canada Cement Company is also constructing near Winnipeg a grinding plant, in which it is proposed for the present to grind clinker produced in the Company's plants in Ontario.

Alberta.—Alberta has three cement plants, located at Exshaw, Calgary, and Blairmore, respectively. All three plants are operated on limestone and shale. The first two, operated by the Canada Cement Company, have an aggregate daily capacity of 2,800 barrels. The Rocky Mountains Cement Company is doubling the capacity of its Blairmore plant, which in 1911 was 500 barrels per day; while the Keystone Portland Cement Company is erecting a mill at the same place.

British Columbia.—The Tod Inlet plant of the Vancouver Portland Cement Company, Limited, near Victoria, B.C., with a capacity of 2,250 barrels per day, is as yet the only operating plant in British Columbia. Limestone and clay are obtained from the Company's property adjoining the works.

At Princeton, B.C., the British Columbia Portland Cement Company, Limited, is constructing a plant with capacity of from 500 to 700 barrels per day.

The Portland Cement Construction Company of London, England, has also commenced the erection of a new cement plant at Tod Inlet.

The production of cement in Ontario has already been shown separately, and the aggregate production in all other provinces during 1910 and 1911 is given in the next table:—

Cement Production in other Provinces, 1910 and 1911.

	1910.	1911	Increase.	%	Decrease.	%
Cement sold..... Bls.	2,249,325	2,602,129	352,804	15.7		
Cement manufactured.... "	1,900,082	2,703,581	803,499	42.3		
Stock on hand Jan. 1.... "	588,760	236,367			352,393	59.9
Stock on hand Dec. 31 .. "	239,517	337,819	98,302	41.0		
Value of cement sold. \$	3,261,736	3,903,498	641,762	19.7		
Wages paid..... "	666,502	1,157,867	491,365	73.7		
Men employed..... No.	914	1,546	632	69.1		
Total daily capacity of operating plants.. Bls.	10,535	13,060	2,525	23.9		

Following is a list of cement manufacturing companies:—

Name.	Location of plant.	Head office.
Sydney Cement Company, Ltd.....	Sydney, N.S.	Sydney, N.S.
Canada Cement Company, Ltd		Montreal, Que.
Montreal Mill No. 1.....	Longue Pointe, Que.	
Montreal Mill No. 2.....	Pointe Aux Trembles, Q.	
International Mill.....	Hull, Que.	
Owen Sound Mill.....	Shallow Lake, Ont.	
Belleville Mill.....	Belleville, O. (Point Ann)	
Lehigh Mill.....	"	
Lakefield Mill.....	Lakefield, Ont.	
Marlbank Mill.....	Marlbank, Ont.	
Port Colborne Mill.....	Port Colborne, Ont.	
Alberta Mill.....	Calgary, Alta.	
Exshaw Mill.....	Exshaw, Alta.	
Grey & Bruce Portland Cement Co. (assigned.)	Owen Sound, Ont.	Owen Sound, Ont.
The Sun Portland Cement Co., Ltd.....	" " " " " "	" " "
The Imperial Cement Co., Ltd.....	" " " " " "	" " "
Hanover Portland Cement Co., Ltd.....	Hanover, Ont.	Hanover, Ont.
The Ontario Portland Cement Co., Ltd.	Blue Lake, Ont.	Brantford, Ont.
The National Portland Cement Co., Ltd.	Durham, Ont.	Durham, Ont.
Kirkfield Portland Cement Co., Ltd	Raven Lake, Ont.	Toronto, Ont.
Superior Portland Cement Co., Ltd.....	Orangeville, Ont.	Orangeville, Ont.
The Maple Leaf Portland Cement Co., Ltd.	Atwood, Ont.	Listowel, Ont.
The Crown Portland Cement Co., Ltd.....	Warton, Ont.	Warton, Ont.
The Commercial Cement Co., Ltd.....	Babeock, Man.	Winnipeg, Man.
The Rocky Mountains Cement Co.....	Blairmore, Alta.	Calgary, Alta.
Vancouver Portland Cement Co	Tod Inlet, B.C.	Victoria, B.C.

The following companies are engaged in the construction of or contemplating the erection of mills:—

Ben Allan Portland Cement Co.....		Owen Sound, Ont.
Lake Medal Portland Cement Co.....		Hamilton, Ont.
The Brant Portland Cement Co.....		Brantford, Ont.
The Edmonton Portland Cement Co.....		Edmonton, Alta.
The Keystone Portland Cement Co.....	Blairmore, Alta.	Calgary, Alta.
British Columbia Portland Cement Co.....		Princetown, B.C.
The Portland Cement Construction Co.....	Tod Inlet, B.C.	

CLAY PRODUCTS.

The actual production and sale of clay as such in Canada is as yet very small and practically limited to a small quantity of fireclay sold by a few operators. With this exception, all of the clay production in Canada is manufactured by the producer, and this report, therefore, treats 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 production of clay products has been rapidly increasing, the value of the output having almost doubled in three years. The total value of the production in 1911 was \$8,359,933, as compared with a value of \$7,629,956 in 1910, showing an increase of \$729,977, or over 9.5 per cent.

While the increase in gross output was not as large as that shown in 1910, the industry apparently made very satisfactory progress during the year. Demand in most districts exceeded supply and higher prices generally were realized. For the year 1911 about 419 active firms reported, as against 438 active firms reporting for 1910. A larger number of men were, however, employed in 1911, an average of 9,131 being engaged, as compared with 8,656 in 1910; while the wages paid were \$3,524,058 in 1911, as against \$3,308,609 in 1910.

Considered by provinces, Ontario in 1911 had the largest output, being credited with 47 per cent of the total value. Quebec was second with 16 per cent, Alberta third with 12½ per cent, Manitoba fourth with 10 per cent, followed by British Columbia with 8 per cent.

In 1907, Ontario contributed 54 per cent of the production of clay products, while the western provinces contributed only 21 per cent, as against over 33 per cent in 1911.

Of the total value of production in 1911, building and paving brick, including fireproofing, contributed \$6,915,792, or nearly 84 per cent; sewerpipe and tile production were valued at \$1,152,528, or about 14 per cent of the total. The total value of the production of pottery was reported as \$439,264, of which \$102,493 is estimated as being attributable to Canadian clays and the balance to imported clays; the value of production of fireclay and firebrick was \$89,130. Compared with the previous year, the production of building, paving, and fireproofing brick shows an increase of nearly 12 per cent, while the production of sewerpipe and drain tile increased less than one per cent.

The average price of common building brick for the whole of Canada in 1911 was \$8.37, as compared with \$8.13 in 1910 and \$7.81 in 1909. The average price of pressed or front brick for the same years was, respectively, \$12.53, \$11.89, and \$11.01, thus showing the general increase in cost of building brick.

A comparison of statistics of imports of clay products shown in the table following, with those of production, is worth special attention. It will be noted in the first place that the total value of the imports in 1911 was at least \$5,156,544 (certain items probably covering clay products not being included), showing a total approximate consumption of clay products valued at \$13,416,537, of which only 62 per cent was of domestic production.

In 1909 the approximate consumption was valued at \$9,172,995, of which about 70 per cent was of domestic production.

In the case of building brick, the imports while increasing rapidly are still small compared with the home production; it is different, however, with paving brick and firebrick. The imports of paving brick in 1911 were over twice, and the imports of firebrick nearly ten times the Canadian output.

While the production of sewerpipe and drain tile remained nearly stationary, the imports of these products more than doubled in 1911, and amounted in value to about one-third the domestic production.

Statistics of the production in 1911 of the several classes of clay products by provinces are shown in the next table, and of the total production for a number of years past in subsequent tables following:—

Production of Clay Products by Provinces, 1911.

Province.	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.
								\$	\$ cts.		
Nova Scotia.....	13	336	97,513	22,300,000	22,680,000	133,540	5 88	850,000	850,000	8,100	9 52
New Brunswick.....	6	126	24,091	4,811,470	4,300,000	36,800	5 55	100,000	100,000	1,200	12 00
Quebec.....	60	1,402	417,882	129,256,700	110,701,580	849,654	7 67	14,577,000	11,340,000	183,616	16 20
Ontario.....	262	4,366	1,727,478	335,221,526	318,670,621	2,513,965	7 89	51,990,204	50,333,750	514,081	10 21
Manitoba.....	18	1,210	438,228	83,362,000	79,600,000	805,178	10 11	1,800,000	1,800,000	21,750	12 08
Saskatchewan.....	13	303	105,507	17,824,260	16,819,960	159,634	9 49	4,726,700	4,251,700	65,124	15 31
Alberta.....	28	732	324,868	58,064,710	56,943,955	574,243	10 10	14,752,734	14,828,975	204,758	13 81
British Columbia.....	19	606	388,491	37,816,308	35,834,401	347,876	9 70	5,373,647	3,846,114	95,953	24 94
Totals.....	419	9,131	3,524,058	688,656,974	645,550,517	5,420,390	8 37	94,170,285	87,350,539	1,094,582	12 53

Province.	Paving brick.		Ornamental.		Firebrick and fireclay shapes, Value.	Fireproofing and terra-cotta, etc., Value.	Pottery, Value.	Sewerpipe, Value.	Tiles, drain, Value.	Total value, Clay products.
	No. sold.	Value.	No. sold.	Value.						
Nova Scotia.....		\$		\$	15,207	11,256	1,800	98,946	5,400	274,249
New Brunswick.....										38,000
Quebec.....			192,000	3,840	18,000	76,199	59,400	150,303	455	1,341,467
Ontario.....	5,220,400	79,444	413,643	7,441		51,080	41,293	409,242	300,029	3,916,575
Manitoba.....									7,500	834,428
Saskatchewan.....					2,200					226,958
Alberta.....						270,750			3,000	1,052,751
British Columbia.....					53,723	300		154,225	23,428	675,505
Totals.....	5,220,400	79,444	605,643	11,281	89,130	409,585	*102,493	812,716	339,812	8,359,933

* There was also a production of \$336,771 from imported clays.

Production of Clay Products, 1909 and 1910.

	1909.			1910.		
	Quantity.	Value.	Per M.	Quantity.	Value.	Per M.
Bricks—		\$	\$ cts.		\$	\$ cts.
Common No.	539,228,708	4,212,424	7 81	627,715,319	5,105,354	8 13
Pressed "	57,264,656	630,677	11 01	67,895,034	807,294	11 89
Paving "	3,759,803	67,408	17 93	4,214,917	78,980	13 74
Ornamental		8,866		703,345	16,092	22 89
Firebrick and fireclay shapes, etc.		78,132			50,215	
Fireproofing, and architectural terra-cotta, etc.		113,886			176,979	
Pottery		285,285			250,924	
Sewerpipe		645,722			774,110	
Tiles, drain.	27,571,097	408,440	14 81	24,562,648	370,008	
Totals		6,450,840			7,629,956	

Production of Clay Products by Provinces, 1906-1911.

Province.	1906.	1907.	1908.	1909.	1910.	1911.
	\$	\$	\$	\$	\$	\$
Nova Scotia.	160,506	125,560	117,833	188,185	204,782	274,249
New Brunswick.	49,220	57,377	75,513	65,570	56,475	38,000
Quebec	769,458	1,214,108	893,717	1,153,832	1,442,842	1,341,467
Ontario	3,136,370	3,123,372	2,476,152	3,425,841	3,667,810	3,916,575
Manitoba.	517,065	466,432	265,091	559,008	781,605	334,428
Saskatchewan.	136,022	125,459	87,566	145,516	160,350	226,958
Alberta.	180,217	353,672	240,384	442,486	753,232	1,052,751
British Columbia.	123,277	306,137	344,446	470,402	562,360	675,505
	5,072,635	5,772,117	4,500,702	6,450,840	7,629,956	8,359,933

Annual Value of Production of Clay Products, 1899-1911.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1899.	2,988,099	1904.	3,841,560	1909.	6,450,840
1900.	3,195,105	1905.	4,709,842	1910.	7,629,956
1901.	3,382,706	1906.	5,072,635	1911.	8,359,933
1902.	3,625,489	1907.	5,772,117		
1903.	4,034,289	1908.	4,500,702		

Exports and Imports.—The only export of clay products recorded is that of building brick, of which the exports in 1911 were 394,000, valued at \$3,977, as compared with 390,000, valued at \$2,762, in 1910, and 365,000, valued at \$2,255, in 1909.

The imports of clay products and of clay are, on the other hand, as already pointed out, quite considerable, and amounted in total value during the calendar year 1911 to \$5,156,544, equivalent to about 62 per cent of the domestic production. The total imports in 1910 were valued at \$4,331,397, showing an increase in 1911 of \$825,147, or 19 per cent, as against an increase in 1910 over 1909 of 33 per cent. In both years the imports have increased at a higher rate than the domestic production. Clay imports are classified by the Department of Customs under three main subdivisions: clays, brick and tile, and earthenware and chinaware. The imports of clays in 1911 were valued at \$270,247, and included chiefly china-clay and fireclay with a small quantity of pipeclay, and other clays not classified. The value of china-clay imports was \$125,768, and of fireclay, \$125,199. The imports of these clays have varied considerably from year to year, and do not show the same general increase as do the imports of manufactured clays. A reference to the next table will show the changes since 1905. The imports classified under brick and tile were valued in 1911 at \$2,369,761, of which about 34 per cent was firebrick, other important items being building brick, sewerpipe, and paving brick. There was also an importation under this class of manufactures of clay not specifically designated, valued at \$523,998. The imports of these 'unclassified' brick and tile have increased steadily year by year, the value of such imports in 1905 having been only \$20,804. The total imports of brick and tile in 1910 were valued at \$1,755,773, showing an increase in 1911 of about 35 per cent. The imports of earthenware and chinaware, of which the most important class is tableware, were valued in 1911 at \$2,516,536, as against \$2,283,116, an increase of about 10 per cent.

The detailed record of imports since 1905 is shown in the next table, the figures for the years 1905 to 1909 covering the fiscal year, and for the last three years the calendar year is used.

Imports of Clay Products, 1905 to 1911.

Imports.	12 months ending June, 1905.	12 months ending June, 1906.	9 months ending March, 1907.	12 months ending March, 1908.	12 months ending March, 1909.	Calendar year 1909.	Calendar year 1910.	Calendar year 1911.
	\$	\$	\$	\$	\$	\$	\$	\$
Brick and tile :-								
Bath brick.....	916	1,466	1,076	1,834	4,432	1,495	2,290	2,623
Building brick.....	168,122	194,897	88,144	129,105	108,773	195,360	274,482	475,865
Paving brick.....	32,578	46,008	23,256	61,346	101,187	139,366	124,994	164,292
Firebrick, of a class or kind not made in Canada..	*436,941	*591,854	*506,801	639,347	350,457	485,994	811,927	814,414
Drain tile, not glazed.....	1,229	4,727	12,106	2,080	2,394	2,785	4,485	5,640
Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....	101,166	131,353	93,453	125,747	106,399	170,280	175,599	382,929
Manufactures of clay, N.O.P.....	20,804	30,067	45,845	110,097	141,391	254,170	361,996	523,998
Total.....	761,756	1,000,372	770,686	1,079,556	815,033	1,249,450	1,755,773	2,369,761
Earthenware and chinaware :-								
Brown or coloured earthenware and stoneware, and Rockingham ware.....	15,464	8,363	9,625	22,847	28,273	36,673	53,413	52,100
C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P.....	169,102	191,552	154,879	239,513	197,623	219,936	202,475	184,291
Demi-johns, churns, or crocks.....	8,158	10,508	9,342	17,836	10,571	8,888	6,607	4,933
Tableware of china, porcelain, white granite or iron-stoneware.....	1,033,171	1,004,024	902,798	1,555,517	1,202,537	1,212,365	1,545,538	1,718,582
China and porcelain ware, N.O.P.....	199,960	214,013	134,675	109,446	87,798	87,467	95,509	62,025
Tiles or blocks of earthenware or stone prepared for mosaic flooring.....			62,547	45,836	43,299	56,974	90,524	123,20
Earthenware tiles, N.O.P.....	65,181	73,247	67,027	116,480	79,854	81,393	125,772	154,351
Manufacture of earthenware, N.O.P.....	71,609	117,824	81,987	83,309	66,932	78,063	163,278	217,051
Total.....	1,562,645	1,624,531	1,422,880	2,190,784	1,716,887	1,781,759	2,283,116	2,516,536

Imports of Clay Products, 1905 to 1911—Continued.

Imports.	12 months ending June, 1905.	12 months ending June, 1906.	9 months ending March, 1907.	12 months ending March, 1908.	12 months ending March, 1909.	Calendar year 1909.	Calendar year 1910.	Calendar year 1911.
	\$	\$	\$	\$	\$	\$	\$	\$
Clays:—								
China-clay, ground or unground.....	94,501	65,909	78,772	97,236	90,922	100,066	142,125	125,768
Fireclay, ground or unground.....	73,837	131,130	85,044	155,873	77,146	86,161	124,293	125,199
Pipeclay, ground or unground.....	1,189	1,333	307	319	887	310	114	1,786
Clays, all other, N.O.P.....	7,278	22,132	14,117	14,292	21,280	29,793	25,976	17,494
Total.....	176,805	220,504	178,240	267,720	190,235	216,330	292,508	270,247
Grand total.....	2,501,206	2,845,407	2,371,806	3,538,060	2,722,155	3,247,539	4,331,397	5,156,544
Baths, bath-tubs, basins, closets, lavatories, urinals, sinks and laundry tubs of any material.....	73,569	67,828	62,547	234,505	157,881	211,337	262,667	285,847
Chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite, ground or unground.....	5,276	9,053	7,376	72,467	81,675	96,747	121,959	147,640

* Includes stove linings, N. E. S.

In addition to the imports shown in the above table, there is also a considerable annual importation of 'chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite ground or unground,' much of which is no doubt used in connexion with the manufacture of clay products. The value of these imports during the calendar year 1911 was \$147,640: of which \$90,119 was from the United States, \$54,548 from Great Britain, and \$2,973 from other countries. The value of the imports under this item during the calendar year 1910 was \$121,959. There is also an annual importation of 'baths, bath tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material,' the value of such imports during 1911 being \$285,847, as compared with \$262,667 during the year 1910.

Imported clay products are derived chiefly from Great Britain and the United States, although considerable quantities of earthenware, china, and porcelain ware, white granite or ironstoneware, etc., are brought from Germany, France, Austria-Hungary, and Japan. The imports during the fiscal year, showing the country of origin, are shown in the next table. Of the brick and tile imported, 76.7 per cent was from the United States and 23.2 per cent from Great Britain; and only \$578 worth from other countries. Of the earthenware and chinaware, 62 per cent was imported from Great Britain; 15 per cent from the United States; 9 per cent from Germany; 7 per cent from France, and considerable values also from Japan, Austria-Hungary, and other countries. The crude clays were imported principally from Great Britain and the United States.

Imports of Clay Products during the twelve months ending March, 1911, showing Countries of Origin.

Imports.	Great Britain.	United States.	Germany.	France.	Austria-Hungary.	Japan.	Other countries.	Total.
	\$	\$	\$	\$	\$	\$	\$	\$
Brick and tile:—								
Bath brick.....	2,250	17						2,267
Building brick.....	30,837	278,716						309,553
Paving brick.....	94,885	35,976						130,861
Firebrick, of a class or kind not made in Canada.....	73,128	791,202					135	864,465
Drain tile, not glazed.....	305	4,073						4,378
Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....	23,179	151,283	191					174,653
Manufactures of clay, N.O.P.....	216,950	191,822	194	29	17		12	409,024
Total.....	441,534	1,453,089	385	29	17		147	1,895,201
Earthenware and chinaware:—								
Brown or coloured earthenware and stoneware, and Rockingham ware.....	13,747	39,728	718	90		123		54,406
C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P.....	112,956	46,260	12,892	2,186	2,438	12,949	1,829	191,510
Demijohns, churns, or crocks.....	1,622	5,615						7,237
Tableware of china, porcelain, white granite or ironstone-ware.....	1,133,279	29,893	174,405	157,325	47,446	69,525	28,162	1,640,035
China and porcelain ware, N.O.P.....	44,866	18,330	15,869	2,330	4,893	3,975	4,312	94,575
Tiles or blocks of earthenware or stone prepared for mosaic flooring.....	24,216	66,057	13	3,448			150	93,884
Earthenware tiles, N.O.P.....	85,489	50,032	236	566			162	136,485
Manufacture of earthenware, N.O.P.....	60,143	95,983	15,539	2,606	1,026	3,399	1,588	180,284
Total.....	1,476,318	351,898	219,672	168,551	55,803	89,971	36,203	2,398,416

Imports of Clay Products during the twelve months ending March, 1911, showing Countries of Origin—*Continued.*

Imports.	Great Britain.	United States.	Germany.	France.	Austria-Hungary.	Japan.	Other Countries.	Total.
	\$	\$	\$	\$	\$	\$	\$	\$
Clays:—								
China-clay, ground or unground.	110,432	34,472						144,904
Fireclay, ground or unground.	25,218	103,811					699	129,728
Pipeclay, ground or unground.	100	156						256
Clays, all other, N.O.P.	486	23,660	499					24,645
Total.	136,236	162,099	499				699	299,533
Grand total.	2,054,088	1,967,086	220,556	168,580	55,820	89,971	37,049	4,593,150
Per cent of total.	44.72	42.83	4.80	3.67	1.21	1.96	0.81	100.00
Baths, bath-tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material.	65,332	195,218	160		11		13	260,734
Chalk, china or cornwall stone, cliff stone, and feldspar, fluorspar, magnesite, ground or unground.	27,550	89,846	856	332	152		1,945	120,681

A record of the total annual value of the imports of clay products since 1900 by fiscal years is shown in the following table. In twelve years Canada has imported clay products to the value of \$30,093,888. The increase in imports has been most pronounced in the case of brick and tile, the imports of which in 1900 amounted to \$145,914, as compared with \$1,895,201 in 1911. The imports of earthenware and chinaware have a little more than doubled in the same time.

Imports of Clay Products (total value) 1900-11.

Fiscal Year.	Brick and tile.	Earthenware and chinaware.	Clays.	Total
	\$	\$	\$	\$
1900.....	145,914	959,526	122,965	1,228,405
1901.....	133,343	1,114,677	141,251	1,389,271
1902.....	172,281	1,275,093	140,521	1,587,895
1903.....	157,783	1,406,610	176,416	1,740,809
1904.....	259,421	1,611,356	144,706	2,015,483
1905.....	761,756	1,636,214	176,805	2,574,775
1906.....	1,000,372	1,692,359	220,504	2,913,235
1907*.....	770,686	1,422,880	178,240	2,371,806
1908.....	1,079,556	2,190,784	267,720	3,538,060
1909.....	815,033	1,716,887	190,235	2,722,155
1910.....	1,341,310	1,859,302	218,232	3,418,844
1911.....	1,895,201	2,398,416	299,533	4,593,150
	8,532,656	19,234,104	2,277,128	30,093,888

*19 months ending March 1907.

** Includes fireclay classified as "for use in process of manufactures."

In view of the large import of clay products into Canada, it may be of interest to quote herewith the Customs duties affecting these goods.

Canadian Customs Duties on Clay Products.

(From the Customs Tariff, 1907, revised 1910).

Item.	British Preferential tariff.	Inter-mediate tariff.	General tariff.
231 Firebrick of a class or kind not made in Canada.....	Free.	Free.	Free.
232 Building brick, paving brick, and mfgs. of clay or cement (N.O.P.).....	12½ %	20 %	22½ %
233 Drain tiles not glazed.....	15 "	17½ "	20 "
234 Drain pipes, sewerpipes, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed, earthenware tiles (N.O.P.).....	25 "	32½ "	35 "
235 Tiles or blocks of earthenware or of stone prepared for mosaic flooring.....	20 "	27½ "	30 "
236 Earthenware and stoneware, viz., demijohns, churns, or crocks.....	20 "	27½ "	30 "
237 Tableware of china, porcelain, white granite or ironstone.....	15 "	27½ "	27½ "
238 Earthenware and stoneware, brown or coloured, and Rockingham ware "C.C." or cream coloured ware, decorated, printed or sponged, and all earthenware (N.O.P.).....	20 "	27½ "	30 "
239 Closets, urinals, basins, lavatories, baths, bath tubs, sinks, and laundry tubs of earthenware, stone, cement or clay or of other material.....	20 "	30 "	35 "
295 Clays, including china-clays, fireclay and pipe-clay, not further manufactured than ground; ganister and sand; gravels; earths, crude only.....	Free.	Free.	Erce.

Clay Building Brick.—The total production of clay building brick, including the common and pressed varieties, but excluding ornamental, paving, firebrick, and fireproofing brick, is shown by provinces for the past two years in the following tables.

In 1911 the total sales were 732,901,056, valued at \$6,515,472, made up of 645,550,517 common, valued at \$5,420,890, or an average value per thousand of \$8.37; and 87,350,539 pressed brick, valued at \$1,094,582, or an average value per thousand of \$12.53. In addition to the common and pressed brick there was a production of ornamental brick of 605,643, valued at \$11,281, and a production of fireproofing brick and architectural terra-cotta valued at \$409,585.

In 1910 the production was 627,715,319 common brick, valued at \$5,105,354, or an average value per thousand of \$8.13; and 67,895,034 pressed brick, valued at \$807,294, or an average value per thousand of \$11.89; the total of the two classes being 695,610,353, valued at \$5,912,648. The production of ornamental brick in 1910 was 703,345, valued at \$16,092; and of fireproofing and architectural terra-cotta, \$176,979.

The increase in production of fireproofing has been particularly marked, and is due to the establishment of new plants, including the National Fire Proofing Company of Canada at Waterdown, Ont., and the Alberta Clay Products Company, Limited, of Medicine Hat, Alta.

The demand for brick has been very strong, particularly throughout the west, where numbers of plants are being increased in capacity and many new plants either contemplated or in course of construction.

Production of Clay Building Brick (Common and Pressed) 1910 and 1911.

Province.	1910.				1911.			
	No. of active firms reporting.	No. sold.	Value.	Per cent of total value.	No. of active firms reporting.	No. sold.	Value.	Per cent of total value.
			\$				\$	
Nova Scotia.....	15	18,730,000	113,436	1·92	13	23,530,000	141,640	2·17
New Brunswick.....	4	3,950,000	31,350	0·53	6	4,400,000	33,000	0·58
Quebec.....	62	130,278,310	929,492	15·72	60	122,041,530	1,033,270	15·86
Ontario.....	235	342,119,078	2,785,361	47·11	262	369,034,371	3,023,046	46·48
Manitoba.....	22	73,834,550	746,704	12·63	18	81,400,000	826,923	12·69
Saskatchewan.....	11	14,733,340	160,850	2·72	13	21,071,660	224,753	3·45
Alberta.....	29	73,639,771	750,932	12·70	28	71,772,930	779,001	11·96
British Columbia....	19	36,316,304	394,473	6·67	19	39,680,515	443,829	6·81
Totals.....	397	695,610,353	5,912,648	100	419	732,901,056	6,515,472	100·00

Production of Clay Building Brick (Common and Pressed) 1908 and 1909.

Province.	1903.			1909.		
	No. sold.	Value.	Per cent of total value.	No. sold.	Value.	Per cent of total value.
		\$			\$	
Nova Scotia.....	9,125,000	56,064	1.79	18,875,000	114,795	2.37
New Brunswick.....	6,594,011	54,573	1.74	6,170,000	44,330	0.91
Quebec.....	90,667,177	601,874	19.24	101,471,567	690,918	14.27
Ontario.....	221,600,575	1,664,184	53.19	322,524,414	2,557,068	52.80
Manitoba.....	26,818,000	254,591	8.14	59,110,000	544,548	11.24
Saskatchewan.....	8,262,996	87,566	2.80	14,416,770	144,316	2.98
Alberta.....	25,521,911	240,336	7.68	45,479,855	441,606	9.12
British Columbia.....	18,152,362	169,546	5.42	28,445,758	305,520	6.31
Totals	406,742,632	3,128,734	100.00	596,493,364	4,843,101	100.00

The exports and imports of building brick since 1891 and 1880, respectively, are shown in the two following tables. The exports have never been large, averaging for a number of years past about \$5,000 in value per annum, but falling in 1910 and 1911 to \$2,762 and \$3,977, respectively. The annual imports for a number of years previous to 1903 averaged only about \$20,000 in value. During the past eight years, however, the imports have rapidly increased from \$100,000 to nearly \$500,000 per annum. During the calendar year 1911 the imports were 51,102,000 brick, valued at \$475,865: of which 6,404,000, valued at \$72,675, or an average of \$11.35 per thousand, were imported from Great Britain; and 44,698,000, valued at \$403,190, or an average of \$9.02 per thousand, from the United States. The imports during the calendar year 1910 were 29,049,000 brick, valued at \$274,482: of which 1,993,000, valued at \$26,447, or an average of \$13.27 per thousand, were imported from Great Britain; and 27,056,000, valued at \$248,035, or an average of \$9.45 per thousand, from the United States.

Exports of Building Brick.

Calendar Year.	M.	Value.	Calendar Year.	M.	Value.	Calendar Year.	M.	Value.
		\$			\$			\$
1891.....	246	1,163	1898.....	65	442	1905.....	754	5,888
1892.....	1,963	12,192	1899.....	172	1,351	1906.....	697	6,541
1893.....	6,073	44,110	1900.....	546	4,528	1907.....	802	6,193
1894.....	1,095	7,405	1901.....	646	5,189	1908.....	2,344	9,047
1895.....	1,655	8,665	1902.....	2,110	12,786	1909.....	365	2,235
1896.....	933	5,673	1903.....	391	5,699	1910.....	390	2,762
1897.....	573	2,679	1904.....	696	5,357	1911.....	394	3,977

Imports of Building Brick.

Fiscal Year.	M.	Value.	Fiscal Year.	M.	Value.	Fiscal Year.	M.	Value.
		\$			\$			\$
1880.....	340	2,067	1891.....	589	9,744	1902.....	4,087	33,802
1881.....	415	4,281	1892.....	621	5,075	1903.....	2,881	23,493
1882.....	3,500	24,572	1893.....	1,489	14,108	1904.....	13,455	117,468
1883.....	1,448	14,234	1894.....	2,220	13,320	1905.....	25,515	168,122
1884.....	3,263	20,258	1895.....	575	4,705	1906.....	21,934	194,897
1885.....	3,108	14,632	1896.....	1,057	23,189	1907 (9 mos.)	8,495	88,144
1886.....	983	5,929	1897.....	2,094	10,336	1908.....	13,790	139,105
1887.....	276	2,440	1898.....	639	6,652	1909.....	10,894	108,773
1888.....	2,483	20,720	1899.....	2,611	21,306	1910.....	30,444	213,175
1889.....	2,590	24,585	1900.....	1,792	19,305	1911.....	32,748	309,553
1890.....	1,933	12,500	1901.....	2,800	20,677			

Prices.—The price of brick varies greatly with the quality, locality, market, or demand. The values as given in the table of production are those at the yard or kiln and do not include costs of delivery. They do not, therefore, represent the price to the consumer. The average price of common brick at the kiln in 1911 according to these returns was \$8.37, as compared with \$8.13 in 1910, and \$7.81 in 1909; and of pressed brick \$12.53, as compared with \$11.89 in 1910 and \$11.01 in 1909.

In the Maritime Provinces, during 1911, the price of common brick varied from \$5 to \$9, averaging for Nova Scotia \$5.88, and for New Brunswick \$5.55.

In Quebec the price of common brick varied between \$4.50 and \$11, averaging \$7.67; while the price of pressed brick averaged \$16.20, with only one firm reporting production. The average price of common brick in Ontario was \$7.89, the limits of variation being \$5 and \$11; while for pressed brick the average was \$10.21 and the variation from \$8 to \$12.

In the western provinces the averages for common brick were fairly uniform—\$9.49 to \$10.11. In individual yards the prices varied from \$8 to \$12. Pressed brick in the west averaged \$12.08 per thousand in Manitoba; \$15.31 in Saskatchewan; \$13.81 in Alberta; and \$24.94 in British Columbia. With the exception of Saskatchewan, the average prices for pressed brick in the western provinces were all lower than in 1910.

The following table shows the average values at the kilns of common and pressed brick during 1909, 1910, and 1911, as furnished by the producers:—

Average Prices per Thousand of Common and Pressed Brick.

	Common brick.			Pressed brick.		
	1909.	1910.	1911.	1909.	1910.	1911.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.	5 69	5 77	5 88	12 36	12 27	9 52
New Brunswick.	7 14	7 83	5 55	12 00	12 00	12 00
Quebec.	6 38	6 63	7 67	14 00	15 00	16 20
Ontario.	7 71	7 88	7 89	9 46	9 74	10 21
Manitoba.	9 14	9 81	10 11	12 00	16 27	12 08
Saskatchewan.	9 66	9 63	9 49	14 00	14 97	15 31
Alberta.	9 21	9 63	10 10	13 03	19 01	13 81
British Columbia.	9 73	9 77	9 70	31 05	33 56	24 94
Canada.	7 81	8 13	8 37	11 01	11 89	12 53

Nova Scotia and New Brunswick.—An increase is shown in the brick production of both these Provinces in 1911, the total production in Nova Scotia being 23,530 thousand, valued at \$141,640; and in New Brunswick, 4,400 thousand, valued at \$38,000. In addition to brick there was a production in Nova Scotia of fireproofing, terra-cotta, tile, etc., valued at \$11,256, and a production of pottery valued at \$1,800. The principal brick plants are located at Pugwash, Elmsdale, New Glasgow, Middleton, and Annapolis in Nova Scotia, and at Fredericton, St. John, and Chatham, New Brunswick.

Quebec.—The total production of brick in Quebec in 1911 is reported by sixty operative firms as 122,042 thousand, valued at \$1,033,270, comprising 110,702 thousand common brick, valued at \$849,654, or \$7.67 per thousand, and 11,340 thousand pressed brick, valued at \$183,616, or \$16.20 per thousand. The production by sixty-two active firms in 1910 was 130,287 thousand brick, valued at \$929,492.

The production of brick is widely scattered throughout the Province, but the principal brickmaking plants are located at Laprairie, Sherbrooke, and St. Jean Deschailons.

Ontario.—This Province has for a number of years produced over 50 per cent of the clay building brick production in Canada, though the percentage in 1910 and 1911 has fallen to a little over 46. The city of Toronto and vicinity, including the counties of York and Halton, is the principal brick-making section, and in 1911 produced about 59 per cent of the Ontario production, or about 28 per cent of the total Canadian production of brick.

The district next in importance is the county of Wentworth, comprising the city of Hamilton and vicinity, producing over 7½ per cent of the Ontario production. The Ottawa district, including the counties of Russell and Carleton, produced over 6½ per cent. Other important districts are Algoma and Nipissing, which cover a wide area, and the counties of Waterloo, Middlesex, Grey, Simcoe, Essex, and Kent. These thirteen counties contributed over 86 per cent of the Ontario production. The greater part of the pressed brick reported as such was made in the Toronto and Hamilton districts.

Production of Common and Pressed Brick by Principal Counties, 1911.

County.	Common.			Pressed.			Total value.	Per cent.
	No.	Value.	Per M.	No.	Value.	Per M.		
		\$	\$ c.		\$	\$ c.	\$	%
York.....	163,102,300	1,353,096	8 30	14,146,000	162,865	11 51	1,515,961	60·06
Halton.....	200,000	1,600	8 00	26,948,400	259,659	9 64	261,259	8·63
Wentworth.....	26,754,286	168,479	6 30	6,612,314	63,706	9 63	232,185	7·67
Carleton.....	11,975,000	109,369	9 13				109,369	3·61
Russell.....	15,850,500	96,353	6 08				96,353	3·18
Algoma.....	9,096,000	74,189	8 16				74,189	2·45
Waterloo.....	8,120,365	60,913	7 50				60,913	2·01
Nipissing.....	6,100,000	57,500	9 43				57,500	1·90
Middlesex.....	6,849,530	52,502	7 66				52,502	1·73
Grey.....	6,099,490	48,952	8 03				48,952	1·62
Simcoe.....	4,995,000	38,940	7 80				38,940	1·29
Essex.....	5,255,200	35,497	6 75	120,000	1,200	10 00	36,697	1·21
Kent.....	4,997,500	33,453	6 69				33,453	1·10
Total, 13 counties...	269,395,171	2,130,843	7 91	47,826,714	487,430	10 19	2,618,273	86·46
Total, other counties	49,275,450	383,122	7 77	2,507,036	26,651	10 63	409,773	13·54
Total, Ontario.....	318,670,621	2,513,965	7 89	50,333,750	514,081	10 21	3,028,046	100·00

The annual production of common and pressed brick in this Province since 1898, as ascertained by the Ontario Bureau of Mines, is shown in the following table. The figures differ only slightly from those reported directly to the Mines Branch:—

Building Brick made in Ontario since 1898.

	Common brick.			Pressed brick.		
	M.	Value.	Average per M.	M.	Value.	Average per M.
		\$	\$ cts.		\$	\$ cts.
1898	170,000	914,000	5.376	8,970	100,344	11.187
1899	233,898	1,813,750	5.617	10,808	105,000	9.715
1900	240,430	1,379,590	5.738	11,562	114,419	9.896
1901	259,265	1,530,460	5.903	12,846	164,394	8.127
1902	220,500	1,411,000	6.399	19,755	144,171	7.298
1903	230,000	1,561,700	6.790	23,703	218,550	9.220
1904	200,000	1,430,000	7.150	26,857	226,750	8.443
1905	250,000	1,937,500	7.750	26,000	234,000	9.000
1906	300,000	2,157,000	7.190	39,860	337,795	8.475
1907	273,882	2,109,978	7.704	69,763	648,683	9.293
1908	222,361	1,575,875	7.087	56,167	485,819	8.649
1909	246,308	1,916,147	7.779	53,167	490,571	9.227
1910	304,988	2,374,287	7.785	44,204	458,596	10.375
*1911	316,000	2,480,177	7.845	51,844	562,345	10.847

* Preliminary.

In addition to the ordinary building brick, there was produced in this Province in 1911, ornamental brick valued at \$7,441, and fireproofing and terra-cotta valued at \$51,080.

Manitoba.—The production of building brick in Manitoba in 1911 was 81,400 thousand, valued at \$826,923, comprising 79,600 thousand common brick, valued at \$805,178, or an average of \$10.11 per thousand; and 1,800 thousand pressed brick, valued at \$21,750, or \$12.08 per thousand. The total production in 1910 was 75,835 thousand, valued at \$746,704, showing an increase of over 10 per cent in the value of the production.

The principal brickmaking plants are located at Winnipeg, Morris, Lac du Bonnet, Portage La Prairie, Sidney, Brandon, Brookdale, Gilbert Plains, and Virden.

Saskatchewan.—Returns from thirteen operating firms show a production in 1911 of 21,072 thousand brick, valued at \$224,758, as compared with 14,733 thousand brick, valued at \$160,850, produced by eleven firms during 1910.

The principal clay plants are located at Estevan, Prince Albert, Saskatoon, Rosthern, Verigin, and Yorkton.

Alberta.—The production in 1911 reported by twenty-eight firms was 71,773 thousand, valued at \$779,001, as against 73,640 thousand, valued at \$750,982, reported by twenty-nine firms in 1910. The 1911 production included 56,944 thousand common brick, valued at \$574,243, or an average of \$10.10 per thousand, and 14,829 thousand pressed brick, valued at \$204,758, or an average of \$13.81 per thousand.

In addition to building brick, there was a production in this Province during 1911 of fireproofing valued at \$270,750.

The principal centres of production are Edmonton, Cochrane, Calgary, Medicine Hat, Lethbridge, and Red Deer.

Throughout the three prairie provinces the demand for brick was particularly heavy, and the prices of common ranged from \$8 to \$12 per thousand, while pressed brick sold at from \$14 to \$20 per thousand.

British Columbia.—The production during 1911 by nineteen active firms was 39,681 thousand brick, valued at \$443,829, and included 35,835 thousand common brick, valued at \$347,876, or an average of \$9.70 per thousand; and 3,846 thousand pressed brick, valued at \$95,953, or an average of \$24.94 per thousand. The total production by the same number of firms in 1910 was 36,316 thousand brick, valued at \$394,473. Vancouver, New Westminster, Port Haney and vicinity, Anvil Island, Victoria, and Sidney are the principal centres for the production of common brick, while pressed brick are made in considerable quantities at Clayburn and Anvil Island.

Paving Brick.—The total production of paving brick and paving blocks in Canada in 1911 was reported as 5,220,400, valued at \$79,444, as compared with a production of 4,215,000, valued at \$78,980 in 1910.

This paving brick is made at West Toronto, Ont., from shale obtained from the banks of the Humber river. The annual production has for a number of years varied from 3,000,000 to over 5,000,000 per season, and the output finds a market chiefly in Toronto. Statistics of production are available since 1897 and are shown in the next table; the average price per thousand has varied from \$8 to \$20.

The imports of paving brick have during the past three years exceeded the domestic production. During the calendar year 1911 the imports were 11,450 thousand, valued at \$164,292, or \$14.34 per thousand, and included 4,988 thousand, valued at \$78,201, or \$15.68 per thousand, from the United States, and 6,462 thousand, valued at \$86,091, or \$13.32 per thousand, from Great Britain. The imports during the calendar year 1910 were 10,503 thousand, valued at \$124,994.

Annual Production of Paving Brick.*

Year.	M.	Value.	Average per M.	Year.	M.	Value.	Average per M.
		\$	\$ cts.			\$	\$ cts.
1897.....	4,568	45,670	10 00	1904.....	4,436	55,450	12 50
1898.....				1905.....	4,500	54,000	12 00
1899.....	5,300	42,550	8 03	1906.....	3,000	45,000	15 00
1900.....	2,710	26,950	9 94	1907.....	3,618	72,354	20 00
1901.....	3,689	37,000	10 03	1908.....	3,720	59,456	15 98
1902.....	4,211	42,000	9 97	1909.....	3,760	67,408	17 93
1903.....	3,789	45,288	11 95	1910.....	4,215	78,980	18 74
				1911.....	5,220	79,444	15 22

* Figures previous to 1907 compiled from Ontario Bureau of Mines.

Imports of Paving Brick.*

Fiscal Year.	M.	Value.	Average per M.	Fiscal Year.	M.	Value.	Average per M.
		\$	\$ cts.			\$	\$ cts.
1895.....	275	5,006	18 20	1903.....	1,337	18,811	14 07
1896.....	918	10,132	11 04	1904.....	1,986	29,753	14 98
1897.....	52	719	13 83	1905.....	3,350	32,578	13 86
1898.....	367	2,337	6 37	1906.....	4,104	46,008	11 21
1899.....	1,533	23,648	14 94	1907 (9 mos).....	2,182	23,256	10 66
1900.....	2,175	35,644	16 39	1908.....	5,340	61,346	11 49
1901.....	900	10,414	11 57	1909.....		101,187	†
1902.....	1,030	16,788	16 30	1910.....		138,763	
				1911.....	10,836	130,861	12 08

* Duty 20 per cent.

† The imports during July, 1908, under the general tariff, are reported as 6,581 M., value \$7,317, an apparent error. There appears also to be an error in the entries for July, August, and September of the same year. Similar errors were apparently made in the figures for the fiscal year 1910 and the total number has, therefore, been omitted for these years. The actual value of the imported brick varies from \$10 to \$12 per M.

Fireclay and Fireclay Products.—There are a number of clays from different localities that have been used in the manufacture of refractory brick or firebrick, and for furnace linings, etc., which have been usually termed fireclays. These include clays found with the coal measures at Westville, Nova Scotia, and at Comox, Vancouver island; also clays found south of Moosejaw, Saskatchewan, and at Clayburn, near the city of Vancouver, British Columbia. Stove lining and other refractory clay products are made at several places in Ontario and Quebec from imported fireclays.

The total value of the sales of fireclay, firebrick, and fireclay products in 1911 was \$89,130, as compared with a valuation of \$50,215 in 1910, and \$78,132 in 1909.

The production in 1911 comprised 2,367,937 firebrick, valued at \$44,122, or an average of \$18.63 per thousand; fireclay or refractory clay sold was 7,532 tons, valued at \$24,128, and other fireclay products valued at \$20,880.

The imports of firebrick during the calendar year 1911 were valued at \$814,414, of which \$659,602 worth was imported from the United States, and \$154,020 from Great Britain. The imports of firebrick in 1910 were valued at \$811,927, and included \$734,908 from the United States and \$76,902 from Great Britain. Fireclay was imported during the calendar year 1911 to the value of \$125,199, as compared with a value of \$124,293 in 1910, and \$86,161 in 1909.

Statistics of the annual production since 1907 of firebrick, refractory clay or fireclay sold as such, and of fireclay products and statistics of the imports of firebrick and fireclay are shown in the following tables:—

Production of Fireclay and Fireclay Products.

Year.	Firebrick.			Fireclay.			Other fireclay products.	Total value.
	No. sold.	Value.	Per M.	Tons.	Value.	Per Ton.	Value.	
		\$	\$ cts.		\$	\$ cts.	\$	\$
1907.....	4,323,179	113,322	26 21				18,000	131,322
1908	2,415,871	70,429	29 16	1,984	8,121	4 09	31,752	110,302
1909	1,059,270	32,742	30 92	4,405	12,390	2 81	33,000	78,132
1910.....	1,375,400	24,352	21 34	1,425	5,863	4 11	15,000	50,215
1911.....	2,367,937	44,122	18 63	7,532	24,128	3 20	20,880	89,130

Imports of Firebrick and Fireclay, 1900-11.

Fiscal Year.	Fireclay.	Firebrick.	Fiscal Year.	Fireclay.	Firebrick.
	\$	\$		\$	\$
1900	59,291	39,535	1906.....	131,130	51,892
1901	79,530	32,331	1907*.....	85,044	349,185
1902	64,541	45,608	1908.....	155,873	639,347
1903.....	94,509	34,522	1909.....	77,146	350,457
1904	52,716	38,335	1910.....	86,151	519,454
1905.....	73,837	44,746	1911.....	129,728	864,465

* 9 months ending March.

Sewerpipe and Drain Tile.—The total value of the sales of sewerpipe in 1911 was \$812,716, as compared with a value of \$774,110 in 1910, and a value of \$645,722 in 1909. Nearly 50 per cent of the production in 1911 was made in Ontario.

Following is a list of firms reporting production of sewerpipe in 1911:—

- Standard Drain Pipe Co., St. Johns, Que., and New Glasgow, N.S.
- Ontario Sewer Pipe Company, Toronto, Ont.
- Dominion Sewer Pipe Company, Toronto, Ont.
- Hamilton and Toronto Sewer Pipe Co., Ltd., Hamilton, Ont.
- Clayburn Company Ltd., Clayburn, B.O.
- B.C. Pottery Company, Victoria, B.C.

The imports of drain pipe and sewerpipe during the calendar year 1911 were valued at \$382,929, of which \$338,644 worth was imported from the United States, \$44,278 from Great Britain, and \$7 from other countries.

The production of drain tile as reported to this Branch was not as large in 1911 as in 1910 or 1909. The total sales in 1911 were valued at \$339,812, as against \$370,008 in 1910, and \$408,440 in 1909.

The Ontario Bureau of Mines reports the total number made in that Province during 1911 as 21,461,000, valued at \$343,956, or an average of \$16.03 per thousand, as compared with 21,028,000, valued at \$318,456, or an average of \$15.14 per thousand, in 1910. The sales in Ontario in 1911 as reported to the Mines Branch were valued at \$300,029, as against a value of \$334,402 in 1910.

The imports of unglazed tile are comparatively small, the value during the calendar year 1911 being \$5,640 only, as compared with \$4,485 in 1910, and \$2,785 in 1909.

Statistics of the annual production of sewerpipe and of the imports of drain tile and sewerpipe are shown in the next three tables:—

Production of Sewerpipe, etc.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1888	266,320	1896	153,875	1904	440,894
1889	Not available.	1897	164,250	1905	382,000
1890	343,000	1898	181,717	1906	350,045
1891	227,300	1899	161,546	1907	667,100
1892	367,660	1900	231,525	1908	514,362
1893	350,000	1901	248,115	1909	645,722
1894	250,325	1902	301,965	1910	774,110
1895	257,045	1903	317,970	1911	812,716

Production of Drain Tile in Ontario.

(As ascertained by the Ontario Bureau of Mines).

Year.	No.	Value.	Year.	No.	Value.	Year.	No.	Value.
		\$			\$			\$
1891...	7,500,000	90,000	1898...	22,668,000	225,000	1905...	15,000,000	220,000
1892...	10,000,000	100,000	1899...	21,027,400	240,246	1906...	17,700,000	252,500
1893...	17,300,000	190,000	1900...	19,544,000	209,738	1907...	15,578,000	250,122
1894...	25,000,000	280,000	1901...	21,592,000	231,374	1908...	24,800,000	333,658
1895...	14,330,000	157,000	1902...	17,510,000	199,000	1909...	27,418,000	363,550
1896...	13,200,000	144,000	1903...	18,200,000	227,000	1910...	21,028,000	318,456
1897...	*	†	1904...	16,000,000	210,000	1911...	21,461,000	343,956

* Not stated

Imports of Drain Tile and Sewerpipe.

Fiscal Year.	Drain tile (a).	Sewerpipe (b).	Fiscal Year.	Drain tile (a).	Sewerpipe (b).
	\$	\$		\$	\$
1880.....		33,796	1896.....	339	18,957
1881.....		37,368	1897.....	416	33,870
1882.....		70,061	1898.....	157	29,454
1883.....		70,699	1899.....	1,817	32,071
1884.....	5,585	66,170	1900.....	1,383	37,766
1885.....	2,911	66,678	1901.....	1,264	54,819
1886.....	1,905	56,048	1902.....	269	55,261
1887.....	2,183	69,020	1903.....	252	57,100
1888.....	4,290	96,967	1904.....	1,637	53,958
1889.....	2,346	80,869	1905.....	1,229	101,166
1890.....	3,780	73,654	1906.....	4,727	131,353
1891.....	673	86,522	1907 (9 mos.)....	12,106	93,458
1892.....	473	59,064	1908.....	2,080	125,747
1893.....	110	33,891	1909.....	2,394	106,399
1894.....	53	24,572	1910.....	2,739	196,002
1895.....	695	20,358	1911.....	4,373	174,653

(a) Drain tile, not glazed.

(b) Drain pipes, sewerpipes, and earthenware fittings therefor, chimney linings, or vents, chimney tops and inverted blocks, glazed or unglazed.

Pottery and Earthenware.—The pottery made from Canadian clays has been, hitherto, chiefly of the common grades, such as flowerpots, jardinières, crocks, jars, churns, etc. A number of potters make a higher grade product of stoneware, but the majority of these use imported clays. Sanitaryware is made at St. Johns, Que., and other points; but the raw material, including clays and feldspar, is nearly all imported.

The total value of the production of pottery and clay sanitaryware in 1911, according to returns received, was \$439,264, of which it is estimated that a value of \$336,771 is attributable to imported clays. The value of the production reported in 1910 was \$250,924, and in 1909, \$285,285. Annual statistics of production are shown herewith.

Annual Production of Pottery.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1888.....	27,750	1896.....	163,427	1904.....	140,000
1889.....	Not available.	1897.....	129,629	1905.....	120,000
1890.....	195,242	1898.....	214,675	1906.....	150,000
1891.....	258,844	1899.....	135,000	1907.....	253,809
1892.....	265,811	1900.....	200,000	1908.....	200,541
1893.....	213,186	1901.....	200,000	1909.....	285,285
1894.....	162,144	1902.....	200,000	1910.....	250,924
1895.....	151,588	1903.....	200,000	1911.....	102,493

Details of the imports of earthenware and chinaware, showing the values imported and the countries of origin, have already been given in the general table of imports, pages 21 and 22.

The total imports in 1911 were valued at \$2,516,536, as compared with a value of \$2,283,116 in 1910. These imports are subdivided into eight classes and in 1911 include: brown or coloured earthenware, etc., \$52,100; C.C. or cream coloured ware, decorated, printed, or sponged, etc., \$184,291; demijohns, churns, or crocks, \$4,933; tableware of china, porcelain, white granite, etc., \$1,718,582; china and porcelain ware, N.O.P., \$62,025; tiles or blocks of earthenware or stone prepared for mosaic flooring, \$123,203; earthenware tiles, N.O.P., \$154,351; manufactures of earthenware, N.O.P., \$217,051.

Great Britain is the principal source of the imports of this class of products, but quite large supplies are also obtained from the United States, Germany, France, Austria-Hungary, Japan, Belgium, and other countries.

Imports of Earthenware and Chinaware.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	322,333	1891.....	634,907	1902.....	1,275,093
1881.....	439,029	1892.....	748,810	1903.....	1,406,610
1882.....	646,734	1893.....	709,737	1904.....	1,611,356
1883.....	657,886	1894.....	695,514	1905.....	1,636,214
1884.....	544,586	1895.....	547,935	1906.....	1,692,359
1885.....	511,853	1896.....	575,493	1907 (9 mos.).....	1,422,880
1886.....	599,269	1897.....	595,822	1908.....	2,190,784
1887.....	750,691	1898.....	675,874	1909.....	1,716,887
1888.....	697,082	1899.....	916,727	1910.....	1,859,302
1889.....	697,949	1900.....	959,526	1911.....	2,398,416
1890.....	695,206	1901.....	1,114,677		

Kaolin.—Although there has as yet been no actual commercial production of china-clay or kaolin in Canada, the development of kaolin deposits in the township of Amherst, Ottawa county, and the construction of a washing or refining plant at St. Remi d'Amherst, are worthy of note.

The present operators are the Canadian China Clay Co., incorporated at Ottawa, February 3, 1912, with a capital of \$250,000; head office, 151 St. James street, Montreal. The property is located on parts of lots 4, 5, 6, 7, and 8 of range VI south, township of Amherst, county of Ottawa, Quebec.

Mr. John C. Broderick, St. Remi d'Amherst, is mine manager, and Mr. Jas. G. Ross, B.Sc., consulting engineer.

The plant¹ for refining the clay is situated 2 miles from St. Remi d'Amherst and 7 miles from Huberdeau station, the terminus of the Canadian Northern Quebec railway, 94 miles northwest of Montreal.

Development work was begun by the present operators in June, 1911, and the washing plant completed in April of 1912.

¹A short description of the plant and property was published in the Canadian Mining Journal, July 1, 1912.

The clay is mined by digging, no drilling or blasting being necessary, trammed 600 feet to the plant, washed free from grit and allowed to settle. After the filter presses have extracted the surplus moisture, it is dried in the open air in stacks. Dry kilns are being built for drying in the winter and wet seasons. After drying it will be pulverized and bagged for shipment. It is expected that an immediate market will be found in the demand of the Canadian paper mills.

The imports of china-clay, ground and unground, into Canada during the twelve months ending December 31, 1911, were valued at \$125,768, as against a value of \$142,125 in 1910, and \$100,066 in 1909, thus indicating to some extent at least the present actual demand for this product. The imports of earthenware and chinaware, however, valued at \$2,516,536 in 1911, and composed chiefly of tableware of china, porcelain, etc., show the possibilities in the development of industries utilizing china-clays.

Kaolin or china-clay is also in considerable demand in the United States, the imports into that country in 1910 being valued at \$1,593,472.

The kaolin deposits of Amherst were first brought to the attention of the Department in 1894, when samples were submitted to the Geological Survey Museum by Mr. R. Lanigan, of Calumet, Que. In 1896, samples were sent to porcelain works at Trenton, N.J., and were very favourably reported upon, but no serious attempt to develop the property was made until the past season.

LIME.

The production of lime in Canada in 1911, according to returns received from the producers, was 7,533,525 bushels, this being the amount sold or used (equivalent to about 263,673 tons), and valued at \$1,517,599, or an average of 20 cents per bushel, or \$5.75 per ton.

The production in 1910 was reported as 5,848,146 bushels (204,685 tons), valued at \$1,137,079, an average of 19 cents per bushel, thus showing an increased production in 1911 of 1,685,579 bushels, or 22 per cent.

Returns were received from seventy-five active firms in 1911, as compared with seventy firms in 1910. The average number of men employed was 1,056, and wages paid, \$523,518, during the past year, as against 976 men employed and \$466,876 paid in wages in 1910. Statistics of labour and wages should be used with discrimination, however, as many firms producing lime are also engaged in quarrying stone for purposes other than lime making, and are unable to make separate reports as to labour employed. This is particularly evident in the record for Nova Scotia and New Brunswick, since for the first mentioned the record includes only the labour employed at the kilns, while for the latter the quarry costs are also included.

The average price per bushel varied from a minimum of 16 cents in Ontario to a maximum of 34 cents in British Columbia.

Hydrated lime was produced by three firms only, the sales being 5,023 tons.

A small quantity of lime is annually made in Prince Edward Island. The production is separately shown for 1911, but for previous years is included in the Nova Scotia figures.

Lime Production by Provinces, 1911.

Province.	No. of active firms reporting.	Men employed.	Wages paid.	SALES.			
				Bushels.	Value.	Average per bushel.	Per cent of total.
			\$	\$	cts.	%	
P. E. Island*.....	3	8	852	20,250	6,765	33	0.44
Nova Scotia.....	1	10	3,964	618,950	123,790	20	8.16
New Brunswick....	5	100	41,378	613,728	132,897	22	8.76
Quebec.....	22	307	139,466	1,428,392	356,453	25	23.49
Ontario.....	31	423	205,618	3,360,265	538,502	16	35.51
Manitoba.....	5	89	44,379	706,888	140,629	20	9.27
Alberta.....	4	33	33,960	434,038	100,407	23	6.61
British Columbia...	4	86	53,901	351,014	117,756	34	7.76
Total.....	75	1,056	523,518	7,533,525	1,517,599	20	100.00

* Production in previous years included in Nova Scotia figures.

Lime Production by Provinces, 1910.

Province.	No. of active firms reporting.	Men employed.	Wages paid.	SALES.			
				Bushels.	Value.	Average per bushel.	Per cent of total.
			\$		\$	cts.	%
Nova Scotia.....	4	45	10,504	55,760	13,490	24	1.2
New Brunswick....	6	109	42,524	470,050	105,593	22	9.3
Quebec.....	17	223	107,275	1,227,555	299,126	23	26.3
Ontario.....	31	410	180,557	2,988,020	476,137	16	41.9
Manitoba.....	5	95	48,707	606,679	100,808	17	8.8
Alberta.....	3	29	21,700	303,214	69,268	23	6.1
British Columbia....	4	65	55,608	196,878	72,657	37	6.4
Total.....	70	976	466,876	5,848,146	1,137,079	19	100.0

Lime Production by Provinces, 1908 and 1909.

Province.	1908.				1909.			
	Bushels.	Value.	Average per bushel.	Per cent.	Bushels.	Value.	Average per bushel.	Per cent.
		\$	cts.	%		\$	cts.	%
Nova Scotia.....	51,068	16,102	32	2.3	57,730	16,729	29	1.5
New Brunswick..	155,748	34,262	22	4.8	697,466	154,151	22	13.6
Quebec.....	857,700	201,357	23	23.2	1,281,827	315,633	25	27.9
Ontario.....	2,087,731	358,507	17	50.3	2,619,553	434,147	17	38.3
Manitoba.....	138,786	24,192	17	3.4	423,954	69,670	16	6.2
Alberta.....	135,000	34,500	26	4.8	281,125	67,350	24	5.9
British Columbia..	176,435	44,027	25	6.2	231,269	75,076	32	6.6
	3,601,468	712,947	20	100.0	5,592,924	1,132,756	20	100.0

Exports and Imports.—The value of the lime exported during the calendar year 1911 was \$39,536, the destination of shipments being mainly the United States. The quantity is not reported, but at the average price of lime in Canada (20 cents a bushel) the quantity would be about 692 tons.

The imports of lime during the same period were 228,538 barrels (22,853 tons), valued at \$161,985: an average of 70 cents per barrel, or \$7.08 per ton, and were derived chiefly from the United States.

Annual statistics of exports and imports are given in the next two tables:—

Exports of Lime.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1891.....	119,853	1898.....	49,594	1905.....	85,723
1892.....	121,535	1899.....	73,565	1906.....	57,072
1893.....	86,623	1900.....	80,852	1907.....	55,903
1894.....	83,670	1901.....	99,194	1908.....	43,316
1895.....	71,697	1902.....	116,009	1909.....	48,821
1896.....	70,820	1903.....	131,412	1910.....	44,762
1897.....	53,177	1904.....	73,838	1911.....	39,536

Imports of Lime.

Fiscal Year.	Barrels.	Value.	Fiscal Year.	Barrels.	Value.
		\$			\$
1880.....	6,100	6,013	1896.....	10,239	7,331
1881.....	5,796	4,177	1897.....	16,108	10,529
1882.....	5,064	5,365	1898.....	12,850	9,002
1883.....	7,623	9,224	1899.....	15,720	11,124
1884.....	10,804	11,200	1900.....	12,365	11,211
1885.....	12,072	11,503	1901.....	19,657	14,534
1886.....	11,021	9,347	1902.....	24,602	17,584
1887.....	10,835	8,524	1903.....	31,108	22,470
1888.....	10,142	7,537	1904.....	54,359	39,639
1889.....	13,079	9,363	1905.....	98,676	71,588
1890.....	8,149	5,360	1906.....	134,334	93,630
1891.....	6,259	4,273	1907 (9 mos.).....	88,919	67,573
1892.....	6,132	4,241	1908.....	129,379	99,611
1893.....	6,879	4,917	1909.....	153,934	106,263
1894.....	6,766	4,907	1910.....	191,537	116,964
1895.....	12,008	5,743	1911 Duty 20 per cent....	194,809	143,338

In reviewing the production of lime by provinces it will be observed that the Provinces of Ontario and Quebec, being the chief centres of population, are the largest producers, the former contributing in 1911 over 35 per cent of the total quantity, and the latter 23 per cent; the production west of the great lakes has, however, been rapidly increasing, these provinces accounting for nearly 24 per cent of the total in 1911, as against 14 per cent in 1908.

Statistics of the annual production of lime in Ontario as published by the Ontario Bureau of Mines are available since 1896, and are shown in the next table. For the years previous to 1910, these returns are slightly higher than those obtained by the Mines Branch.

Annual Production of Lime in Ontario.

(As ascertained by the Ontario Bureau of Mines.)

Calendar Year.	Bushels.	Value.	Cents per bushel.	Calendar Year.	Bushels.	Value.	Cents per bushel.
		\$				\$	
1896.....	1,800,000	222,000	12	1904.....	2,600,000	406,800	16
1897.....				1905.....	3,100,000	424,700	14
1898.....	2,620,000	308,000	12	1906.....	2,885,000	496,785	17
1899.....	4,342,500	535,000	12	1907.....	2,650,000	418,700	17
1900.....	3,893,000	544,000	14	1908.....	2,442,331	448,596	18
1901.....	4,100,000	550,000	13	1909.....	2,633,500	470,858	18
1902.....	4,300,000	617,000	14	1910.....	2,889,235	474,531	16
1903.....	3,400,000	520,000	15	*1911.....	2,335,085	394,551	17

* Provisional.

SAND-LIME BRICK.

The manufacture of sand-lime or silica brick, although of comparatively recent origin in Canada, has developed with considerable rapidity during the past five years, for which statistics have been collected.

Returns received from sixteen producing firms showed total sales in 1911 of 51,535,243 brick, valued at \$442,427, or an average of \$8.58 per thousand, as compared with a production of 44,593,541 brick, valued at \$371,857, or an average of \$8.34 per thousand, by thirteen firms in 1910.

The total sales by nine firms in 1909 were 27,052,864 brick, valued at \$201,650, or an average of \$7.45 per thousand.

The number of men employed in 1911 was 337, and wages paid, \$166,902.

The number of completed plants at the end of 1911 was seventeen, of which eight were in Ontario, four in Manitoba, two in Saskatchewan, one in Alberta, and two in British Columbia. Two additional plants were under construction.

Annual statistics of production since 1907 are shown below:—

Annual Production of Sand-Lime Brick.

Calendar Year.	Number sold.	Value.	Per M.
		\$	\$ cts.
1907.....	16,492,971	167,795	10 17
1908.....	17,288,260	152,856	8 84
1909.....	27,052,864	201,650	7 45
1910.....	44,593,541	371,857	8 34
1911.....	51,535,243	442,427	8 58

The following is a list of manufacturers of sand-lime brick reporting to the Department:—

Completed plants—

- The Schultz Bros. Co., Ltd., Brantford, Ont.
- The Jno. Mann Brick Co., Ltd., Brantford, Ont.
- The Silicate Brick Co. of Ottawa, Ltd., Ottawa, Ont.
- The Peterboro Sandstone Brick Co., Ltd., Peterborough, Ont.
- Toronto Brick Co., Ltd., 64 Wellington St. W., Toronto, Ont.
- Canada Sand Lime Pressed Brick Co., 1661 Dundas St., Toronto, Ont.
- Harbour Brick Co., Ltd., 50 Front St. E., Toronto, Ont.
- The Port Arthur Sand Lime Brick Co., Port Arthur, Ont.
- The Brandon Sandstone Co., Ltd., Brandon, Man.
- Manitoba Pressed Brick Co., Ltd., 215 McIntyre Block, Winnipeg,
Man.
- Winnipeg Sandstone Brick Co., 410 Builders' Exchange, Winnipeg,
Man.

The Alsip Sandstone Brick Co., Ltd., 502 Builders' Exchange, Winnipeg, Man.

Moosejaw Pressed Brick Co., Moosejaw, Sask.

Interocean Pressed Brick Co., Regina, Sask.

Calgary Silicate Pressed Brick Co., Calgary, Alta.

Vancouver Pressed Brick and Stone Co., Ltd., 145 Front St. W., Vancouver, B.C.

Victoria-Vancouver Lime and Brick Co., Victoria, B.C.

Plants under construction—

The Wilcox Lake Brick Co., 6 Marlboro Ave., Toronto, Ont.

The British Columbia Pressed Brick Co., Vancouver, B.C.

SAND AND GRAVEL.

No attempt has yet been made by this Department to obtain complete statistics of the production of building sand or gravel, but the record of exports and imports as collected by the Department of Customs has been published from year to year and is shown in tables below.

The business of obtaining and supplying sand and gravel is, however, becoming well organized in many districts. In the Province of Quebec, coarse river sand is being taken from the beds of certain streams under mining license from the Quebec Government, the sand being shipped to Montreal and other large centres, where it finds a ready market for building purposes. The Superintendent of Mines of Quebec reports a production from such sources in 1911 valued at \$62,000. This will, of course, be only a small fraction of the value of such material produced in that Province during the year.

The Provincial Mineralogist for British Columbia states that near Vancouver and Victoria, companies have been formed for supplying washed sand and gravel properly screened to size, some of these companies having installed a system of mining the gravel by hydraulic streams and carrying the product to the screens by the water used. The value of the sand and gravel produced for use in these two cities amounted during the past year to over \$360,000.

Annual Exports of Sand and Gravel.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1893.....	329,116	121,795	1903.....	355,792	124,006
1894.....	324,656	86,940	1904.....	399,809	129,808
1895.....	277,162	118,359	1905.....	306,935	152,805
1896.....	224,769	80,110	1906.....	336,550	139,712
1897.....	152,963	76,729	1907.....	298,095	119,853
1898.....	165,954	90,498	1908.....	298,954	161,387
1899.....	242,450	101,640	1909.....	481,584	256,166
1900.....	197,558	101,666	1910.....	624,824	407,974
1901.....	197,302	117,465	1911.....	573,494	408,110
1902.....	159,793	119,120			

Annual Imports of Sand and Gravel.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1893.....	26,065	31,739	1903.....	91,518	95,647
1894.....	41,573	53,506	1904.....	110,634	107,547
1895.....	19,609	24,779	1905.....	85,339	92,722
1896.....	18,953	24,604	1906.....	116,500	173,727
1897.....	21,308	25,222	1907 (9 mos.).....	171,700	177,412
1898.....	32,148	43,287	1908.....	266,704	223,043
1899.....	30,288	42,209	1909.....	132,158	136,011
1900.....	35,713	41,280	1910.....	151,932	155,012
1901.....	35,749	42,891	1911.....	241,375	246,613
1902.....	47,381	58,668			

SLATE.

The production of slate in 1911 is reported as 1,833 squares, valued at \$8,248, which is a little less than one-half the production of 1910, which was 3,959 squares, valued at \$18,492.

The output was as usual obtained from the New Rockland quarries, in Melbourne township, Richmond county, Quebec, operated under lease by Messrs. Frazer and Davies. The same firm also opened up a quarry during the year at Botsford, Temiscouata county.

In the Province of Ontario some development work was undertaken on a slate property near New Liskeard, in Hudson township, lot 10, concession V, this property being owned by the Canada Slate Co., Ltd., of New Liskeard. No shipments were made.

Statistics of annual production are shown herewith:—

Annual Production of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	5,345	64,675	1899.....		33,406
1887.....	7,357	89,000	1900.....		12,100
1888.....	5,314	90,689	1901.....		9,980
1889.....	6,935	119,160	1902.....		19,200
1890.....	6,368	100,250	1903.....	5,510	22,040
1891.....	5,000	65,000	1904.....	5,277	23,247
1892.....	5,180	69,070	1905.....		21,568
1893.....	7,112	90,825	1906.....		24,446
1894.....		75,550	1907.....	4,335	20,056
1895.....		58,900	1908.....	2,950	13,496
1896.....		53,370	1909.....	4,000	19,000
1897.....		42,800	1910.....	3,959	18,492
1898.....		40,791	1911.....	1,833	8,248

No exports of slate have been reported since 1909.

The imports of slate have ranged in value during the past six years from \$100,000 to \$170,000 per annum. The total value of the imports during the calendar year 1911 was \$169,685, comprising: roofing slate, \$83,075; school writing slate, \$35,049; slate pencils, \$6,036; other slates and manufactures of slate, \$45,525. The total value of the imports during the calendar year 1910 was \$142,285. The imports of roofing slate, school writing slate, and manufactures of slate N.O.P. are chiefly from the United States. Some roofing slate is also imported from Great Britain, while slate pencils come chiefly from Germany and the United States.

Statistics of imports and exports are shown in the following tables:—

Imports of Slate during the Years 1909, 1910, and 1911.

Slate and manufactures of.	Calendar Year 1909.	Calendar Year 1910.	Calendar Year 1911.
	\$	\$	\$
Roofing slate.....	71,914	67,063	83,075
School writing slate.....	34,085	31,397	35,049
Slate pencils.....	6,154	6,948	6,036
Slate of all kinds and manufactures of.....	23,068	36,877	45,525
	135,221	142,285	169,685

Exports of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1884.....	539	6,845	1893.....	178	3,168
1885.....	346	5,274	1894.....	187	3,610
1886.....	34	495	1895.....	36	574
1887.....	27	373	1896.....	301	8,913
1888.....	22	475	1897 to 1907.....	Nil.	Nil.
1889.....	26	3,303	1908.....		2,539
1890.....	12	153	1909.....	134	612
1891.....	15	195	1910.....	Nil.	Nil.
1892.....	87	2,038	1911.....	Nil.	Nil.

Imports of Slate.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	21,431	1891.....	46,104	1902.....	72,601
1881.....	22,184	1892.....	50,441	1903.....	84,437
1882.....	24,543	1893.....	51,179	1904.....	86,037
1883.....	24,968	1894.....	20,267	1905.....	93,228
1884.....	28,816	1895.....	19,471	1906.....	112,941
1885.....	28,169	1896.....	24,176	1907 (9 mos.)....	95,520
1886.....	27,852	1897.....	21,615	1908.....	131,069
1887.....	27,845	1898.....	24,907	1909.....	124,065
1888.....	23,151	1899.....	33,100	1910.....	136,401
1889.....	41,370	1900.....	53,707	1911.....	147,172
1890.....	22,871	1901.....	72,187		

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, rip-rap, and crushed stone, limestone for furnace flux, sugar factories, etc., but stone used for burning lime or the manufacture of cement is not included.

The kinds of stone quarried have been classed as granite, limestone, sandstone, and marble.

The records are practically confined to quarry operations or the production of sawn or polished stone when these operations are carried on by the 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 probably also used in railway construction work and in road building, of which no record has yet been obtained.

It is impossible, except in a few cases, to show the quantity of stone production, so that the value only of the shipment can be given.

The total value of the production of stone in 1911, according to returns received, was \$4,328,757, as compared with a value of \$3,650,019 in 1910, showing an increased production of \$678,738, or 18.6 per cent.

The number of active firms reporting in 1911 was 191, the total number of men employed 5,437, and the total wages paid, \$2,500,005. In 1910 the number of active firms reporting was 166, the number of men employed 5,105, and wages paid, \$2,225,791.

Of the total value of the 1911 production, limestone contributed \$2,594,926, or nearly 60 per cent; granite, \$1,119,865, or nearly 26 per cent; sandstone, \$451,183, or 10.4 per cent; and marble, \$162,783, or 3.8 per cent.

Stone was used for building purposes to the value of \$1,368,693, or 31.6 per cent of the total; monumental and ornamental stone, a value of \$303,050, or 7 per cent; curb, paving, and flagstone, \$233,723, or 5.4 per cent; rubble, \$460,803, or 10.6 per cent; crushed stone, \$1,509,498, or 34.9 per cent; and furnace flux, 874,224 tons, valued at \$452,990, or 10.5 per cent.

By provinces, Quebec again shows the largest output, having a value of \$1,894,892, or 43.8 per cent of the total, being made up of limestone to the value of \$1,296,577, granite valued at \$462,678, marble, \$135,187, and sandstone, \$450. Ontario takes second place with a production of \$892,305, or 20.6 per cent of the total, of which limestone is credited with \$680,461; granite, \$131,816; sandstone, \$54,032, and marble, \$25,996. British Columbia ranked third in order of importance, with a total of \$698,811, including granite, \$460,851;

sandstone, \$179,580; limestone, \$56,780, and marble, \$1,600. The production in Manitoba was valued at \$318,050, made up of limestone, \$315,782, and granite, \$2,268. The Nova Scotia production was valued at \$292,914, comprising limestone, \$245,216; granite, \$24,258, and sandstone, \$23,440. The Alberta production was reported as \$158,344, all sandstone. New Brunswick is credited with \$73,441, made up chiefly of sandstone and granite.

Production of Stone by Provinces, 1911.

Province.	Granite.	Lime- stone.	Marble.	Sand- stone.	Total.	%
	\$	\$	\$	\$	\$	
Nova Scotia.....	24,258	245,216	.....	23,440	292,914	6·8
New Brunswick.....	37,994	110	.....	35,337	73,441	1·7
Quebec.....	462,678	1,296,577	135,187	450	1,894,892	43·8
Ontario.....	131,816	680,461	25,996	54,032	892,305	20·6
Manitoba.....	2,268	315,782	.....	.....	318,050	7·3
Alberta.....	.....	.....	.....	158,344	158,344	3·7
British Columbia.....	460,851	56,780	1,600	179,580	698,811	16·1
Total.....	1,119,865	2,594,926	162,783	451,183	4,328,757	.....
Per cent.....	25·9	59·9	3·8	10·4	.....	100·0

Production of Stone by Provinces, 1910.

Province.	Granite.	Lime- stone.	Marble.	Sand- stone.	Total.	%
	\$	\$	\$	\$	\$	
Nova Scotia.....	18,291	192,919	.....	16,425	227,635	6·2
New Brunswick.....	6,880	315	.....	51,793	58,988	1·6
Quebec.....	356,257	962,429	151,000	.....	1,469,686	40·3
Ontario.....	109,678	722,763	4,100	62,247	898,788	24·6
Manitoba.....	3,643	328,029	.....	.....	331,672	9·1
Alberta.....	.....	.....	.....	240,858	240,858	6·6
British Columbia.....	244,767	43,121	3,679	130,825	422,392	11·6
Total.....	739,516	2,249,576	158,779	502,148	3,650,019	.....
Per cent.....	20·3	61·7	4·3	13·7	.....	100·0

Value of Stone Sold for Various Purposes in 1911.

Kind.	Building.	Ornamental and monu- mental.	Paving and curb- stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Granite.....	324,011	129,017	172,246	51,982	442,639	.....	1,119,865
Limestone.....	625,402	38,746	36,902	374,327	1,066,559	452,990	2,594,926
Marble.....	27,596	135,187	.....	.....	.....	.....	162,783
Sandstone.....	391,684	100	24,575	34,524	300	.....	451,183
Total.....	1,368,693	353,050	233,723	460,803	1,509,498	452,990	4,328,757

Value of Stone Sold for Various Purposes in 1910.

Kind.	Building.	Ornamental and monumental.	Paving and curb-stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Granite	268,197	74,576	79,501	46,639	270,603	.....	739,516
Limestone	623,149	72,530	125,637	295,163	701,556	431,486	2,249,576
Marble	153,700	.....	.....	15	.....	64	158,779
Sandstone	453,955	265	34,530	10,173	3,220	.....	502,148
Total	1,504,001	147,421	239,668	352,000	975,379	431,550	3,650,019

Production of Stone by Provinces and for Purposes used, 1911.

Province.	Building.	Ornamental and monumental.	Paving and curb-stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Nova Scotia	26,710	17,143	1,400	3,717	2,422	241,517	292,914
New Brunswick	45,348	22,936	.....	5,077	.....	30	73,441
Quebec	599,758	242,269	151,242	200,243	700,737	593	1,894,892
Ontario	168,012	8,647	54,091	93,615	408,370	151,070	892,305
Manitoba	74,424	.....	.....	106,782	136,844	.....	318,050
Alberta	161,737	.....	.....	6,557	.....	.....	158,344
British Columbia	302,654	12,000	26,990	39,312	260,575	56,730	693,311
Total	1,368,693	303,050	233,723	460,303	1,509,498	452,990	4,323,757
Per cent	31.6	7.0	5.4	10.6	34.9	10.5	100.0

Production of Stone by Provinces and for Purposes used, 1910.

Province.	Building.	Ornamental and monumental.	Paving and curb-stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Nova Scotia	18,610	11,156	4,600	.....	350	192,919	227,635
New Brunswick	49,017	6,880	.....	2,761	200	100	53,988
Quebec	707,890	116,456	165,730	143,930	329,027	6,053	1,469,686
Ontario	83,602	9,929	65,588	135,550	414,326	189,293	893,788
Manitoba	215,378	.....	.....	53,302	62,992	.....	331,672
Alberta	234,487	.....	.....	6,371	.....	.....	240,858
British Columbia	194,937	3,000	3,750	10,086	167,334	43,135	422,392
Total	1,504,001	147,421	239,668	352,000	975,379	431,550	3,650,019
Per cent	41.2	4.0	6.6	9.7	26.7	11.8	100.0

Exports and Imports.—The exports of stone from Canada in 1911 were valued at \$28,335, as against \$27,571 in 1910 and \$57,685 in 1909. The principal item in the 1911 export was building stone, unwrought, of which the exports were 83,767 tons, valued at \$25,103. The exports of dressed stone in 1911, including both ornamental and building stone, were valued at \$1,436 only.

The exports of several classes of stone during the past three years, as shown by the Customs record, was as follows:—

Exports of Stone during the Calendar Years 1909, 1910, 1911.

	1909.		1910.		1911.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Stone—						
Ornamental, granite, marble, etc., unwrought.....	1,027	8,606	446	3,352	168	1,796
Building, freestone, limestone, etc., unwrought.....	26,672	15,481	63,407	18,867	83,767	25,103
Ornamental, granite, marble, etc., dressed.....		33,097		5,272		980
Building, freestone, limestone, etc., dressed.....		501		80		456
		57,685		27,571		28,335

The annual exports since 1890 are shown in the following table:—

Exports of Stone and Marble, Wrought and Unwrought.

Calendar Year.	Wrought.	Unwrought.	Calendar Year.	Wrought.	Unwrought.
	\$	\$		\$	\$
1890.....	21,725	43,611	1901.....	5,917	157,739
1891.....	13,398	46,162	1902.....	8,632	124,329
1892.....	7,698	47,424	1903.....	7,684	46,295
1893.....	9,102	12,532	1904.....	4,760	17,802
1894.....	22,576	34,130	1905.....	3,545	13,089
1895.....	8,587	51,616	1906.....	23,097	4,675
1896.....	4,934	32,897	1907.....	4,233	3,087
1897.....	9,415	42,034	1908.....	15,194	36,320
1898.....	2,526	65,370	1909.....	32,598	24,087
1899.....	5,092	101,931	1910.....	5,352	22,219
1900.....	6,933	115,711	1911.....	1,436	26,899

The imports of stone are classified as building stone of all kinds, except marble, manufactures of granite and other stone, and marble and its manufactures. The total value of the imports during the calendar year 1911 was \$1,140,846, as compared with a value of \$845,123 in 1910; showing an increase of \$295,723, or about 35 per cent. Of the total imports in 1911, \$392,868 in value was classed as building stone, and included 21,356 tons of rough stone,

valued at about \$3.98 per ton, and 52,908 tons of dressed stone, valued at about \$5.82 per ton. The imports of sawn granite, manufactures of granite, and manufactures of stone N.O.P., were valued at \$207,836; paving blocks, \$64,676; marble and manufactures of, \$384,252. There was also an importation of refuse stone of 226,122 tons, valued at \$91,214.

During 1910 the imports of building stone were \$311,595; manufactured granite, \$192,213; paving blocks, \$74,100, and marble, \$267,215. The imports during both years were derived chiefly from the United States and Great Britain; the United States supplying building stone, paving blocks, and marble principally, and Great Britain mainly manufactures of granite. Marble is obtained in some quantity also from Italy and other countries. The total value of the imports from the United States in 1911 was \$946,624; from Great Britain, \$175,169; from Italy, \$6,334, and from other countries, \$12,719.

The value of the imports from the United States in 1910 was \$640,084; from Great Britain, \$160,664; from Italy, \$31,314, and from other countries, \$13,061.

Total Imports of Stone during the Calendar Years 1910 and 1911.

Imports.	1910.		1911.	
	Tons.	Value.	Tons.	Value.
		\$		\$
Building stone, rough (1).....	27,658	125,531	21,356	85,084
" " dressed (2).....	33,996	1,606,64	52,908	307,784
Refuse stone (3).....			226,122	91,214
Granite, sawn only.....	789	3,287	539	4,231
" manufactures of.....		154,798		164,229
Paving blocks.....		74,100		64,676
Manufactures Of stone, N.O.P.....		34,128		39,376
Marble and manufactures of:—				
Marble, sawn or sand rubbed, not polished.....		154,153		186,174
" rough, not hammered or chiselled.....		18,368		46,839
" manufactures of, N.O.P.....		94,694		151,229
		845,123		1,140,846

- (1) Flagstone, granite, rough sandstone, and all building stone not hammered, sawn, or chiselled.
 (2) Flagstone and all other building stone, sawn or dressed.
 (3) Stone refuse not sawn, hammered, or chiselled, not fit for flagstone, building stone, or paving.

Imports of Stone, showing Country of Origin, Calendar Year 1911.

Imports.	Great Britain.		United States.		Italy.	Other countries.
	Tons.	Value.	Tons.	Value.	Value.	Value.
		\$		\$	\$	\$
Building stone, rough (1)	196	1,764	20,496	81,157	.....	2,163
" " dressed (2)	109	419	52,659	306,694	.....	671
Refuse " .....	.....	.....	226,122	91,214	.....	.....
Granite, sawn only	118	911	421	3,320	.....	.....
" manufactures of .....	.....	156,101	.....	8,128	.....	.....
Paving blocks .....	.....	43	.....	64,633	.....	.....
Manufactures of stone, N.O.P. ....	.....	4,297	.....	32,257	.....	2,822
Marble and manufactures of :—						
Marble, sawn or sand rubbed, not polished .....	.....	3,825	.....	174,618	6,334	1,397
Marble, rough, not hammered or chiselled .....	.....	.....	.....	45,589	.....	1,250
Marble, manufactures of, N.O.P. ....	.....	7,809	.....	139,014	.....	4,416
.....	.....	175,169	.....	946,624	6,334	12,719

- (1) Flagstone, granite, rough sandstone, and all building stone not hammered, sawn, or chiselled
(2) Flagstone ; all other building stone, sawn or dressed.

Imports of Stone, Fiscal Years 1910. and 1911.

Imports.	1910.		1911.	
	Tons.	Value.	Tons.	Value.
		\$		\$
Building stone, rough (1)	23,928	110,997	28,001	126,386
" " dressed (2)	36,884	184,620	36,578	206,224
Granite, sawn only	280	2,146	773	3,213
" manufactures of .....	.....	130,697	.....	159,377
Paving blocks .....	.....	58,247	.....	74,143
Manufactures of stone, N.O.P. ....	.....	32,372	.....	34,861
Marble and manufactures of :—				
Marble, sawn or sand rubbed, not polished .....	.....	123,897	.....	174,001
" rough, not hammered or chiselled .....	.....	1,398	.....	25,606
" manufactures of, N.O.P. ....	.....	54,503	.....	107,821
.....	.....	703,877	.....	911,632

- (1) Flagstone, granite, rough sandstone, and all building stone not hammered, sawn, or chiselled.
(2) Flagstone ; all other building stone, sawn or dressed.

Annual Imports of Stone.

Fiscal Year.	BUILDING STONE.		Manufactures of granite, etc.	Marble.	Flagstone.	Total value.
	Rough.	Dressed.				
	\$	\$	\$	\$	\$	\$
1880.....	32,824	3,146	29,408	63,015		123,393
1881.....	7,823	50,326	36,877	85,977	241	181,244
1882.....	32,848	775	37,267	109,505	848	181,243
1883.....	33,429	1,632	45,636	128,520	99	209,316
1884.....	46,232	4,856	45,290	108,771	1,158	206,307
1885.....	28,433	2,058	39,867	102,835	1,756	174,949
1886.....	36,776	4,899	41,984	117,752	9,443	210,854
1887.....	47,819	6,549	41,829	104,250	10,966	211,413
1888.....	84,263	2,110	47,487	94,681	21,077	249,618
1889.....	89,723	10,591	61,341	118,421	15,451	295,527
1890.....	126,456	5,699	84,396	99,353	43,995	364,899
1891.....	151,119	19,771	61,051	107,661	36,348	372,950
1892.....	85,169	10,381	39,479	106,268	15,048	256,345
1893.....	47,609	8,901	49,323	96,177	8,500	210,510
1894.....	48,097	4,811	49,510	94,657	2,429	199,504
1895.....	37,732	6,550	51,050	83,422	84	178,838
1896.....	42,737	11,393	51,499	90,065	Nil	195,694
1897.....	27,442	11,272	34,026	77,150	227	150,117
1898.....	25,322	3,173	41,240	95,894	1,540	167,129
1899.....	43,494	4,546	60,148	104,879	Nil	210,067
1900.....	63,376	1,157	57,039	94,017	63	215,652
1901.....	45,039	1,039	66,639	96,159	116	208,992
1902.....	69,972	29,102	72,397	130,424	1,231	303,126
1903.....	71,202	16,664	78,629	153,481	Nil	319,976
1904.....	59,864	33,914	141,165	181,511	Nil	416,454
1905.....	49,004	53,813	150,160	145,466	Nil	398,443
1906.....	66,994	65,134	178,435	189,589	Nil	500,152
1907*.....	58,398	78,967	136,779	176,450	Nil	450,594
1908.....	80,950	90,740	192,248	287,587	Nil	651,525
1909.....	63,984	72,961	193,949	200,928	Nil	531,822
1910.....	110,997	184,620	223,462	184,798	Nil	703,877
1911.....	126,386	206,224	271,594	307,428	Nil	911,632

* 9 months ending March 1907.

GRANITE.

The production of granite and trap-rock in 1911, according to returns from forty-seven active firms reporting, was valued at \$1,119,865, as compared with a production by thirty-three firms, valued at \$739,516, in 1910; showing an increase of \$380,349, or 51.4 per cent. There was a particularly large increase in the value of granite used for building purposes and in the production of crushed stone.

Quebec province was again the largest producer, the value of sales in 1911 being \$462,678, as compared with \$356,257 in 1910. The value of sales in British Columbia in 1911, however, approached very closely to that of Quebec, being \$460,851, as against \$244,767 in 1910. Ontario produced granite to the value of \$131,816 in 1911, as compared with \$109,678 in 1910. Both New Brunswick and Nova Scotia showed an increased production, the value of the New Brunswick output being \$37,994. Much of the rough stone quarried in New Bruns-

wick, as well as stone imported from Redbeach, Maine, and Mt. Johnston, Que., is worked up into finished monumental and ornamental stone at mills at St. George, the value of the finished product here in 1911 being \$86,658.

Statistics of the production by provinces for 1911 and 1910, showing the purposes for which the stone was sold and the annual total production since 1886, are shown in the following tables:—

Value of Granite Production by Provinces, 1911.

Province.	Building.	Monumental or ornamental.	Curb, or paving.	Rubble.	Crushed.	Total.
	\$	\$	\$	\$	\$	\$
Nova Scotia.....	5,670	17,048	1,400	140	.....	24,258
New Brunswick.....	15,008	*22,986	.....	.....	.....	37,994
Quebec.....	168,759	74,687	116,256	.....	102,976	462,678
Ontario.....	13,100	2,296	27,600	12,000	76,820	131,816
Manitoba.....	.....	.....	.....	.....	2,268	2,268
British Columbia.....	121,474	12,000	26,990	39,812	260,575	460,851
Total.....	324,011	129,017	172,246	51,952	442,639	1,119,865

* The value of the "Finished" stone in 1911 was \$86,658.

Value of Granite Production by Provinces, 1910.

Province.	Building.	Monumental or ornamental.	Curb, or paving.	Rubble.	Crushed.	Total.
	\$	\$	\$	\$	\$	\$
Nova Scotia.....	2,600	11,091	4,600	.....	.....	18,291
New Brunswick.....	.....	*6,880	.....	.....	.....	6,880
Quebec.....	202,435	53,405	40,831	3,065	56,531	356,257
Ontario.....	1,100	200	30,320	33,513	44,545	109,678
Manitoba.....	.....	.....	.....	.....	3,643	3,643
British Columbia.....	62,062	3,000	3,750	10,071	165,884	244,767
Total.....	268,197	74,576	79,501	46,639	270,603	739,516

* "Finished" stone was valued at \$70,000.

Annual Production of Granite.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	6,062	63,309	1899.....	13,418	90,542
1887.....	21,217	142,506	1900.....	.....	80,000
1888.....	21,352	147,305	1901.....	.....	155,000
1889.....	10,197	79,624	1902.....	.....	210,000
1890.....	13,307	65,985	1903.....	.....	200,000
1891.....	13,637	70,056	1904.....	.....	150,000
1892.....	24,302	89,326	1905.....	.....	226,305
1893.....	22,521	94,393	1906.....	.....	278,419
1894.....	16,392	109,936	1907.....	15,136	194,712
1895.....	19,238	84,838	1908.....	.....	282,320
1896.....	18,717	106,709	1909.....	.....	454,824
1897.....	19,345	61,934	1910.....	.....	739,516
1898.....	23,897	81,073	1911.....	.....	1,119,865

LIMESTONE.

The statistics given herewith do not include the value of the stone burned into lime by the quarry operators nor that of the stone used in the manufacture of cement, a record of lime and cement production being separately given. With these exceptions, the total value of the production of limestone in Canada in 1911 was \$2,594,926, as compared with a value of \$2,249,576 in 1910, or an increase of about 15 per cent.

There was a decrease in the production of limestone for building and monumental purposes and for curbstone and paving, but an increased production of crushed stone and rubble. The production of furnace flux was slightly less in tonnage, but of increased value.

The production during 1911 of limestone for building purposes was valued at \$664,148, as against \$695,729 in 1910. The value of crushed stone in 1911 was \$1,066,559, as against \$701,556 in the previous year. Curbstone and paving blocks were produced to the value of \$36,902 in 1911, as compared with \$125,637 in 1910. The value of rubble in 1911 was \$374,327, as against \$295,168 in 1910. The production of furnace flux in 1911 was 874,224 tons, valued at \$452,990, as compared with 896,677 tons, valued at \$431,486, in 1910.

Value of Limestone Production by Provinces, 1911.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
					Tons.	\$	
	\$	\$	\$	\$			\$
Nova Scotia.....		2,122		1,577	483,035	241,517	245,216
New Brunswick.....	80				60	30	110
Quebec.....	462,944	597,811	34,986	200,243	659	593	1,296,577
Ontario.....	126,700	332,050	1,916	65,725	295,837	154,070	680,461
Manitoba.....	74,424	134,576		106,782			315,782
British Columbia.....					94,633	56,780	56,780
Total.....	664,148	1,066,559	36,902	374,327	874,224	452,990	2,594,926

Value of Limestone Production by Provinces, 1910.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
					Tons.	\$	
	\$	\$	\$	\$			\$
Nova Scotia.....					385,838	192,919	192,919
New Brunswick.....	15	200			100	100	315
Quebec.....	417,506	273,096	124,899	140,875	9,573	6,053	962,429
Ontario.....	62,830	363,911	738	100,991	466,391	189,293	722,763
Manitoba.....	215,378	59,349		53,302			323,029
British Columbia.....					94,772	43,121	43,121
Total.....	695,729	701,556	125,637	295,168	896,677	431,486	2,249,576

Value of Limestone Production by Provinces, 1909.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
					Tons.	\$	
	\$	\$	\$	\$		\$	\$
Nova Scotia.....	2,025				319,795	159,897	161,922
New Brunswick.....	30						30
Quebec.....	456,338	257,185	154,259	94,221	20,500	10,250	972,253
Ontario.....	78,823	297,589	169	66,885	427,422	106,208	639,674
Manitoba.....	224,605	54,575	62	49,312			328,554
British Columbia.....					74,515	37,253	37,253
Total.....	761,821	609,349	154,490	210,418	842,232	403,613	2,139,691

MARBLE.

From 1886 to 1896 there was a small production of marble, aggregating, however, only \$4,167 in value for the eleven years. During the next eleven years—1897 to 1907—there is no record of any production. But the opening up of the quarries at Philipsburg, Que., by the Missisquoi Marble Company, Limited, together with the development of quarries in Ontario and British Columbia, has resulted in a considerable production of marble during the past four years. The total value of the production in 1911 was returned as \$162,783, as compared with \$158,779 in 1910 and \$158,441 in 1909.

Marble quarries were operated during 1911 at Philipsburg and South Stukely, Que.; Dungannon and Hungerford townships in Ontario, and Marblehead, British Columbia.

The value of the Quebec production was \$135,187, as compared with \$151,000 in 1910 and \$130,000 in 1909. Ontario produced marble to the value of \$25,996, as against \$4,100 in 1910 and \$3,441 in 1909. British Columbia production was \$1,600, as compared with \$3,679 in 1910 and \$25,000 in 1909.

With the exception of the Philipsburg and Bancroft quarries, the operations were practically confined to the development of quarries.

Annual Production of Marble.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	501	9,900	1894.....	Nil	Nil
1887.....	242	6,224	1895.....	200	2,000
1888.....	191	3,100	1896.....	224	2,405
1889.....	83	980	1897 to 1907 inclusive	Nil	Nil
1890.....	780	10,776	1908.....		125,000
1891.....	240	1,752	1909.....		158,441
1892.....	340	3,600	1910.....		158,779
1893.....	590	5,100	1911.....		162,783

The imports of marble during the calendar year 1911 were valued at \$384,252, as compared with \$267,215 in 1910 and \$182,147 in 1909.

The annual imports of marble since 1880 are shown in the general table of imports of stone, page 50.

SANDSTONE.

The value of sandstone production in 1911 was reported as \$451,183, being a slight falling off as compared with the production in 1910, which was valued at \$502,148. The greater part of the sandstone quarried is used for building purposes, though small quantities are also used as rubble and for paving purposes.

Of the production in 1911, building and ornamental sandstone was sold to the value of \$391,784, or 86.8 per cent of the total sandstone sales. This amount comprised \$86,502 in rough stone and \$305,282 in dressed stone sold by the quarry operators. The production in 1910 of building and ornamental stone was valued at \$454,220, comprising \$118,364 in rough stone and \$335,856 in dressed stone.

Statistics of production in 1909, 1910, and 1911 are shown in the next three tables. There is no complete record of the sandstone production throughout Canada in previous years.

Value of Sandstone Production by Provinces, 1911.

Province.	Building and ornamental.	Crushed.	Paving.	Rubble.	Total.
	\$	\$	\$	\$	\$
Nova Scotia.....	21,140	300		2,000	23,440
New Brunswick.....	30,260			5,077	35,337
Quebec.....	450				450
Ontario.....	8,567		24,575	20,890	54,032
Alberta.....	151,787			6,557	158,344
British Columbia.....	179,580				179,580
Total.....	391,784	300	24,575	34,524	451,183

Value of Sandstone Production by Provinces, 1910.

Province.	Building and ornamental.	Crushed.	Paving.	Rubble.	Total.
	\$	\$	\$	\$	\$
Nova Scotia.....	16,075	350			16,425
New Brunswick.....	49,032			2,761	51,793
Ontario.....	25,301	1,370	34,530	1,046	62,247
Alberta.....	234,487			6,371	240,858
British Columbia.....	129,325	1,500			130,825
Total.....	454,220	3,220	34,530	10,178	502,148

Value of Sandstone Production by Provinces, 1909.

Province.	Building and orna- mental.	Crushed.	Paving.	Rubble.	Total.
	\$	\$	\$	\$	\$
Nova Scotia.....	15,050	800	.....	6,000	21,850
New Brunswick.....	25,784	.....	.....	4,825	30,609
Ontario.....	29,584	2,563	17,774	12,903	62,824
Alberta.....	87,450	.....	.....	2,933	90,383
British Columbia.....	168,338	.....	.....	175	168,513
Total.....	326,206	3,363	17,774	6,836	374,179