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CANADA

DEPARTMENT OF MINES

HON. LOUIS CODERRE, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;

MINES BRANCH

EUGENE HAANEL, PH.D., DIRECTOR.

THE

PRODUCTION OF CEMENT, LIME, CLAY PRODUCTS, STONE,

AND OTHER STRUCTURAL MATERIALS

IN

CANADA

During the Calendar Year

1912

JOHN McLEISH, B.A.

Chief of the Division of Mineral Resources and Statistics.



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ADVANCE CHAPTER OF THE ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA DURING THE CALENDAR YEAR 1912.

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

INTRODUCTORY.

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. Previous to 1912 no attempt had been made to collect a record of the production of sands and gravels in Canada, and the only statistics available were those of exports and imports. An attempt has been made to obtain statistics of production covering the year 1912, but owing to the incompleteness of our list of producers, and the failure of many to answer correspondence, only a very partial record has been obtained. A beginning, however, has been made, and no doubt more complete statistics will be obtained in succeeding years. 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 1912, according to the record obtained, was \$28,794,869, as compared with a value of \$22,709,612 in 1911, an increase of \$6,085,258, or 26.8 per cent. The total production in 1910 was valued at \$19,627,592, and in 1909, \$16,533,349.

The Canadian consumption of products of this class is apparently still increasing at a more rapid rate than the production. The consumption based upon the above figures of production in conjunction with the records of exports and imports was in 1912 valued at \$39,139,510, as compared with a value only slightly less than \$30,000,000 in 1911, and about \$25,250,000 in 1910, and \$20,350,000 in 1909, the increased consumption in 1912 being about 30 per cent. against an increase of 18 per cent in 1911 and 24 per cent in 1910.

The structural activity which has been in evidence in Canada during the past few years was continued during 1912, as is evidenced by the large increase in production and consumption of structural materials thus shown.

A summary of the production, imports, exports, and consumption of structural materials and clay products for 1912, and the production from 1907 to 1911 is shown in tables herewith.

Structural Materials, Calendar Year, 1912.

	Production.	Imports.	Exports.	Con- sumption.
	\$	\$	\$	\$
Cement, Portland.....	9,106,556	1,969,529	2,436	11,073,649
Clay products.....	10,575,869	6,592,540	8,749	17,160,660
Lime.....	1,844,849	207,481	35,097	2,017,233
Sand-lime brick.....	1,020,386			1,020,386
Sand and gravels.....	1,512,099	445,781	459,952	1,497,928
Slate.....	8,939	200,643		209,582
Stone.....	4,726,171	1,467,143	33,242	6,160,072
	28,794,869	10,883,117	539,476	39,139,510

Production of Structural Materials, 1907-1911.

	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	1,132,766	1,137,079	1,617,599
Sand-lime brick.....	167,795	152,856	201,650	371,857	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	3,630,019	4,323,757
Total.....	12,863,049	11,339,955	16,533,349	19,627,592	22,709,611

An increased production is shown for each product.

The increase in the value of cement sales in 1912 over 1911 was 19 per cent; an increase of production of clay products 26.5 per cent; an increase in the production of stone quarries of 9 per cent, and an increase in the production of lime of 21.5 per cent. The production of sand-lime brick was over twice that of the previous year. The production of sand and gravel is shown as valued at \$1,512,099 in 1912. As already explained this is a partial record only, but it is hoped that the figures obtained in following years will be more complete. The production of slate remained practically the same as in 1911 and forms but a small percentage of the Canadian consumption.

The exports of structural materials is apparently small, the total value reported for 1912 being \$539,476, of which about 85 per cent is made up of sand and gravel. The imports of structural material products on the other hand are quite large, amounting in 1912 to nearly 27 per cent of the total consumption. The aggregate value of these imports was \$10,883,117, as compared with a value of \$7,710,552 in 1911, showing an increased import of \$3,172,565, or about 41 per cent. The imports in 1912 included: Portland cement valued at \$1,969,529; clay products, \$6,592,540; lime, \$207,481; sand and gravel, \$445,781; slate, \$200,643, and stone, \$1,467,143. The corresponding imports of 1911 were: cement, \$834,879; 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 in 1912 as per reports received from the manufacturers was 7,141,004 barrels, 350 lbs. net each (1,249,675 tons), as compared with 5,677,539 barrels (993,569 tons) made in 1911, an increase of 1,463,465 barrels, or over 25 per cent.

The total quantity of Canadian Portland cement sold in 1912 was 7,132,732 barrels (1,248,228 tons), as compared with 5,692,915 barrels (996,260 tons) in 1911, an increase of 1,439,817 barrels, or over 25 per cent.

The total consumption of Portland cement in 1912, including Canadian and imported cement, was 8,567,145 barrels of 350 lbs. net each (1,499,250 tons), as compared with 6,354,831 barrels (1,112,095 tons) in 1911, or an increase of 2,212,314 barrels, or nearly 35 per cent.

During the early part of the season of 1912 there was a shortage of cement supplies in western Canada owing to the apparent inability of Canadian producers to meet the demand. It was claimed, however, that the shortage was due in large part to the failure of transportation companies to provide sufficient transportation facilities for moving the cement from the eastern mills to the western market.

Acceding to a strong demand from western cities and with a view to relieving the situation in some measure, the Dominion Government reduced the duty on cement by one-half, such reduction remaining in force from June 12 to October 31.

The cement industry continues to increase rapidly in importance and its output is exceeded in value amongst non-metallic products by coal and clay products only.

There were employed in Canadian cement plants during 1912 an average of 3,461 men, and the total wages paid were \$2,623,902.

The market prices of cement according to quotations published in trade journals showed practically no variation during the year. The 'Canadian Engineer' reports prices at Halifax as \$2 per barrel; at Montreal for large lots \$1.35 to \$1.40; bags 40 cents extra; at Toronto in very large quantities \$1.50; car lots \$1.65; small city dealers, \$1.90; bags 40 cents extra in each case; at Winnipeg, \$2.50 to \$2.60 per barrel in bags.

The average price at cement mills as returned by producers was for Quebec province \$1.15, Ontario, \$1.11, Alberta, \$2.16, and British Columbia, \$1.50 per barrel.

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.	Average value.	Barrels.	Value.	Average value.	Barrels.	Value.
		\$	\$ cts.		\$	\$ cts.		\$
1887							69,843	81,909
1888							50,668	35,593
1889	90,474	69,790	0 77	Nil.	Nil.		90,474	69,790
1890	87,521	74,822	0 85	14,695	17,583	1 20	102,216	92,405
1891	90,846	103,479	1 14	2,633	5,082	1 93	93,479	108,561
1892	88,137	94,912	1 08	29,221	52,751	1 81	117,408	147,663
1893	126,673	130,167	1 03	31,924	63,848	2 00	158,597	194,015
1894	72,965	74,842	1 03	35,177	69,795	1 98	108,142	144,637
1895	66,219	60,795	0 92	62,075	112,880	1 82	128,294	173,675
1896	70,705	60,500	0 86	78,385	141,151	1 80	149,090	201,651
1897	85,450	65,893	0 77	119,763	209,386	1 75	205,213	275,273
1898	87,125	73,412	0 84	163,084	324,168	1 99	250,209	397,580
1899	147,387	119,308	0 81	253,366	513,983	2 01	396,753	633,291
1900	125,428	99,994	0 80	292,124	562,916	1 93	417,552	662,910
1901	133,328	94,415	0 71	317,066	565,615	1 78	450,394	660,030
1902	127,931	98,932	0 77	594,594	1,028,618	1 73	722,525	1,127,550
1903	92,252	74,655	0 81	627,741	1,150,592	1 83	719,993	1,225,247
1904	56,814	50,247	0 88	910,358	1,297,992	1 41	967,172	1,338,239
1905	14,184	10,274	0 72	1,316,548	1,913,740	1 42	1,360,732	1,924,014
1906	8,610	6,052	0 70	2,119,764	3,164,807	1 49	2,128,374	3,170,859
1907	5,775	4,043	0 70	2,436,903	3,777,323	1 55	2,441,868	3,781,371
1908	1,044	815	0 78	2,665,239	3,709,139	1 39	2,666,333	3,709,954
1909	0	0		4,067,709	5,345,802	1 31	4,067,709	5,345,802
1910	0	0		4,753,975	6,412,215	1 35	4,753,975	6,412,215
1911	0	0		5,692,915	7,644,537	1 34	5,692,915	7,644,537
1912	0	0		7,132,732	9,106,556	1 28	7,173,732	9,106,556

* Quantities sold or shipped.

The production of cement in 1912 was derived from twenty-four operating plants in addition to which sales were made from two other plants not producing, the total daily capacity of these plants being 36,515 barrels. The producing plants were 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 and three in Quebec using limestone and clay; fifteen in Ontario, of which ten use marl and five limestone.

A comparison of the principal statistics of 1911 and 1912 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 1911 and 1912.

	1911.	1912.	Increase.	%	De-crease.	%
Cement sold.....Bls.	5,692,915	7,132,732	1,439,817	25·3		
Cement manufactured,"	5,677,539	7,141,004	1,463,465	25·8		
Stock on hand Jan. 1....."	918,965	894,822			24,143	2·6
Stock on hand Dec. 31....."	903,589	903,094			495	0·05
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Value of cement sold.....\$	7,644,537	9,106,556	1,462,019	19·13		
Average price per barrel"	1·34	1·28			0·06	4·5
Wages paid....."	2,103,838	2,623,902	520,064	24·7		
Men employed.....No.	3,010	3,461	451	15·0		
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Imports of Portland cement...Bls.	661,916	1,434,413	772,497	116·7		
Value of cement.....\$	834,879	1,969,529	1,134,650	135·9		
Average price per barrel....."	1·26	1·37	0·11	8·7		
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Total consumption of cement in Canada.....Bls.	6,354,831	8,567,145	2,212,314	34·8		
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No. of completed plants operated....	24	24				
Total daily capacity of operating plants as on Dec. 31.....Bls.	23,810	38,015	9,205	31·9		

The large increase in output and sales has already been mentioned. Stocks on hand December 31, 1912, were practically the same as stocks at the end of the previous year, about 900,000 barrels. The average price per barrel at the mill for all plants showed a slight falling off in 1912, being reported as \$1.27½ as compared with \$1.34 in 1911.

An increase of 15 per cent is shown in number of men employed, and an increase of over 24 per cent in amount of wages paid.

The imports of cement in 1912 were over double those of 1911, the increase being over 110 per cent in quantity and nearly 136 per cent in value. The average price per barrel of imported cement in 1912 is shown as 11 cents higher than the average price in 1911.

Of the total quantity of cement made in 1912, 1,420,155 barrels were made from marl, and 5,720,849 barrels from limestone and slag. In 1911, there were 1,626,857 barrels made from marl and 4,050,682 barrels from limestone and slag, while in 1910, 1,214,479 barrels were made from marl, and 3,181,803 barrels from limestone and slag. With the exception of the new plant at Marlboro, Alberta, 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 28 per cent in 1911 and 20 per cent in 1912.

Statistics of the annual production of Portland cement since 1887, showing the quantity made, 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	58,094	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	128,386	1,150,592	1 83	4,850
1904.....	10	908,990	910,353	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	3,164,307	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	2,665,289	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	832,038	6,412,215	1 35	25,835
1911.....	24	5,677,539	5,692,915	903,589	7,644,537	1 34	28,810
1912.....	24	7,141,004	7,132,732	903,094	9,106,550	1 28	38,015

Imports and Exports.—Very little cement is exported from Canada, the quantity is not shown in the export records of the Customs Department but the value of the export during 1912 was only \$2,436 as against a value of \$4,067 in 1911, and \$12,914 in 1910.

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 three years there has been a steady increase in the importation of cement, the imports for 1912 being 1,434,413 barrels, as compared with 661,916 barrels in 1911, and 349,310 barrels in 1910.

The United States has been the principal source of imports during the past few years and supplied about 89 per cent of the imports in 1912, as compared with about 9 per cent from Great Britain. In 1911 about 66 per cent of the total imports were from the United States and 29 per cent from Great Britain. The imports of cement during 1911 and 1912 by countries, are shown in the next table.

Imports of Cement, 1911 and 1912.

	1911.				1912.			
	Cwt.	%	Value.	Average value.	Cwt.	%	Value.	Average value.
			\$	cts.			\$	cts.
Great Britain...	666,771	28.8	210,839	32	457,031	9.1	147,831	32
United States...	1,544,612	66.7	575,768	37	4,483,353	89.3	1,789,621	40
Belgium.....	9,389	0.4	2,618	21	21,375	0.4	7,175	34
Other countries.	18,727	0.8	7,962	43	3,187	0.1	1,423	45
Hong Kong...	77,208	3.3	38,292	50	55,500	1.1	23,479	42
Totals...	2,316,707	100.0	834,879	36	5,020,446	100.0	1,969,529	39
Equivalent in barrels of 350 lbs.	661,916	.....	.....	.....	1,434,413	.....	.....	.....

The duty on cement during 1912 is shown by the following items of the Customs tariff except, as already mentioned, that only one-half this rate was in force during the period from June 12 to October 31.

	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 43½ 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 51½ 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.

A permanent revision of the cement duties was made in the early part of 1913 and from May 13, 1913, the cement duties have been as follows:—

	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.....	7 cents.....	10 cents.....	10 cents.....
Bags in which cement or lime mentioned in the next preceding item is imported.....	15 per cent....	20 per cent....	20 per cent....

This is equivalent to a duty under the general and intermediate tariffs of 35 cents per barrel on cement, and 8 cents on the bags, or a total of 43 cents per barrel.

In view of the reduction in duty during a portion of the year it may be of interest to record the monthly import from Great Britain, the United States, and other countries, which is shown as follows:—

Imports of Cement by Months During 1912 from Great Britain, The United States, and Other Countries.

Month.	Great Britain.			United States.			Other countries.		
	Cwt.	\$	Average price. cts.	Cwt.	\$	Average price. cts.	Cwt.	\$	Average price. cts.
January	14,400	4,647	32	67,694	28,286	42	8	6	75
February	26,145	8,082	31	60,793	23,504	39			
March	38,664	13,144	34	133,994	53,312	40			
April	53,834	17,447	32	168,162	72,263	43	500	244	49
May	103,517	33,532	32	248,632	106,575	43	9,620	2,863	30
June	50,623	16,139	32	549,321	215,865	39	8,009	3,303	41
July	17,651	5,896	33	910,269	329,654	36	8,000	2,615	33
August	8,477	2,588	31	623,651	238,794	38	27,289	9,357	34
September	56,135	17,817	32	525,398	210,077	40			
October	57,175	13,429	34	606,196	249,839	41	18,200	10,867	60
November	26,495	7,930	30	551,611	243,969	44	8,445	2,822	33
December	3,865	1,180	31	37,452	17,483	47			
	457,031	147,831	32	4,483,353	1,789,621	40	80,062	32,071	40

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	957	1902	2,267	1909	113,362
1896	1,328	1903	2,851	1910	12,914
1897	644	1904	5,494	1911	4,067
				1912	2,436

Imports of Cement.

Fiscal Year.	Cement and Mfrs. of N. E. S.*	Hydraulic cement.			Portland cement.		
		Barrels.	Value.	Average value.	Barrels.	Value.	Average value.
	\$		\$	\$ cts.		\$	\$ cts.
1880.....	28	10,034	10,306	1 03		55,774	
1881.....	298	7,812	7,821	1 00		45,646	
1882.....	86	11,945	13,410	1 12		66,579	
1883.....	548	11,659	13,755	1 18		102,537	
1884.....	1,236	8,606	9,514	1 11		102,857	
1885.....	1,315	5,613	5,396	0 96		111,521	
1886.....	1,851	6,164	6,028	0 98		120,398	
1887.....	1,419	6,160	8,784	1 43	102,750	148,054	1 44
1888.....	5,787	5,636	7,522	1 33	122,402	177,168	1 45
1889.....	10,668	5,835	7,467	1 28	122,273	179,406	1 47
1890.....	5,443	5,440	9,048	1 66	192,322	313,672	1 63
1891.....	2,890	3,515	6,152	1 75	183,728	304,648	1 66
1892.....	3,394	2,214	2,782	1 26	187,233	281,553	1 50
1893.....	2,909	4,896	8,060	1 65	229,492	316,179	1 38
1894.....	2,618	1,054	985	0 93	224,150	280,841	1 25
1895.....	2,112	5,333	7,001	1 31	196,281	242,813	1 24
1896.....	3,672	5,688	8,948	1 57	204,407	242,409	1 19
1897.....	4,318	2,494	3,937	1 58	210,371	252,587	1 20
		Cwt.			Cwt.		
1898.....	3,263	16,033	7,097	0 44	1,073,058	355,264	0 33
1899.....	8,929	1,678	694	0 41	1,300,424	467,994	0 36
1900.....	10,452	10,418	4,711	0 45	1,301,361	498,607	0 38
1901.....	4,890	17,784	6,865	0 39	1,612,432	654,595	0 41
1902.....	12,234	29,585	17,755	0 60	1,971,616	833,657	0 42
1903.....	16,281	13,690	6,333	0 46	2,316,853	868,131	0 37
1904.....	14,305	12,088	5,391	0 45	2,476,388	995,017	0 40
1905.....	18,489	16,961	10,690	0 63	4,228,394	1,234,649	0 29
1906.....	27,858	10,794	4,034	0 37	2,848,582	963,839	0 34
1907.....	16,201	1,192	685	0 57	1,551,493	523,120	0 34
1908.....	12,418	18,860	6,710	0 36	2,427,381	852,041	0 35
1909.....	5,733	438	466	1 06	1,460,850	475,676	0 33
1910.....	7,678	588	553	0 94	493,809	158,487	0 32
1911.....	6,275	339	365	0 94	1,283,121	494,081	0 39
1912.....	7,821	901	579	0 64	2,592,025	936,425	0 36

* 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 1912 was 8,567,145 barrels (1,499,250 tons), made up of 7,132,732 barrels (1,248,228 tons) of Canadian cement, and 1,434,413 barrels (251,022 tons) of imported cement, the Canadian cement representing 83.3 per cent, and the imported cement 16.7 per cent of the total.

In 1911 the total consumption of cement 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
1912.....	7,132,732	83.3	1,434,413	16.7	8,567,145

Nova Scotia.—There is but one cement plant in Nova Scotia located at Sydney and operated by the Sydney Cement Company, Limited. Puzzolan cement is made from blast furnace slag and lime.

New Brunswick.—There are no cement plants in this Province, but it is reported that negotiations have been carried on looking to the erection of a plant at Greenhead, near St. John.

Quebec.—This Province has three completed cement mills all operated by the Canada Cement Company, Limited; two situated near Montreal at Longue Pointe and Pointe aux Trembles, and the third in Hull. The Montreal mills have a combined capacity of 7,800 barrels per day, and the Hull mill 2,400 barrels per day. A new plant is being erected by the Standard Cement Company, at Chambord, Lake St. John. The total quantity of cement sold or used during 1912 in this Province was 2,714,685 barrels valued at \$3,134,499.

Ontario.—Ontario is the most important cement producing province, having 15 mills, of which 6 with a total daily capacity of 11,400 barrels are operated by the Canada Cement Company, and 9 mills having a total daily capacity of 8,500 barrels, by independent companies. Five plants are operated on limestone and have a daily capacity of 9,600 barrels, while 10 plants with an aggregate daily capacity of 10,280 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 1912 were 3,044,713 barrels valued at \$3,372,897, as compared with 3,090,786 barrels valued at \$3,741,039 in 1911. There was thus a falling off of sales in Ontario during 1912 of 46,073 barrels, or about 1.5 per cent.

The detailed statistics of production during 1911 and 1912 are shown in the next table.

Cement Production in Ontario, 1911 and 1912.

—		1911.	1912.	Increase.	%	Decrease.	%
Cement sold	Bls.	3,090,786	3,044,713	.....	.....	46,073	1.5
Cement manufactured....	"	2,973,958	2,961,185	.....	.....	12,773	0.4
Stock on hand Jan. 1....	"	682,598	563,066	.....	.....	119,532	17.5
Stock on hand Dec. 31....	"	565,770	479,538	.....	.....	86,232	15.2
Value of cement sold....	\$	3,741,039	3,372,897	.....	.....	368,132	9.8
Wages paid	"	945,971	921,553	.....	.....	24,418	2.6
Men employed.....	No.	1,464	1,559	95	6.5	.....	.....
Total daily capacity of operating plants....	Bls.	15,750	19,900	3,150	20.0	.....	.....

Manitoba.—The Commercial Cement Company of Winnipeg is operating a natural Portland cement plant at Babcock, 75 miles southwest of Winnipeg on the Canadian Northern railway. The capacity of the plant is reported as about 175 barrels per day. The Canada Cement Company, which is constructing a new plant near Winnipeg, expects to have its clinker grinding plant in operation early during 1913. Clinker produced in the Company's plants in Ontario will be used until the Winnipeg plant is completed.

Alberta.—Three completed cement plants in Alberta are located at Exshaw, Calgary, and Blairmore, respectively. All three plants are operated with limestone and shale. The first two operated by the Canada Cement Company have an aggregate daily capacity of 3,300 barrels. The Rocky Mountains Cement Company has increased the capacity of its plant at Blairmore to 800 barrels in 1912. A new plant is being erected at Marlboro, Alberta, near the Grand Trunk Pacific railway, about 140 miles west of Edmonton. This plant which will have a capacity of about 1,500 barrels per day will utilize marl deposits which are situated close to the railway. The Keystone Portland Cement Company is also proposing to erect a mill at or near Blairmore.

British Columbia.—The Tod Inlet plant of the Vancouver Cement Company, Limited, near Victoria, B.C., with a capacity of 2,000 barrels per day, has been in operation for a number of years. Limestone and clay are obtained from the Company's property adjoining the works.

New plants are being constructed in this Province, one adjoining the Tod Inlet plant; the second at Princeton.

At Tod Inlet or Bamberton, the Portland Cement Construction Company of London, England, has been engaged in the construction of a large plant which was still incomplete at the end of the year. The British Columbia Portland Cement Company, Limited, is constructing at Princeton, a plant with a capacity of from 500 to 700 barrels per day. This plant also was incomplete at the end of the year.

The production of cement in Ontario has already been shown separately and the aggregate production in all other provinces during 1911 and 1912 is given in the next table.

Cement Production in Other Provinces, 1911 and 1912.

	1911	1912.	Increase.	%	Decrease.	%
Cement sold..... Bls.	2,602,129	4,088,019	1,485,890	57.1		
Cement manufactured.... "	2,703,581	4,179,819	1,476,238	54.6		
Stock on hand Jan. 1.... "	236,367	331,756	95,389	40.4		
Stock on hand Dec. 31 .. "	337,819	423,556	85,737	25.4		
Value of cement sold. \$	3,903,498	5,733,659	1,830,161	46.9		
Wages paid..... "	1,157,867	1,702,349	544,482	21.3		
Men employed..... No.	1,546	1,902	356	23.0		
Total daily capacity of operating plants..... Bls.	13,060	18,115	5,055	38.7		

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	
*The Doric Portland Cement Co., Ltd.	Owen Sound, Ont.	Owen Sound, Ont.
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.
St. Mary's Portland Cement Co., Ltd.	St. Marys, Ont.	Toronto, Ont.
The Commercial Cement Co., Ltd.	Babcock, Man.	Winnipeg, Man.
The Rocky Mountains Cement Co.	Blairmore, Alta.	Calgary, Alta.
Vancouver Portland Cement Co.	Tod Inlet, B.C.	Victoria, B.C.

*Not operated during 1912.

The following companies are engaged in the construction of or contemplating the erection of mills:—

Standard Cement Co	Chambord	Lac St. Jean, Que.
Ben Allan Portland Cement Co.....	.....	Owen Sound, Ont.
The Edmonton Portland Cement Co.....	Marlboro, Alta	Edmonton, Alta.
The Keystone Portland Cement Co.....	Blairmore, Alta.....	Calgary, Alta.
British Columbia Portland Cement Co.....	Near Princeton.....	Princeton, B.C.
The Portland Cement Construction Co.....	Bamberton, Tod Inlet, B.C	Victoria Temple Bldg.

CLAYS AND CLAY PRODUCTS.

For a number of years a small quantity of fireclay has been produced and sold and in 1912 there was a small production of kaolin or china-clay from a deposit in the Province of Quebec. With these exceptions, practically 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 total value of the production of clay products in 1912 was \$10,575,869, as compared with a value of \$8,359,933 in 1911, showing an increase of \$2,215,936 or over 26.5 per cent.

The production of clay products has been increasing very rapidly during the past few years and many new plants have been erected both in eastern and western Canada. For the year 1912 about 459 active firms reported, as against 419 firms active in 1911, and 438 firms in 1910. The average number of men employed in 1912 was 10,415, as compared with 9,131 in 1911 and 8,656 in 1910. The total wages paid in 1912 were \$4,488,957, as against \$3,524,058 in 1911.

Of the several provinces Ontario is by far the largest producer of clay products, being credited in 1912 with 46 per cent of the total value of the output, as compared with 47 per cent in 1911. Quebec contributed 16 per cent, Alberta about 12.5 per cent, and Manitoba 10 per cent of the total output in both years, and British Columbia 8 per cent in 1911, and 9.4 per cent in 1912.

Of the total value of the production in 1912, building and paving brick, including fireproofing, contributed \$9,163,666, or about 86 $\frac{2}{3}$ per cent; sewerpipe and tile production were valued at \$1,242,503, or 11.7 per cent of the total. The total value of the production of pottery was reported as \$426,589, of which \$43,955 is estimated as attributable to Canadian clays, the balance to imported clays; the value of the production of fireclay and firebrick was \$125,585. Compared with the previous year, the production of building, paving, and fireproofing brick, shows an increase of about 30 per cent, while the aggregate production of sewerpipe and drain tile shows a slight falling off.

The average price of common and building brick for the whole of Canada in 1912 is reported as \$9.11, as compared with \$3.37 in 1911; \$8.13 in 1910, and \$7.81 in 1909. The average price of pressed or front brick for the same years was respectively \$12.86; \$12.53; \$11.89, and \$11.01, thus showing a general increase in cost of building brick.

A comparison of statistics of imports of clay products, shown in succeeding tables, with those of production, is worthy of note. It will be observed that the total value of the imports in 1912, was \$6,592,540 (not including certain items probably in part covering clay products), and after deducting a small export a total approximate consumption of clay products valued at \$17,160,660 is shown of which about 62 per cent was of domestic production.

In 1911, the approximate consumption was valued at \$13,516,477, of which about 62 per cent was of domestic production. In 1909 the approximate consumption was valued at \$9,972,995, of which about 70 per cent was of domestic production.

While the imports of building brick continue to increase, the total value is still small compared with the home production. In the case of paving brick, however, the imports are about double, and of firebrick nearly eight times the Canadian output. The imports of sewerpipe have also increased much more rapidly than the production during the past year.

Statistics of the production in 1912 and 1911 of the several classes of clay products by provinces, are shown in the following tables:—

Production of Clay Products by Provinces, 1912.

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.
Nova Scotia	11	316	98,939	20,095,202	18,722,960	128,508	6 86	220,000	100,000	1,600	16 00
New Brunswick.....	7	148	45,586	6,179,000	5,750,000	52,850	9 22	50,000	50,000	500	10 00
Quebec.....	74	1,917	645,221	181,219,323	161,836,557	1,808,380	8 08	10,386,454	11,500,000	138,500	12 04
Ontario.....	271	4,696	2,060,542	356,964,931	350,461,874	3,045,540	8 69	75,231,791	73,208,310	761,355	10 40
Manitoba.....	21	1,088	405,926	83,556,487	83,681,237	959,854	11 47	3,450,000	3,497,700	52,947	15 13
Saskatchewan.....	14	383	152,654	24,603,771	25,338,771	246,443	9 73	5,950,000	5,200,000	86,500	16 63
Alberta.....	33	1,053	587,223	73,394,693	70,074,568	755,986	10 69	23,798,410	23,685,412	349,926	14 77
British Columbia.....	28	814	492,916	56,569,470	53,245,565	512,514	9 61	8,210,800	7,939,000	218,526	27 53
Totals.....	459	10,415	4,488,957	802,582,827	769,191,532	7,010,375	9 11	129,297,455	125,180,422	1,609,854	12 86

Province.	Paving brick.		Ornamental.		Firebrick and fireclay shapes. Value.	Fireproofing and terra-cotta, etc. Value.	Pottery. Value.	Sewerpipe. Value.	Tiles, drain. Value.	Kaolin. Value.	Total value. Clay products.
	No. sold.	Value.	No. sold.	Value.							
		\$		\$							
Nova Scotia.....					15,375	1,270		115,000	10,300		272,053
New Brunswick.....								1,560			54,910
Quebec.....					25,000	42,530	500	165,000	390	160	1,630,460
Ontario.....	4,554,500	85,589	352,816	7,168		135,087	43,455	478,156	308,050		4,864,700
Manitoba.....									5,250		1,018,051
Saskatchewan.....											332,943
Alberta.....			10,000	1,000		248,712				560	1,356,184
British Columbia.....	25,000	400	8,540	427	85,210	21,254		126,485	31,752		996,568
Totals.....	4,579,500	85,989	371,356	8,595	6125,585	448,853	*43,955	884,641	357,862	160	10,575,869

* There was also a production of \$383,134 from imported clays.

^b Also a production of \$25,000 from imported clays.

Production of Clay Products by Provinces, 1911.

Province.	No. of active firms reporting.	No. of men employed.	Wages.	Common brick.				Pressed brick.			
				No. manu- factured.	No. sold.	Value of sales.	Per M.	No. manu- factured.	No. sold.	Value of sales.	Per M.
Nova Scotia.....	13	336	97,513	22,300,000	22,680,000	133,540	5 88	850,000	850,000	3,100	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	782	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	636	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	5,420,890	8 37	94,170,285	87,350,539	1,094,582	12 53

Province.	Paving brick.		Ornamental.		Firebrick and fireclay shapes. Value.	Fireproof- ing and terra-cotta, etc. Value.	Pottery. Value.	Sewerpipe. Value.	Tiles, drain. Value.	Total val'ue. 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	400,585	*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	18 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, 1907-1912.

Province.	1907.	1908.	1909.	1910.	1911.	1912.
	\$	\$	\$	\$	\$	\$
Nova Scotia.	125,560	117,833	188,185	204,782	274,249	272,053
New Brunswick.	57,377	75,513	65,570	56,475	38,000	54,910
Quebec	1,214,108	893,717	1,153,832	1,442,842	1,341,467	1,680,460
Ontario	3,123,372	2,476,152	3,425,841	3,667,810	3,916,575	4,864,700
Manitoba	466,432	265,091	559,008	781,605	834,428	1,018,051
Saskatchewan.	125,459	87,566	145,516	160,850	226,958	332,943
Alberta.	353,672	240,384	442,486	753,232	1,052,751	1,356,184
British Columbia.	306,137	344,446	470,402	562,360	675,505	996,568
	5,772,117	4,500,702	6,450,840	7,629,956	8,359,933	10,575,869

Annual Value of Production of Clay Products, 1899-1912.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1899	2,983,099	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	1912	10,575,869
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 1912 were 694,000, valued at \$8,493, and manufactures of clay valued at \$256. In 1911 the exports were: building brick, 394,000 valued at \$3,997, and manufactures of clay valued at \$2,071.

The imports of clay products and of clay reached a total value during the calendar year 1912 of \$6,592,540, equivalent to about 62 per cent of the domestic production. The total imports in 1911 were valued at \$5,156,544, showing an increase in 1912 of \$1,435,996 or nearly 28 per cent, as against an increase in 1911 over 1910 of 19 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, including: brick and tile, earthenware and chinaware, and clays. The imports of clays in 1912 were valued at \$288,394 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 \$127,402 and of fireclay \$140,500. In 1911 the total value of the imports of clays was \$270,247, and included china-clay valued at \$125,768 and fireclay valued at \$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 1906. The imports classified under brick and tile were valued in 1912 at \$3,209,190, of which about 28 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 specially designated, valued at \$818,467. The value of the imports of brick and tile in 1911 was \$2,339,761, of which about 34 per cent was firebrick. The imports during 1911 of manufactures of clay not specially designated, were 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 increase in the imports of brick and tile in 1912, as compared with 1911, was a little over 35 per cent. The imports of earthenware and chinaware, of which the most important class is table-ware, were valued in 1912 at \$3,094,956, as against \$2,516,536 in 1911, or an increase of about 23 per cent.

The detailed record of imports since 1906 is shown in the next table, the figures for the years 1906 to 1909 covering the fiscal year; for the last four-years, the calendar year is used.

Imports of Clay Products, 1906 to 1912.

Imports.	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.	Calendar year 1912.
	\$	\$	\$	\$	\$	\$	\$	\$
Brick and tile:—								
Bath brick.....	1,466	1,076	1,834	4,432	1,495	2,290	2,623	1,927
Building brick.....	194,897	88,144	129,105	108,773	195,360	274,482	475,865	763,470
Paving brick.....	46,008	23,256	61,346	101,187	139,366	124,994	164,292	160,663
Firebrick, of a class or kind not made in Canada.....	*591,854	*506,801	639,347	350,457	485,994	811,927	814,414	953,621
Drain tile, not glazed.....	4,727	12,106	2,080	2,394	2,785	4,485	5,640	4,018
Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....	131,353	93,458	125,747	106,399	170,280	175,599	382,929	507,024
Manufactures of clay, N.O.P.....	30,067	45,845	110,097	141,391	254,170	361,996	523,998	818,467
Total.....	1,000,372	770,686	1,079,556	815,033	1,249,450	1,755,773	2,369,761	3,209,190
Earthenware and chinaware:—								
Brown or coloured earthenware and stoneware, and Rockingham ware.....	8,363	9,625	22,847	28,273	36,673	53,413	52,100	62,161
C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P.....	191,552	154,879	239,513	197,623	219,936	202,475	194,291	291,804
Demijohns, churns, or crocks.....	10,508	9,342	17,836	10,571	8,888	6,607	4,933	18,404
Tableware of china, porcelain, white granite or iron- stoneware.....	1,004,024	902,798	1,555,517	1,202,537	1,212,365	1,545,538	1,718,582	2,068,362
China and porcelain ware, N.O.P.....	214,013	134,675	109,446	87,798	87,467	95,509	62,025	71,751
Tiles or blocks of earthenware or stone prepared for mosaic flooring.....		62,547	45,836	43,299	56,974	90,524	123,203	160,082
Earthenware tiles, N.O.P.....	78,247	67,027	116,480	79,854	81,393	125,772	154,351	239,391
Manufacture of earthenware, N.O.P.....	117,824	81,987	83,309	66,932	78,063	163,278	217,051	183,001
Total.....	1,624,531	1,422,880	2,190,784	1,716,887	1,781,759	2,283,116	2,516,536	3,094,956

Clays:—

China-clay, ground or unground.....	65,909	78,772	97,236	90,922	100,066	142,125	125,768	127,402
Fireclay, ground or unground.....	131,130	85,044	155,873	77,146	86,161	124,293	125,199	140,500
Pipeclay, ground or unground.....	1,333	307	319	887	310	114	1,786	234
Clays, all other, N.O.P.....	22,132	14,117	14,292	21,280	29,793	25,976	17,494	20,258
Total.....	220,504	178,240	267,720	190,235	216,330	292,508	270,247	288,394
Grand total.....	2,845,407	2,371,806	3,538,060	2,722,155	3,247,539	4,331,397	5,156,544	6,592,540
Baths, bath-tubs, basins, closets, lavatories, urinals, sinks and laundry tubs of any material.....	67,828	62,547	234,505	157,881	211,837	262,667	285,847	382,920
Chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite, ground or unground.....	9,053	7,376	72,467	81,675	96,747	121,959	147,640	167,990

* 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 1912 was \$167,990; of which \$131,694 was from the United States, \$34,732 from Great Britain, and \$1,564 from other countries. The value of the imports under this item during the calendar year 1911 was \$147,640. 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 1912 being \$382,920, as compared with \$285,847 during the year 1911.

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 iron-stoneware, 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 82 per cent was from the United States and 17.9 per cent from Great Britain; and only \$2,045 worth from other countries. Of the earthenware and chinaware, 60 per cent was imported from Great Britain; 16 per cent from the United States; 12 per cent from Germany; 5 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, 1912, Showing Countries of Origin.

Imports.	Great Britain.	United States.	Germany.	France.	Austria-Hungary.	Japan.	Other countries.	Total.
	\$	\$	\$	\$	\$	\$	\$	\$
Brick and tile:—								
Bath brick.....	2,428	542						2,970
Building brick.....	27,345	438,652						465,997
Paving brick.....	87,375	78,275						165,650
Firebrick, of a class or kind not made in Canada.....	105,904	754,202					657	860,763
Drain tile, not glazed.....	829	4,602		347				5,778
Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....	55,000	350,961	30				7	405,998
Manufactures of clay, N.O.P.....	162,381	391,640	794	170			40	555,025
Total.....	441,262	2,018,874	824	517			704	2,462,181
Earthenware and chinaware:—								
Brown or coloured earthenware and stoneware, and Rockingham ware.....	13,300	41,189	48	196		461	37	55,231
C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P.....	128,312	38,162	13,410	1,030	1,840	6,713	2,277	191,744
Demi-johns, churns, or crocks.....	248	4,357					10	4,615
Tableware of china, porcelain, white granite or ironstone-ware.....	1,194,396	35,321	262,602	130,838	55,654	71,389	12,283	1,762,483
Chinaware, to be silver mounted, imported by manufacturers of silverware.....		217						217
China and porcelain ware, N.O.P.....	29,493	13,200	10,750	750	1,123	4,523	431	60,270
Tiles or blocks of earthenware or stone prepared for mosaic flooring.....	29,673	94,026	554	2,511			1,151	127,915
Earthenware tiles, N.O.P.....	82,574	74,659	176	103			9	157,521
Manufacture of earthenware, N.O.P.....	80,085	120,738	11,250	944	715	6,581	2,657	222,970
Total.....	1,558,081	421,869	298,790	136,372	50,332	89,667	18,855	2,582,966

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Imports of Clay Products During the Twelve Months Ending March, 1912, Showing Countries of Origin—Continued.

Imports.	Great Britain.	United States.	Germany.	France.	Austria-Hungary.	Japan.	Other countries.	Total.
	\$	\$	\$	\$	\$	\$	\$	\$
Clays:—								
China-clay, ground or unground.....	90,125	25,537			290		4,310	120,262
Fireclay, ground or unground.....	31,454	86,269	303				377	118,863
Pipe-clay, ground or unground.....	46	1,596						1,642
Clays, all other, N.O.P.....	2,763	13,655	468			18		16,904
Total.....	124,388	127,057	1,271		290	18	4,647	257,671
Grand total.....	2,123,731	2,567,800	300,885	136,889	59,622	89,685	24,206	5,802,818
Per cent of total.....	40.05	48.42	5.68	2.58	1.12	1.69	0.46	100.00
Baths, bath-tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material.....	80,466	220,458	7	7				300,938
Chalk, china or cornwall stone, cliff stone, and feldspar, fluorspar, magnesite, ground or unground.....	43,171	98,289			295		1,575	143,330

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 thirteen years Canada has imported clay products to the value of \$35,396,706. 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 \$2,462,181 in 1912. The imports of earthenware and chinaware have almost doubled in the same time.

Imports of Clay Products (total value) 1900-12.

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	176,305	2,574,275
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
1912.....	2,462,181	2,582,966	257,671	5,302,818
	10,944,837	21,867,070	2,534,799	35,396,706

* 9 months ending March 1907.

** Includes fireclay classified as "for use in process of manufactures."

The Canadian Customs duties affecting clays and clay products are shown in the following tabulated statement:—

Canadian Customs Duties on Clay Products.

(From the Customs Tariff, 1907, revised 1910.)

Item.	British Preferential tariff.	Inter-mediate tariff.	General tariff.
281 Firebrick of a class or kind not made in Canada.	Free.	Free.	Free.
282 Building brick, paving brick, and mfgs. of clay or cement (N.O.P.).....	12½ %	20 %	22½ %
283 Drain tiles not glazed.....	15 "	17½ "	20 "
284 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 "
285 Tiles or blocks of earthenware or of stone prepared for mosaic flooring	20 "	27½ "	30 "
286 Earthenware and stoneware, viz., demijohns, churns, or crocks	20 "	27½ "	30 "
287 Tableware of china, porcelain, white granite or ironstone.....	15 "	27½ "	27½ "
288 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 "
289 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.	Free.

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 four years in the following tables.

In 1912 the total sales were 894,371,954, valued at \$8,620,229, made up of 769,191,532 common valued at \$7,010,375, or an average value per thousand of \$9.11; and 125,180,422 pressed brick valued at \$1,609,854, or an average value per thousand of \$12.86. In addition to the common and pressed brick there was a production of ornamental brick of 371,356 valued at \$8,595, and a production of fireproofing brick and architectural terra-cotta, valued at \$448,853.

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 \$607,294, 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.

There were 459 active firms reporting in 1912, as compared with 419 firms in 1911, and 397 firms in 1910.

The demand for brick has continued very strong both in eastern and western Canada, and many new plants have been and are being constructed.

Production of Clay Building Brick (Common and Pressed) 1911 and 1912.

Province.	1911.				1912.			
	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.....	13	23,530,000	141,640	2.17	11	18,822,960	130,108	1.5
New Brunswick.....	6	4,400,000	38,000	0.58	7	5,780,000	53,350	0.6
Quebec.....	60	122,041,580	1,033,270	15.86	74	173,336,557	1,446,880	16.8
Ontario.....	262	369,074,371	3,024,046	46.48	271	423,670,184	3,807,195	44.2
Manitoba.....	18	81,400,000	826,928	12.69	21	87,178,937	1,012,801	11.7
Saskatchewan.....	13	21,071,660	224,758	3.45	14	30,538,771	332,943	3.9
Alberta.....	28	71,772,980	779,001	11.96	33	93,759,980	1,105,912	12.8
British Columbia.....	19	39,680,515	443,829	6.81	23	61,254,565	731,040	8.5
Totals.....	419	732,901,056	6,515,472	100.00	459	894,371,954	8,620,229	100.00

Production of Clay Building Brick (Common and Pressed) 1909 and 1910.

Province.	1909.			1910.		
	No. sold.	Value.	Per cent of total value.	No. sold.	Value.	Per cent of total value.
		\$			\$	
Nova Scotia.....	18,875,000	114,795	2.37	18,730,000	113,436	1.92
New Brunswick.....	6,170,000	44,330	0.91	3,950,000	31,350	0.53
Quebec.....	101,471,567	690,918	14.27	130,278,310	929,492	15.72
Ontario.....	322,524,414	2,557,068	52.80	342,119,078	2,785,361	47.11
Manitoba.....	59,110,000	544,548	11.24	75,834,550	746,704	12.63
Saskatchewan.....	14,416,770	144,316	2.98	14,733,340	160,850	2.72
Alberta.....	45,479,855	441,606	9.12	73,639,771	750,982	12.70
British Columbia.....	28,445,758	305,520	6.31	36,316,304	394,473	6.67
Totals.....	696,493,364	4,843,101	100.00	695,610,353	5,912,648	100

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 \$3,000 per annum. The exports fell off somewhat in 1911 to a value of \$3,977, but increased again in 1912 to a value of \$8,493. The annual imports for a number of years previous to 1903 averaged only about \$20,000 in value; during the past nine years, however, the imports have rapidly increased from \$100,000 to nearly \$800,000 per annum. During the calendar year 1912, the imports were 81,425,000 brick valued at \$763,470, of which 3,071,000 valued at \$32,731 or an average of \$10.66 per thousand, were imported from Great Britain, and 78,350,000 valued at \$730,739, or an average of \$9.33 per thousand, from the United States. The imports during the calendar year 1911 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.

It will be observed that in 1912 there was a considerable falling off in the imports of brick from Great Britain and an increase of close to 100 per cent on the imports of brick 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	2,255
1896.....	983	5,678	1903.....	891	5,699	1910.....	390	2,762
1897.....	573	2,679	1904.....	696	5,357	1911.....	394	3,977
						1912.....	694	8,493

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	28,493
1882.....	3,500	24,572	1893.....	1,489	14,108	1904.....	13,455	117,468
1883.....	1,448	14,234	1894.....	2,220	18,320	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	103,773
1888.....	2,483	20,720	1899.....	2,611	21,306	1910.....	30,444	218,175
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	1912.....	51,673	465,997

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 1912 according to these returns was \$9.11, as compared with \$8.37 in 1911, and \$8.13 in 1910; and of pressed brick \$12.86, as compared with \$12.53 in 1911 and \$11.89 in 1910.

In the Maritime Provinces during 1912, the price of common brick varied from \$6.50 to \$10, averaging for Nova Scotia \$6.86, and for New Brunswick \$9.22.

In Quebec the price of common brick varied between \$5 and \$10.50, averaging \$8.08; while the price of pressed brick averaged \$12.04, with only two firms reporting production. The average price of common brick in Ontario was \$8.69, the limits of variation being \$6 and \$11; while for pressed brick the average was \$10.40 and the variation from \$8.75 to \$12.

In the western provinces the averages for common brick were fairly uniform: \$9.61 to \$11.47. In individual yards the prices varied from \$9 to \$14. Pressed brick in the west averaged \$15.13 per thousand in Manitoba; \$16.63 in Saskatchewan; \$14.77 in Alberta; and \$27.53 in British Columbia.

The following table shows the average values at the kilns of common and pressed brick during 1910, 1911, and 1912, as furnished by the producers:—

Average Prices per Thousand of Common and Pressed Brick.

	Common brick.			Pressed brick.		
	1910.	1911.	1912.	1910.	1911.	1912.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.....	5 77	5 88	6 86	12 27	9 52	16 00
New Brunswick.....	7 83	5 55	9 22	12 00	12 00	10 00
Quebec.....	6 63	7 67	8 08	15 00	16 20	12 04
Ontario.....	7 88	7 89	8 69	9 74	10 21	10 40
Manitoba.....	9 81	10 11	11 47	16 27	12 08	15 13
Saskatchewan.....	9 63	9 49	9 73	14 97	15 31	16 63
Alberta.....	9 63	10 10	10 69	19 01	13 81	14 77
British Columbia.....	9 77	9 70	9 61	33 56	24 94	27 53
Canada.....	8 13	8 37	9 11	11 89	12 53	12 86

According to trade journals, the following retail prices were quoted during the year:—

Toronto.—Grey and red stock brick during the first nine months of the year \$10.50 to \$11 per M; and during the last three months \$11.50 to \$12 per M. Don Valley No. 1, dry pressed and buff bricks at the yard \$17 per M. Port Credit brick f. o. b. Port Credit during the last three months of the year, wire cut, \$10, and pressed brick \$12 to \$15 per M.

Winnipeg.—Kiln run brick during the first nine months, \$11, \$12, and \$16 according to quality. Pressed brick \$25 to \$50 per M.

Nova Scotia and New Brunswick.—There was a slight falling off in the production of brick in Nova Scotia in 1912 and a small increase in the production in New Brunswick. Comparatively little pressed brick is made. The total value of the output in Nova Scotia was \$130,108 and the chief sources of production, Annapolis Royal, Middleton, Pugwash, Elmsdale, Mira Gut, River Denys, and New Glasgow. A feature of special interest during 1912 was the consolidation of the clay working plants at Annapolis Royal, Bridgetown, Middleport, Pugwash, and Elmsdale, under the name of the Nova Scotia Clay Works, Limited.

The total value of the production in New Brunswick was \$53,350 and the principal sources of production, Fredericton, St. John, Little River, Chatham, and St. Stephen.

Quebec.—The total production of brick in Quebec in 1912 is reported by 74 operating firms as 173,336,557 valued at \$1,446,880, comprising 161,836,557 common brick valued at \$1,308,380, or \$8.08 per thousand, and 11,500,000 pressed brick valued at \$138,500, or \$12.04 per thousand.

The production by 60 active firms in 1911 was reported as 122,041,580 brick valued at \$1,033,270.

While brick-making is carried on at many places in the Province, the principal plants are located at Laprairie, Sherbrooke, and St. Jean des Chailions.

Ontario.—Over 44 per cent of the brick production in Canada in 1912 was made in Ontario, the total sales as reported by 271 firms being 423,670,184 valued at \$3,807,195, and including 350,461,874 common brick valued at \$3,045,840 or an average of \$8.69 per thousand, and 73,208,310 pressed brick, valued at \$761,355, or an average of \$10.40 per thousand. The total sales in 1911 as reported by 262 operating firms were 369,004,371 valued at \$3,028,046, and comprised 318,670,621 common brick valued at \$2,513,965 or an average of \$7.89 per thousand, and 50,333,750 pressed brick valued at \$514,081 or an average of \$10.21 per thousand.

The city of Toronto and vicinity, including the counties of York and Halton, is the principal brick making section and in 1912 produced about 52 per cent of the Ontario production, or about 23 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 nearly 11 per cent of the Ontario production. The Ottawa district, including the counties of Russell and Carleton, produced over 7 per cent. The greater part of the pressed brick, reported as such, was made in the Toronto and Hamilton districts.

The production by principal counties in 1912 and 1911 is shown in the accompanying tables.

Sales of Common and Pressed Brick in Ontario by Principal Counties, 1912.

County.	Common.			Pressed.			Total value.	Per cent.
	No.	Value.	Per M.	No.	Value.	Per M.		
		\$	\$ cts.		\$	\$ cts.		
York.....	159,650,579	1,453,741	9 14	3,813,700	108,855	12 35	1,567,596	41.17
Halton.....				41,507,692	420,967	10 14	420,967	11.06
Wentworth.....	34,661,376	236,268	8 26	12,667,803	129,273	10 20	415,541	10.91
Peel.....	12,123,100	90,588	7 47	9,582,680	95,008	9 91	185,596	4.88
Carleton.....	17,810,000	170,150	9 55				170,150	4.47
Algoma.....	11,900,000	114,875	9 65				114,875	3.02
Russell.....	15,125,000	103,150	6 82				103,150	2.71
Middlesex.....	8,002,000	66,766	8 34				66,766	1.75
Nipissing.....	6,115,800	65,058	10 64				65,058	1.71
Waterloo.....	7,666,778	59,107	7 71				59,107	1.55
Simcoe.....	6,329,000	53,271	8 42				53,271	1.40
Grey.....	6,090,000	47,540	7 81				47,540	1.25
Kent.....	5,442,250	38,524	7 08				38,524	1.02
Lincoln.....	3,209,200	27,345	8 52	598,935	6,915	11 54	34,260	0.90
Renfrew.....	1,110,000	33,615	8 18				33,615	0.88
Peterborough.....	3,700,000	33,390	9 00				33,300	0.87
Essex.....	4,502,587	32,690	7 26				32,690	0.86
Total, 17 counties...	306,487,670	2,680,988	8 75	73,170,810	761,018	10 40	3,442,006	90.41
Total, other counties	44,024,204	364,852	8 29	37,500	337	9 00	365,189	9.59
Total, Ontario.....	350,461,874	3,045,840	8 69	73,208,310	761,355	10 40	3,807,195	100.00

Sales of Common and Pressed Brick in Ontario 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	50.06
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	62,502	7 66				62,502	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, 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	1,313,750	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	19,765	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	26,357	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	39,800	337,795	8.475
1907.....	273,882	2,109,978	7.704	69,763	648,683	9.298
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	2,374,237	7.785	44,204	458,596	10.375
1911.....	354,546	2,801,971	7.903	52,764	564,630	10.701
*1912.....	385,000	3,178,250	8.255	35,028	627,669	9.652

* Preliminary.

In addition to the ordinary clay building brick, there was produced in this Province in 1912 ornamental brick valued at \$7,168, and fireproofing and terra-cotta valued at \$135,087. In 1911 the production of ornamental brick was valued at \$7,441 and of fireproofing and terra-cotta \$51,080.

Manitoba.—The production of clay building brick in the Province in 1912, as reported by 21 firms, was 87,178,937, valued at \$1,012,801, comprising 83,681,237 common brick valued at \$957,854 or an average of \$11.47 per thousand and 3,497,700 pressed brick valued at \$52,947 or \$15.13 per thousand. The production as reported by 18 firms in 1911 was 81,400,000 valued at \$826,928 and included 79,600,000 common brick valued at \$805,178 or \$10.11 per thousand and 1,800,000 pressed brick valued at \$21,750 or \$12.03 per thousand.

The principal brick-making plants are located at Winnipeg, St. Boniface, Morris, Lac du Bonnet, Portage la Prairie, Sidney, Brandon, Gilbert Plains, Virden, Balmoral, Lavenham, Neepawa, and Whitemouth.

Saskatchewan.—Returns from 14 operating firms show a production in 1912 of 80,538,771 brick, valued at \$332,943, which includes 25,338,771 common brick valued at \$246,443 or an average of \$9.73 per thousand and 5,200,000 pressed brick valued at \$86,500 or an average of \$16.63 per thousand. The total production in 1911 by 13 firms was 21,071,660 brick valued at \$224,758.

The principal clay plants are located at Estevan, Prince Albert, Saskatoon, Weyburn, Rosthern, Verigin, Arcola, and Broadview.

Alberta.—The production of building brick has been increasing very rapidly and in 1912 the production in this Province was surpassed only by Ontario and Quebec. During the past year the sales as reported by 33 active firms were 93,759,980 brick valued at \$1,105,912, as compared with sales by 28 firms in 1911 of 71,772,930 brick valued at \$779,001. The 1912 output comprised 70,074,568 common brick valued at \$755,986 or an average of \$10.69 per thousand and 23,685,412 pressed brick valued at \$349,926 or an average of \$14.77 per thousand. In addition to building brick there was a production in this Province during 1912 of fireproofing valued at \$248,712.

The principal centres of production are Edmonton, Cochrane, Calgary, Medicine Hat, Redcliff, Lethbridge, Red Deer, Brickburn, Innisfail, and Vermilion.

British Columbia.—The brick making industry has also grown rapidly in British Columbia, the increase of production of 1912 over 1911 being 64 per cent. During 1912 the total sales were 61,284,565 valued at \$731,040, and included 53,345,565 common brick valued at \$512,514 or an average of \$9.61 per thousand and 7,939,000 pressed brick valued at \$218,526 or an average of \$27.53 per thousand. In 1911 the total sales were 39,680,515 brick valued at \$443,829. There were 28 active firms engaged in brick making in 1912, as compared with 19 in 1911.

The principal centres of manufacture are Vancouver, New Westminster, Clayburn, Cloverdale, Bazan Bay, Pender Island, Port Haney and vicinity, Anvil Island, Victoria, and Sydney.

CLAY PAVING BRICK.

The total production of paving brick and paving blocks in Canada in 1912 was reported as 4,579,500 valued at \$85,989, or an average value per thousand of \$18.78, as compared with a production of 5,220,400 valued at \$79,444, or an average value of \$15.22 per thousand in 1911.

This paving brick is made chiefly at West Toronto, Ontario, from shale obtained from the banks of the Humber river, although during 1912 there was also a small production reported at Pender island, near Vancouver, B.C.

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 since 1887 are shown in the next table:—

The imports of paving brick during the past four years have considerably exceeded the domestic production. During the calendar year 1912 the imports were 11,793,000 valued at \$160,663, or an average value of \$13.62 per thousand, and included 6,709,000 valued at \$95,610, or \$14.25 per thousand, from the United States; 5,044,000 valued at \$64,375, or \$12.76 per thousand, from Great Britain; and 40,000 valued at \$678, or \$16.95 per thousand, from other countries.

The imports during the calendar year 1911 were 11,450,000 valued at: \$164,292, and included 4,988,000 valued at \$78,201, or \$15.68 per thousand, from the United States, and 6,462,000 valued at \$86,091, or \$13.32 per thousand, from Great Britain.

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	1905.....	4,500	54,000	12 00
1898.....				1906.....	3,000	45,000	15 00
1899.....	5,300	42,550	8 03	1907.....	3,618	72,354	20 00
1900.....	2,710	26,950	9 94	1908.....	3,720	59,456	15 98
1901.....	3,689	37,000	10 03	1909.....	3,760	67,408	17 93
1902.....	4,211	42,000	9 97	1910.....	4,215	78,980	18 74
1903.....	3,789	45,288	11 95	1911.....	5,220	79,444	15 22
1904.....	4,436	55,450	12 50	1912.....	4,580	85,989	18 78

* 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	1904.....	1,986	29,753	14 98
1896.....	918	10,132	11 04	1905.....	3,350	32,578	13 86
1897.....	52	719	13 83	1906.....	4,104	46,008	11 21
1898.....	367	2,337	6 37	1907 (9 mos).....	2,182	23,256	10 66
1899.....	1,583	23,648	14 94	1908.....	5,340	61,346	11 49
1900.....	2,175	35,644	16 39	1909.....		101,187	†
1901.....	900	10,414	11 57	1910.....		138,763	†
1902.....	1,030	16,738	16 30	1911.....	10,836	130,861	12 08
1903.....	1,337	18,811	14 07	1912.....	11,538	165,650	14 36

* 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 in Canada 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, Sask., and at Clayburn, near the city of Vancouver, B.C. Stove linings and other refractory clay products are made at several places in Ontario and Quebec from imported clays.

The total value of the sales of fireclay, firebrick, and fireclay products in 1912, was \$125,585, as compared with a valuation of \$89,130 in 1911, and \$50,215 in 1910. There was in addition in 1912 a production of fireclay products valued at \$25,000 reported as being made from imported clays.

The production in 1912 included fireclay or refractory clay sold as such to the extent of 6,307 tons, valued at \$24,343; firebrick, 3,429,594 valued at \$67,192, or an average of \$19.59 per thousand; and other fireclay products valued at \$34,050.

In 1911 the production comprised 7,532 tons of fireclay, and refractory clay sold as such, valued at \$24,128; firebrick 2,367,937, valued at \$44,122, or an average of \$18.63 per thousand; and other fireclay products valued at \$20,880.

The imports of firebrick during the calendar year 1912 were valued at \$953,621, of which \$860,587 worth was imported from United States, \$91,236 from Great Britain, and \$1,798 from other countries. The imports of firebrick in 1911 were valued at \$814,414, of which \$659,602 was imported from United States, and \$154,020 from Great Britain. In 1910 the imports of firebrick were valued at \$811,927 and included \$734,908 from United States and \$76,902 from Great Britain. Fireclay was imported for the calendar year 1912 to the value of \$140,500, as compared with a value of \$125,199 in 1911, and \$124,293 in 1910.

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 table:—

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				15,000	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	4,105	12,390	2 81	33,000	78,132
1910.....	1,375,400	21,372	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
1912.....	3,429,594	67,192	19 59	6,307	24,343	3 36	34,050	125,595

Imports of Firebrick and Fireclay, 1900-12.

Fiscal Year.	Fireclay.	Firebrick.	Fiscal Year.	Fireclay.	Firebrick.
	\$	\$		\$	\$
1900.....	59,291	39,535	1906.....	131,130	51,892
1901.....	79,530	32,831	1907*.....	85,044	349,135
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	364,465
			1912.....	118,863	560,763

* 9 months ending March.

SEWERPIPE AND DRAIN TILE.

The total value of the sales of sewerpipe in 1912 was \$884,641, as compared with a value of \$812,716 in 1911, and a value of \$774,910 in 1910. About 54 per cent of the production in 1912 was made in Ontario.

Following is a list of firms reporting production of sewerpipe in 1912:—

Standard Clay Products, Limited, St. Johns, Que., and New Glasgow, N.S.

Ontario Sewerpipe Company, Mimico, Ont.

Dominion Sewerpipe Company, Waterdown, Ont.

Hamilton & Toronto Sewerpipe Company, Waterdown, Ont.

British Columbia Pottery Company, Victoria, B.C.

The imports of drain pipe and sewerpipe during 1912 were valued at \$507,024, of which \$431,600 was imported from the United States, \$75,394 from Great Britain, and \$30 from other countries.

The total imports during 1911 were valued at \$332,929, and included \$338,644 from the United States, \$44,278 from Great Britain, and \$7 from other countries.

The total value of sales of drain pipe in Canada in 1912, as reported to this Branch, was \$357,862, as compared with \$339,812 in 1911, and \$370,008 in 1910. The greater part of this production is in the Province of Ontario; the sales in this Province in 1912, as reported to this Branch, were valued at \$308,050, as against a value of \$300,029 in 1911, and \$334,402 in 1910.

The Ontario Bureau of Mines reports the total number of drain tile made in that Province during 1912 as 16,463,000, valued at \$279,579, or an average of \$16.98 per thousand, as compared with 21,630,000 valued at \$349,545, or an average of \$16.16 per thousand in 1911.

The imports of unglazed tile are comparatively small, the value during the calendar year 1912 being \$4,018 only, as compared with \$5,640 in 1911, and \$4,485 in 1910.

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	264,320	1897	164,250	1905	382,000
1889	Not available.	1898	181,717	1906	350,045
1890	348,000	1899	161,546	1907	667,100
1891	227,300	1900	231,525	1908	514,362
1892	367,660	1901	248,115	1909	645,722
1893	350,000	1902	301,965	1910	774,110
1894	250,325	1903	317,970	1911	812,716
1895	257,045	1904	440,894	1912	884,641
1896	163,875				

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	1899...	21,027,400	240,246	1906...	17,700,000	252,500
1892...	10,000,000	100,000	1900...	19,544,000	209,738	1907...	15,573,000	250,122
1893...	17,300,000	190,000	1901...	21,592,000	231,374	1908...	24,800,000	338,658
1894...	25,000,000	280,000	1902...	17,510,000	199,000	1909...	27,418,000	363,550
1895...	14,330,000	157,000	1903...	18,200,000	227,000	1910...	21,023,000	318,456
1896...	13,200,000	144,000	1904...	16,000,000	210,000	1911...	21,630,000	349,545
1897...	*	*	1905...	15,000,000	220,000	1912**.	16,463,000	279,579
1898...	22,668,000	225,000						

* Not stated.

** Preliminary.

Imports of Drain Tile and Sewerpipe.

Fiscal Year.	Drain tile (a).	Sewerpipe (b).	Fiscal Year.	Drain tile (a).	Sewerpipe (b).
	\$	\$		\$	\$
1880.....		33,796	1897.....	416	33,870
1881.....		37,688	1898.....	157	29,454
1882.....		70,061	1899.....	1,817	32,071
1883.....		70,699	1900.....	1,383	37,766
1884.....	5,585	66,170	1901.....	1,264	54,819
1885.....	2,911	66,678	1902.....	269	55,261
1886.....	1,905	56,048	1903.....	252	57,100
1887.....	2,133	69,020	1904.....	1,637	53,958
1888.....	4,290	96,967	1905.....	1,229	101,160
1889.....	2,346	80,869	1906.....	4,727	131,353
1890.....	3,780	73,654	1907 (9 mos.)....	12,106	93,453
1891.....	673	86,522	1908.....	2,080	125,747
1892.....	473	59,064	1909.....	2,394	106,399
1893.....	110	38,891	1910.....	2,739	196,002
1894.....	53	24,572	1911.....	4,378	174,653
1895.....	695	20,358	1912.....	5,778	405,998
1896.....	339	18,957			

(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 1912, according to returns received, was \$427,089, of which it is estimated that the value of \$383,134 is attributable to imported clays. The total value of the production in 1911 was reported as \$439,264, of which a value of \$336,771 is credited to imported clays. The large falling off in Canadian production in 1912 is chiefly due to the destruction by fire of the large pottery works in Quebec. Annual statistics of production are shown herewith.

Annual Production of Pottery.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1888	27,750	1897	129,629	1905	120,000
1889	Not available.	1898	214,675	1906	150,000
1890	195,242	1899	185,000	1907	253,809
1891	258,844	1900	200,000	1908	200,541
1892	265,811	1901	200,000	1909	285,285
1893	213,186	1902	200,000	1910	250,924
1894	162,144	1903	200,000	1911	102,493
1895	151,588	1904	140,000	1912	43,955
1896	163,427				

Details of the imports of earthenware and chinaware, showing the values imported and the countries of origin, have already been shown in the general table of imports.

The imports in 1912 were valued at \$3,094,956, as compared with a value of \$2,516,536 in 1911, and \$2,283,116 in 1910. These imports are subdivided into eight classes, and in 1912, include: brown or coloured earthenware, etc., \$62,161; C. C. or cream coloured ware, decorated, printed, or sponged, etc., \$291,804; demijohns, churns, or crocks, \$18,404; tableware of china, porcelain, white granite, etc., \$2,068,362; china and porcelain ware, N. O. P., \$71,751; tiles or blocks of earthenware, or stone prepared for mosaic flooring, \$160,082; earthenware tiles N. O. P., \$239,391; manufactures of earthenware N. O. P., \$183,001.

The imports in 1911 comprised: 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.

It will be observed that there has been a general increase in almost all classes of earthenware and chinaware imported. 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	743,810	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.) ..	1,422,380
1886	599,269	1897	595,822	1908	2,190,784
1887	750,091	1898	673,874	1909	1,716,887
1888	697,082	1899	916,727	1910	1,859,302
1889	697,949	1900	959,526	1911	2,395,416
1890	695,206	1901	1,114,677	1912	2,582,966

KAOLIN.

A production of kaolin is reported in Canada for the first time in 1912, the total sales being 20 tons, valued at \$160. This was obtained from the deposits located on parts of lots Nos. 4, 5, 6, 7, and 8 of range VI south, township of Amherst, Ottawa county, Que., which were opened up by the Canadian China Clay Company, of Montreal.

The plant for refining the clay is situated 2 miles from St. Remi d'Amherst, and 7 miles from Huberdeau, the terminus of the Canadian Northern Quebec railway—94 miles northwest of Montreal.

The following description¹ of operations was published in last year's report:—

'Development work was begun by the present operators in June 1911, and the washing plant completed in April of 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, 1912, were 18,332 tons, valued at \$127,402, or \$6.95 per ton, as against an importation of 18,819 tons, valued at \$125,768, or an average of \$6.68 per ton in 1911. Imports of china-clay in 1910 were valued at \$142,125, and in 1909, \$100,066. These figures indicate to some extent at least the present actual demand for this product. The imports of earthenware and chinaware were, however, valued at \$3,094,956 in 1912, and composed chiefly of tableware of china, porcelain, etc., showing the possibilities for 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 1911 being valued at \$1,461,068.

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 season of 1911.

¹ A short description of the plant and property was published in the Canadian Mining Journal, July 1, 1912.

LIME.

In common with other materials of construction, the production of lime in Canada has been steadily increasing during the past few years. According to the returns received from the producers, the total production in 1912 was 8,475,839 bushels, this being the amount sold, or used (equivalent to about 296,654 tons) and valued at \$1,844,849, or an average of 22 cents per bushel, or about \$6.25 per ton.

The production in 1911 was reported as 7,533,525 bushels (263,673 tons), valued at \$1,517,599, or an average of 20 cents per bushel, or \$5.75 per ton. The increase in production in 1912 was, therefore, 942,314 bushels, or about 12.05 per cent. Owing to the increased value per bushel in 1912, however, the increase in total value of production was over 21 per cent.

Returns were received from 78 active firms in 1912, as compared with 75 firms in 1911. The average number of men employed in 1912 was 1,103, and wages paid \$576,217, as against 1,056 men employed, and \$523,518 paid in wages in 1911. Statistics in respect to labour and wages in lime production, however, should be used with some discrimination, as many firms producing lime are also engaged in the quarrying of stone for purposes other than lime-burning, and are unable to make separate reports as to labour employed. This is particularly evident in the record from Nova Scotia and New Brunswick, since for the first mentioned, the record includes only the labour employed at the kilns, while for the latter, quarry costs are also included.

The average price per bushel of lime sold in 1912 varied from the minimum of 17 cents in Ontario, with a maximum of 36 cents in Saskatchewan. In 1911 the range was from a minimum of 16 cents in Ontario, to a maximum of 34 cents in British Columbia.

Hydrated lime is produced by a few firms only, including Messrs. Wright & Company, Hull, Quebec; Standard Lime Company, Limited, Joliette, Quebec; Gaspard Defond, St. Cathberts, Quebec; and The Standard White Lime Company, Limited, Guelph, Ontario. The Pacific Lime Company, Limited, also reports that a hydrator is being installed at their plant at Blubber Bay, B.C.

The total production of hydrated lime in 1911 was reported as 5,023 tons, the production in 1912 is not available owing to the neglect of one firm to report the quantity produced.

A small quantity of lime is annually made in Prince Edward Island. The production is shown separately in 1911 and 1912, but for previous years is included in the Nova Scotia figures.

Lime Production by Provinces, 1912.

Province.	No. of active firms reporting.	Men employed.	Wages paid.	SALES.			
				Bushels.	Value.	Average per bushel.	Per cent of total.
			\$		\$	cts.	%
P. E. Island*	4	10	844	24,971	8,191	33	0.44
Nova Scotia	1	8	5,610	684,625	136,930	20	7.42
New Brunswick	5	96	53,536	616,835	133,742	22	7.25
Quebec	21	334	157,909	1,729,614	474,595	27	25.73
Ontario	32	470	242,196	3,376,193	573,269	17	31.07
Manitoba	5	10	2,656	818,237	168,257	21	9.12
Saskatchewan	1	6	450	4,000	1,440	36	0.08
Alberta	4	76	52,272	704,035	166,520	24	9.03
British Columbia	5	93	60,344	517,329	181,905	35	9.86
Total	78	1,103	576,217	8,475,839	1,844,849	22	100.00

* Production in previous years included in 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	366,453	25	23.49
Ontario	31	423	205,618	3,360,265	538,902	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	623,518	7,533,525	1,517,599	20	100.00

* Production in previous years included in Nova Scotia figures.

Lime Production by Provinces, 1909 and 1910.

Province.	1909.				1910.			
	Bushels.	Value.	Average per bushel.	Per cent.	Bushels.	Value.	Average per bushel.	Per cent of total.
		\$	cts.	%		\$	cts.	%
Nova Scotia	57,730	16,729	29	1.5	55,750	13,490	24	1.2
New Brunswick	697,466	154,151	22	13.6	470,050	105,593	22	9.3
Quebec	1,281,827	315,633	25	27.9	1,227,555	299,126	23	26.3
Ontario	2,619,553	434,147	17	38.3	2,988,020	476,137	16	41.9
Manitoba	423,954	69,670	16	6.2	606,679	100,808	17	8.8
Alberta	231,125	67,350	24	5.9	303,214	69,268	23	6.1
British Columbia	231,269	75,076	32	6.6	196,878	72,657	37	6.4
	5,592,924	1,132,756	20	100.0	5,848,146	1,137,079	19	100.0

Exports and Imports.—The value of the lime exported during the calendar year 1912 was \$35,097, the destination being mainly the United States. In 1911 the exports were valued at \$39,536. The imports of lime during the calendar year 1912 were 329,925 barrels (32,992 tons) valued at \$207,481, or an average of 63 cents per barrel, or \$6.29 per ton, and were derived chiefly from the United States. The imports during 1911 were 228,538 barrels (22,853 tons) valued at \$161,985, an average of 70 cents per barrel, or \$7.08 per ton.

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	1899.....	73,565	1906.....	57,072
1892.....	121,535	1900.....	80,852	1907.....	55,903
1893.....	86,623	1901.....	99,194	1908.....	43,316
1894.....	83,670	1902.....	116,009	1909.....	48,821
1895.....	71,657	1903.....	131,412	1910.....	44,762
1896.....	70,820	1904.....	73,838	1911.....	39,536
1897.....	53,177	1905.....	85,723	1912.....	35,097
1898.....	49,594				

Imports of Lime.

Fiscal Year.	Barrels.	Value.	Average value.	Fiscal Year.	Barrels.	Value.	Average value.
		\$	\$ cts.			\$	\$ cts.
1880.....	6,100	6,013	0 99	1897.....	16,108	10,529	0 65
1881.....	8,796	4,177	0 72	1898.....	12,850	9,002	0 70
1882.....	5,064	5,365	1 06	1899.....	15,720	11,124	0 71
1883.....	7,623	9,224	1 21	1900.....	12,865	11,211	0 87
1884.....	10,804	11,200	1 04	1901.....	19,657	14,534	0 74
1885.....	12,072	11,503	0 95	1902.....	24,602	17,584	0 71
1886.....	11,021	9,347	0 85	1903.....	31,108	22,470	0 72
1887.....	10,835	8,524	0 79	1904.....	54,359	39,639	0 73
1888.....	10,142	7,537	0 74	1905.....	98,676	71,588	0 73
1889.....	13,079	9,363	0 72	1906.....	134,334	93,630	0 70
1890.....	8,149	5,360	0 66	1907 (9 mos.).....	88,919	67,573	0 76
1891.....	6,259	4,273	0 68	1908.....	129,379	99,611	0 77
1892.....	6,132	4,241	0 69	1909.....	153,934	106,263	0 69
1893.....	6,879	4,917	0 71	1910.....	191,537	116,964	0 61
1894.....	6,766	4,907	0 73	1911.....	194,809	143,338	0 74
1895.....	12,008	5,743	0 48	1912 Duty 20 per cent.....	230,013	162,593	0 71
1896.....	10,239	7,331	0 72				

It will be observed that the Provinces of Ontario and Quebec, being the chief centres of population in Canada, are the largest producers of lime, the former contributing in 1912, 31 per cent of the total value, and the latter 26 per cent. The production west of the great lakes has, however, been rapidly increasing, the western provinces accounting for nearly 28 per cent of the total in 1912, as against 14 per cent in 1908.

Statistics of the annual production of lime in Ontario, as published by the Ontario Bureau of Mines, since 1896, 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	1905.	3,100,000	424,700	14
1897.....				1906.	2,885,000	496,785	17
1898.	2,620,000	308,000	12	1907.	2,650,000	418,700	17
1899.	4,342,500	535,000	12	1908.	2,442,331	448,596	18
1900.	3,893,000	544,000	14	1909.	2,633,500	470,858	18
1901.	4,100,000	550,000	13	1910.	2,889,235	474,531	16
1902.	4,300,000	617,000	14	1911.	2,469,773	402,340	16
1903.	3,400,000	520,000	15	*1912.	2,297,525	381,672	17
1904.	2,600,000	406,800	16				

* Provisional.

According to trade papers quotations on lime in Toronto during 1912 were as follows: in the city per 100 lbs. f.o.b. cars 35 cents, at kilns outside the city f.o.b. cars 23 to 25 cents per 100 lbs., hydrated lime (imported) at warehouses \$10 per ton.

The duty on lime is provided under item 711 of the Customs tariff and is 20 per cent under the general tariff, 17½ per cent under the Intermediate tariff, and 15 per cent under the British Preferential tariff.

SAND-LIME BRICK.

The manufacture of sand-lime, or silica brick in Canada, is a comparatively new industry, and the first returns of production were obtained for the year 1907, when there was a production by 10 firms, amounting to 16,492,971 bricks, valued at \$167,795. In 1912 the number of firms has doubled, and the production is now nearly six times what it was in 1907, the production during the past year being reported as 96,448,402 bricks, valued at \$1,020,386, or an average of \$10.58 per thousand.

In 1911, sixteen firms reported a production of 51,535,243 bricks, valued at \$442,427, an average value of \$8.58 per thousand.

Annual statistics of production since 1907 are shown below.

Annual Production of Sand-Lime Brick.

Calendar Year.	No. of firms reporting.	Number sold.	Value.	Per M.
			\$	\$ cts.
1907.....	10	16,492,971	167,795	10 17
1908.....	9	17,288,260	152,856	8 84
1909.....	9	27,052,864	201,650	7 45
1910.....	13	44,593,541	371,857	8 34
1911.....	16	51,535,243	442,427	8 58
1912.....	20	96,448,402	1,020,386	10 58

The following is a list of manufacturers of sand-lime brick reporting to the Department:—

Completed plants:—

- The Canada Brick Co., Limited, Montreal, Transportation Building.
- The Schultz Bros. Co., Limited, Brantford, Ont.
- The Jno. Mann Brick Co., Limited, Brantford, Ont.
- The Silicate Brick Co. of Ottawa, Limited, Ottawa, Ont.
- The Peterboro Sandstone Brick Co., Limited, Peterborough, Ont.
- Toronto Brick Co., Limited, 64 Wellington St. W., Toronto, Ont.
- Canada Sand-Lime Pressed Brick Co., 1661 Dundas St., Toronto, Ont.
- Harbour Brick Co., Limited, 50 Front St. E., Toronto, Ont.
- The Wilcox Lake Brick Co., Toronto, Ont.
- The Port Arthur Sand-Lime Brick Co., Port Arthur, Ont.
- The Brandon Sandstone Co., Limited, Brandon, Man.
- Manitoba Pressed Brick Co., Limited, 215 McIntyre Block, Winnipeg, Man.
- Winnipeg Sandstone Brick Co., 410 Builders' Exchange, Winnipeg, Man.

The Birds Hill Sandstone Brick Co., Limited, Builders' Exchange, Winnipeg, Man.

Moosejaw Pressed Brick Co., Moosejaw, Sask., High St. E.

Interocean Pressed Brick Co., Regina, Sask., Box 424.

The Saskatoon Brick & Supply Co., Limited, Saskatoon, Sask.

Calgary Silicate Pressed Brick Co., Calgary, Alta.

The Hardstone Brick Co., Limited, Edmonton, Alta.

The Alsip Brick & Supply Co., Limited, Edmonton, Box 1769.

Vancouver Pressed Brick and Stone Co., Limited, 145 Front St. W., Vancouver, B.C.

Victoria-Vancouver Lime and Brick Co., Victoria, B.C.

Plants under construction:—

The British Columbia Pressed Brick Co., Vancouver, B.C.

The York Sandstone Brick Co., Limited, 27 Montague Place, Toronto,
(care of G. Martin).

The Rideau Silicate Co., Ottawa, care of H. P. Brumell, Buckingham, Que.

The Prince Albert Sandstone Brick Co., Prince Albert, Sask.

SAND AND GRAVEL.

Previous to 1912 no attempt had been made by this Department to obtain complete or comprehensive statistics of the production of building sand, or of gravel in Canada.

For the year 1912, however, a beginning has been made in the collection of these statistics, although the record is far from being complete, owing to many correspondents neglecting to furnish us with the information asked, and also incomplete lists of producers. The partial returns received showed a production in Quebec valued at \$243,126, Ontario, \$363,668, Manitoba, \$101,653, Saskatchewan, \$255,453, Alberta, \$148,704, British Columbia, \$385,946. The record for the Maritime Provinces was particularly ineagre, returns being received only to the extent of \$13,549, making a total value of \$1,512,099.

With the beginning that has been made, however, it may be expected that the record for succeeding years will be much more complete. The business of obtaining and supplying sand and gravel has become well organized in many districts and large companies are now engaging in the industry, particularly in the vicinity of the larger cities.

Statistics of the exports and imports of sand and gravel have appeared in the annual reports of the Department of Customs, and the following tables show the compilation of this record since 1893.

During 1912 there was exported from Canada 660,090 tons of sand and gravel, valued at \$459,952; while during the same year there were imported 553,721 tons, valued at \$445,781.

Annual Exports of Sand and Gravel.

Calendar Year.	Tons.	Value.	Average value.	Calendar Year.	Tons.	Value.	Average value.
		\$	cts.			\$	cts.
1893.....	329,116	121,795	37	1903.....	355,792	124,006	35
1894.....	324,656	86,940	27	1904.....	399,809	129,803	32
1895.....	277,162	118,359	43	1905.....	306,935	152,805	50
1896.....	224,769	80,110	36	1906.....	336,550	139,712	41
1897.....	152,963	76,729	50	1907.....	298,095	119,853	40
1898.....	165,954	90,498	55	1908.....	293,954	161,387	54
1899.....	242,450	101,640	42	1909.....	481,584	256,166	53
1900.....	197,558	101,666	51	1910.....	624,824	407,974	65
1901.....	197,302	117,465	60	1911.....	573,494	408,110	71
1902.....	159,793	119,120	75	1912.....	660,090	459,952	70

Annual Imports of Sand and Gravel.

Fiscal Year.	Tons.	Value.	Average value.	Fiscal Year.	Tons.	Value.	Average value.
		\$	\$ cts.			\$	\$ cts.
1893.....	26,065	31,739	1 22	1903.....	91,518	95,647	1 05
1894.....	41,573	53,506	0 81	1904.....	110,634	107,547	0 97
1895.....	19,609	24,779	1 26	1905.....	85,339	92,722	1 09
1896.....	18,953	24,604	1 30	1906.....	116,500	173,727	1 49
1897.....	21,308	25,222	1 18	1907 (9 mos).....	171,700	177,412	1 03
1898.....	32,148	43,287	1 35	1908.....	266,704	223,043	0 84
1899.....	30,288	42,209	1 39	1909.....	132,158	136,011	1 03
1900.....	35,713	41,280	1 16	1910.....	151,982	155,012	1 02
1901.....	35,749	42,891	1 20	1911.....	241,375	246,613	1 02
1902.....	47,381	58,668	1 24	1912.....	263,971	258,438	0 98

SLATE.

There is a small annual production of slate in Canada, obtained from the New Rockland quarries in Melbourne township, Richmond county, Quebec, operated by Messrs. Fraser & Davies. During the past year this firm has also been opening up and installing machinery at a quarry at Botsford, in Temiscouata county. The production in 1912 is reported as 1,894 squares, valued at \$8,939. The quarries in Richmond county have been operated for many years and at one time there was a production valued at upwards of \$100,000 per year.

Statistics of annual production are shown herewith.

Annual Production of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Squares.	Value.
		\$			\$
1886.....	5,345	64,675	1900.....		12,100
1887.....	7,357	89,000	1901.....		9,980
1888.....	5,314	90,689	1902.....		19,200
1889.....	6,935	119,160	1903.....	5,510	22,040
1890.....	6,368	100,250	1904.....	5,277	23,247
1891.....	5,000	65,000	1905.....		21,568
1892.....	5,180	69,070	1906.....		24,446
1893.....	7,112	90,825	1907.....	4,335	20,056
1894.....		75,650	1908.....	2,950	13,496
1895.....		58,900	1909.....	4,000	19,000
1896.....		53,370	1910.....	3,959	18,492
1897.....		42,800	1911.....	1,833	8,248
1898.....		40,791	1912.....	1,894	8,939
1899.....		33,406			

No exports of slate have been reported since 1901.

The imports of slate have ranged in value during the past seven years from \$100,000 to \$200,000 per annum. The total value of imports during the calendar year 1912 was \$200,643, comprising: roofing slate, \$88,911; school writing slate, \$39,858; slate pencils, \$6,978; other slates and manufactures of, \$65,896. The total value of the imports during the calendar year 1911 was \$169,685, and included: roofing slate, \$33,075; school writing slate, \$35,049; slate pencils, \$6,036; other slates and manufactures of, \$45,525. 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. Imported roofing slate from Bangor, Maine, is quoted in Toronto f.o.b. cars, at \$3.75 per square of 100 feet, and mottled and green slate at \$8 per square.

Statistics of imports and exports are shown in the following tables:—

Imports of Slate During the Years 1910, 1911, and 1912.

Slate and manufactures of.	Calendar Year 1910.	Calendar Year 1911.	Calendar Year 1912.
	\$	\$	\$
Roofing slate.....	67,063	83,075	88,911
School writing slate.....	31,397	35,049	39,858
Slate pencils.....	6,948	6,036	6,978
Slate of all kinds and manufactures of.....	36,877	45,525	65,896
	142,285	169,685	200,643

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 to 1912.....	Nil.	Nil.
1892.....	87	2,038			

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.....	29,267	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.....	22,371	1901.....	72,187	1912.....	173,566

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 (including trap rock, syenite, and other igneous rocks), limestone, sandstone, and marble.

The records are practically confined to quarry operations and 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 also used in railway construction work and in road building, of which the record is probably very incomplete.

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 1912, according to returns received, was \$4,726,171, as compared with a value of \$4,328,757 in 1911, showing an increased production of \$397,414, or 9.2 per cent.

The number of active firms reporting in 1912 was 192, the total number of men employed 5,710, and the total wages paid \$2,918,116. In 1911 the number of active firms reporting was 191, the number of men employed 5,437, and wages paid \$2,500,005.

Of the total value of the 1912 production, limestone contributed \$2,762,936 or 58.5 per cent; granite, \$1,373,119, or nearly 29 per cent; sandstone, \$329,352, or 7.0 per cent; and marble, \$260,764, or 5.5 per cent.

Stone was used for building purposes to the value of \$1,452,157 or 30.7 per cent of the total, monumental and ornamental stone, a value of \$190,359 or 4 per cent; curb, paving, and flagstone, \$268,390, or 5.7 per cent; rubble, \$353,871, or 7.5 per cent; crushed stone, \$1,987,073, or 42.1 per cent; and furnace flux, 904,528 tons, valued at \$474,321, or 10.0 per cent.

By provinces, Quebec again shows the largest output, having a value of \$1,957,703, or 41.4 per cent of the total, being made up of limestone to the value of \$1,187,751, granite valued at \$522,114, marble, \$247,838. Ontario takes second place with a production of \$1,109,164, or 23.5 per cent of the total, of which limestone is credited with \$862,052; granite, \$174,946; sand-

stone, \$59,240, and marble, \$12,926. British Columbia ranked third in order of importance, with a total of \$779,611, including: granite \$624,178; sandstone, \$99,816; limestone, \$55,617. The production in Manitoba was valued at \$383,095, made up of limestone, \$381,572, and granite, \$1,523. The Nova Scotia production was valued at \$324,630, comprising: limestone, \$275,944; granite, \$28,041, and sandstone, \$20,645. The Alberta production was reported as \$81,391, all sandstone. New Brunswick is credited with \$90,577, made up chiefly of sandstone and granite.

Production of Stone by Provinces, 1912.

Province.	Granite.	Lime- stone.	Marble.	Sand- stone.	Total.	%	Labour.	
							No. men em- ployed.	Wages.
	\$	\$	\$	\$	\$			\$
Nova Scotia.....	28,041	275,944	.....	20,645	324,630	6.9	788	220,501
New Brunswick.	22,317	.....	.....	68,260	90,577	1.9	210	65,807
Quebec.....	522,114	1,187,751	247,638	.....	1,957,703	41.4	2,216	1,140,715
Ontario.....	174,941	632,052	12,926	59,240	1,109,164	23.5	1,281	614,171
Manitoba.....	1,523	381,572	.....	.....	383,095	8.1	544	274,548
Alberta.....	.....	.....	.....	81,391	81,391	1.7	107	70,276
British Columbia	624,178	55,617	.....	99,816	779,611	16.5	564	532,093
Total.....	1,373,119	2,762,936	260,764	329,352	4,726,171	..	5,710	2,918,116
Per cent.....	29.0	58.5	5.5	7.0	.....	100.0	.....	.....

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	43.3
Ontario.....	131,816	680,461	27,996	51,032	892,305	20.6
Manitoba.....	2,268	315,782	.....	.....	313,050	7.3
Alberta.....	.....	.....	.....	158,344	158,344	3.7
British Columbia.	469,851	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

Value of Stone Sold for Various Purposes in 1912.

Kind.	Building.	Ornamental and monu- mental.	Paving and curb- stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Granite.....	296,715	101,837	227,071	59,824	687,672	.....	1,373,119
Limestone....	671,383	72,296	13,561	256,798	1,274,577	474,321	2,762,936
Marble.....	237,415	2,611	6,535	.....	14,173	.....	260,764
Sandstone....	246,644	12,585	21,223	37,249	10,651	.....	329,352
Total.....	1,452,157	196,359	268,390	353,871	1,987,073	474,321	4,726,171

Value of Stone Sold for Various Purposes in 1911.

Kind.	Building.	Ornamental and monumental.	Paving and curb-stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Granite	324,011	120,017	172,246	51,952	442,639	.....	1,119,865
Limestone.	625,402	38,746	30,902	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

Production of Stone by Provinces and for Purposes Used, 1912.

Province.	Building.	Ornamental and monumental.	Paving and curb-stone.	Rubble.	Crushed.	Furnace flux.	Total.
	\$	\$	\$	\$	\$	\$	\$
Nova Scotia	24,150	15,911	8,625	.....	.....	275,944	324,630
New Brunswick	73,759	4,602	8,928	3,288	.....	.....	90,577
Quebec.	81,380	149,584	97,749	93,170	300,026	794	1,957,703
Ontario	185,969	6,848	56,543	107,300	610,561	141,943	1,109,164
Manitoba	97,096	.....	.....	119,142	166,834	23	383,095
Alberta	52,771	13,414	5,145	10,061	.....	.....	81,391
British Columbia.	204,032	.....	91,400	18,910	409,652	55,617	779,611
Total	1,452,157	190,359	268,390	353,871	1,987,073	474,321	4,726,171
Per cent	30.7	4.0	5.7	7.5	42.1	10.0	100.0

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	17,148	1,400	3,717	2,422	241,517	292,914
New Brunswick	45,348	22,986	.....	5,077	.....	30	73,441
Quebec.....	599,758	242,269	151,242	200,243	700,787	593	1,894,892
Ontario	168,012	8,647	54,091	98,615	408,870	151,070	892,305
Manitoba	74,421	.....	.....	106,782	136,844	.....	318,050
Alberta.....	151,787	.....	.....	6,557	.....	.....	153,344
British Columbia.....	302,654	12,000	26,990	39,812	260,575	56,780	698,811
Total	1,368,693	303,050	233,723	460,803	1,509,498	452,990	4,328,757
Per cent	31.6	7.0	5.4	10.6	34.9	10.5	100.0

Exports and Imports.—The exports of stone from Canada in 1912 were valued at \$33,242, as against \$28,335 in 1911, and \$27,571 in 1910. The principal item in the export of stone during the past three years, has been building stone unwrought, of which the exports in 1912 were 108,516 tons, valued at \$28,795. The exports of dressed stone in 1912, including both ornamental and building stone, were valued at \$2,621 only.

The exports of the 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 1910, 1911, 1912.

	1910.		1911.		1912.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Stone—						
Ornamental, granite, marble, etc., unwrought.....	446	3,352	168	1,796	2,339	1,826
Building, freestone, limestone, etc., unwrought.....	63,407	18,867	83,707	25,103	108,516	28,795
Ornamental, granite, marble, etc., dressed.....		5,272		980		2,458
Building, freestone, limestone, etc., dressed.....		80		456		163
		27,571		28,335		33,242

The annual exports of stone since 1880 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	1902.....	8,632	124,829
1891.....	13,398	46,162	1903.....	7,684	46,295
1892.....	7,698	47,424	1904.....	4,760	17,892
1893.....	9,102	12,532	1905.....	3,545	13,089
1894.....	22,576	34,130	1906.....	23,097	4,675
1895.....	8,587	51,616	1907.....	4,233	3,087
1896.....	4,934	32,897	1908.....	15,194	36,820
1897.....	9,415	42,054	1909.....	32,598	24,087
1898.....	2,526	65,370	1910.....	5,352	22,219
1899.....	5,092	101,931	1911.....	1,436	26,899
1900.....	5,933	115,711	1912.....	2,621	30,621
1901.....	5,917	187,739			

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 1912 was \$1,467,143, as compared with a value of \$1,140,846 in 1911, showing an increase of \$326,297, or about 29 per cent. Of the total imports in 1912, \$563,672 in value was classed as building stone, and included \$117,037 worth of rough stone, and \$451,635 worth of dressed stone. The imports of sawn granite, manufactures of granite, and manufactures of stone N. O. P. were valued at \$245,333, paving blocks, \$64,053; marble and manufactures of, \$475,926. There was also an importation of refuse stone amounting to \$265,270 tons, valued at \$113,159.

The total value of the imports from the United States in 1912 was \$1,240,264; Great Britain, 182,496; from Italy, \$18,616; and from other countries, \$25,767.

The total value of the imports of stone during the calendar year 1911 included: building stone, valued at \$392,868; manufactures of granite, \$207,836; paving blocks, \$64,676; and marble, \$384,252. Of the total value \$946,624 was imported from United States; \$175,169 from Great Britain; \$6,334 from Italy, and \$12,719 from other countries. During both years the imports 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 also in some quantity from Italy and other countries.

Total Imports of Stone During the Calendar Years 1911 and 1912.

Imports.	1911.		1912.	
	Tons.	Value.	Tons.	Value.
		\$		\$
Building stone, rough ¹	21,356	85,084		117,037
" " dressed ²	52,908	307,784		451,635
Refuse stone ³	226,122	91,214	265,270	113,159
Granite, sawn only.....	539	4,231		20,706
" manufactures of.....		164,229		180,346
Paving blocks.....		64,676		64,053
Manufactures of stone, N.O.P.....		39,376		44,281
Marble and manufactures of:—				
Marble, sawn or sand rubbed, not polished... ..		186,174		209,990
" rough, not hammered or chiselled.....		46,839		49,626
" manufactures of, N.O.P.....		151,239		216,310
.....		1,140,846		1,467,143

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 1912.

Imports.	Great Britain.		United States.		Italy.	Other countries.
	Tons.	Value.	Tons.	Value.	Value.	Value.
		\$		\$	\$	\$
Building stone, rough ¹		3,258		111,885		1,894
" " dressed ²		2,070		449,549		16
Refuse ".....			265,270	113,159		
Granite, sawn only.....		802		18,797		1,107
" manufactures of.....		157,428		22,918		
Paving blocks.....				64,058		
Manufactures of stone, N.O.P.....		5,489		36,236		2,556
Marble and manufactures of:—						
Marble, sawn or sand rubbed, not polished.....		1,705		177,549	18,616	12,120
Marble, rough, not hammered or chiselled.....				48,176		1,450
Marble, manufactures of, N.O.P.....		11,744		197,942		6,624
		182,496		1,240,264	18,616	25,767

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 1911 and 1912.

Imports.	1911.		1912.	
	Tons.	Value.	Tons.	Value.
		\$		\$
Building stone, rough ¹	28,001	126,386	20,185	81,260
" " dressed ²	36,578	206,224	51,775	300,378
Refuse.....			258,731	108,281
Granite, sawn only.....	773	3,213	712	5,417
" manufactures of.....		159,377		161,652
Paving blocks.....		74,143		64,737
Manufactures of stone, N.O.P.....		34,861		37,899
Marble and manufactures of:—				
Marble, sawn or sand rubbed, not polished.....		174,001		175,177
" rough, not hammered or chiselled.....		25,606		56,336
" manufactures of, N.O.P.....		107,821		169,222
		911,632		1,160,359

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	.....	128,393
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	41,981	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	84,316	99,353	48,995	361,898
1891.....	151,119	19,771	61,051	107,661	36,348	372,956
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	57,639	94,017	63	215,652
1901.....	45,039	1,039	66,639	96,159	116	208,932
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	73,967	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	134,798	Nil	703,877
1911.....	126,385	206,224	271,594	307,428	Nil	911,632
1912.....	81,260	300,378	**377,986	400,725	Nil	1,160,359

* 9 months ending March 1907.

** Including refuse stone.

GRANITE.

The production of granite, including trap-rock, syenite, etc., in 1912, according to returns received from 57 active firms reporting, is valued at \$1,373,119, as compared with a production in 1911 by 47 firms, valued at \$1,119,865, showing an increased production in 1912 valued at \$253,254, or 52.6 per cent. There was a falling off in the production of granite for building and ornamental purposes, but an increased production of paving stone, rubble, and crushed stone.

The largest production is reported from British Columbia in 1912, the value from this Province being \$624,178, as against \$460,851 in 1911. The value of the production in Quebec in 1912 was \$522,114, as against \$462,678 in 1911. Ontario produced granite to the extent of \$174,946 in 1912, as compared with \$131,816 in 1911. There was apparently little change in the Maritime Provinces. Much of the rough stone quarried in New Brunswick as well as stone imported from Redbeach, Maine, and Mt. Johnston, Quebec, is worked up into finished ornamental and monumental stone at mills at St. George, N.B. The value of the finished stone produced at St. George in 1912 was \$32,935, as against a value of \$86,658 produced in 1911.

Statistics of the production by provinces for 1912 and 1911, showing the purposes for which the stone was sold, and the annual total production since 1886, are given in the following tables:—

Value of Granite Production by Provinces, 1912.

Province.	Building.	Monumental or ornamental.	Curb, or paving.	Rubble.	Crushed.	Total.
	\$	\$	\$	\$	\$	\$
Nova Scotia.....	3,601	15,815	8,625	.....	.....	28,041
New Brunswick.....	8,862	*4,527	8,923	.....	.....	22,317
Quebec.....	180,636	81,180	79,368	13,912	167,618	522,114
Ontario.....	.....	315	38,750	27,002	108,879	174,946
Manitoba.....	.....	.....	.....	.....	1,523	1,523
British Columbia.....	104,216	.....	91,400	13,910	409,632	624,178
Total.....	296,715	101,837	227,071	59,824	687,672	1,373,119

* "Finished" stone in 1912 was valued at \$82,935.

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	76,320	131,816
Manitoba.....	.....	.....	.....	.....	2,268	2,268
British Columbia.....	121,474	12,000	26,990	39,312	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.

Annual Production of Granite.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	6,062	63,309	1900.....	.....	80,600
1887.....	21,217	142,506	1901.....	.....	155,000
1888.....	21,352	147,305	1902.....	.....	210,000
1889.....	10,197	79,624	1903.....	.....	200,000
1890.....	13,307	65,985	1904.....	.....	150,000
1891.....	13,637	70,056	1905.....	.....	226,305
1892.....	24,302	89,326	1906.....	.....	278,419
1893.....	22,521	94,393	1907.....	15,136	194,712
1894.....	16,392	109,936	1908.....	.....	282,320
1895.....	19,238	84,838	1909.....	.....	454,824
1896.....	18,717	106,709	1910.....	.....	739,516
1897.....	19,345	61,934	1911.....	.....	1,119,865
1898.....	23,897	81,073	1912.....	.....	1,373,119
1899.....	13,418	90,542			

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 this exception the total value of limestone in Canada in 1912 was \$2,762,936, as compared with a value of \$2,594,926 in 1911, or an increase of about 7 per cent.

There was an increase in the production of crushed stone, furnace flux, limestone for building and ornamental purposes, but a decrease in the production of paving stone and rubble.

The production during 1912 of limestone for building purposes was valued at \$743,679, as against \$664,148 in 1911. The value of crushed stone in 1912 was \$1,274,577, as against \$1,066,559 in the previous year. Curbstone and paving blocks were produced to the value of \$13,561 in 1912, as compared with \$36,902 in 1911. The value of the rubble in 1912 was \$256,798 as against \$374,327 in 1911. The production of furnace flux was 904,528 tons, valued at \$474,321, as compared with 874,224 tons, valued at \$452,990 in 1911.

Value of Limestone Production by Provinces, 1912.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
					Tons.	\$	
Nova Scotia.....	\$	\$	\$	\$	538,730	275,944	275,944
New Brunswick.....							
Quebec.....	472,192	621,661	11,846	81,258	529	794	1,197,751
Ontario.....	174,391	487,605	1,715	56,398	272,544	141,943	862,052.
Manitoba.....	97,096	165,311		119,142	30	23	381,572
British Columbia.....					92,695	55,617	55,617
Total.....	743,679	1,274,577	13,561	256,798	904,528	474,321	2,762,936

Value of Limestone Production by Provinces, 1911.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
					Tons.	\$	
Nova Scotia.....	\$	\$	\$	\$	483,035	241,517	245,216
New Brunswick.....	80	2,122		1,577	60	30	110
Quebec.....	462,944	597,811	34,986	200,243	659	593	1,296,577
Ontario.....	126,700	352,050	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	496,391	189,293	723,763
Manitoba.....	215,378	59,349		53,302			328,029
British Columbia.....					94,772	43,121	43,121
Total.....	695,729	701,556	125,637	295,168	896,677	431,486	2,249,576

MARBLE.

From 1886 to 1896 there was a small production of marble, aggregating, however, only \$45,837 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 five years. The total value of the production in 1912 was returned as \$260,764, as compared with \$162,783 in 1911 and \$158,779 in 1910.

Marble quarries were operated during 1912 at Philipsburg and South Stukely, Que., Dungannon and Hungerford townships in Ontario.

The value of the Quebec production was \$247,838, as compared with \$135,187 in 1911 and \$151,000 in 1910. Ontario produced marble to the value of \$12,926, as against \$25,996 in 1911 and \$4,100 in 1910. There was no production reported from British Columbia in 1912—the value of the production in 1911 was \$1,600, as compared with \$3,679 in 1910.

Annual Production of Marble.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	501	\$ 9,900	1895.....	200	2,000
1887.....	242	6,224	1896.....	224	2,405
1888.....	191	3,100	1897 to 1907 inclusive	Nil	Nil
1889.....	83	980	1908.....		125,000
1890.....	780	10,776	1909.....		158,441
1891.....	240	1,752	1910.....		158,779
1892.....	340	3,600	1911.....		162,783
1893.....	590	5,100	1912.....		260,764
1894.....	Nil	Nil			

The imports of marble during the calendar year 1912 were valued at \$475,976, as compared with \$384,252 in 1911, and \$267,215 in 1910.

The annual imports of marble since 1880, are shown in the general table of imports covering the fiscal years, on page 60.

SANDSTONE.

The value of the production of sandstone in 1912 is reported as \$329,352, as compared with a value of \$151,183 reported for 1911. The greater part of the sandstone quarried is used for building purposes, though some quantities are used for rubble and paving purposes.

Of the production in 1912, building and ornamental stone was sold to the value of \$260,229, or 79 per cent of the total value of production. There was included in this amount, rough stone valued at \$96,877 and dressed stone valued at \$163,352. Of the 1911 production the value of \$391,784 was credited to building and ornamental stone, and included \$36,503 in rough stone and \$305,282 in dressed stone.

Statistics of the production in 1910, 1911, and 1912 are shown in the next three tables.

Value of Sandstone Production by Provinces, 1912.

Province.	Building and ornamental.	Crushed.	Paving.	Rubble.	Total.
	\$	\$	\$	\$	\$
Nova Scotia.....	20,645				20,645
New Brunswick.....	64,972			3,288	68,260
Ontario.....	8,611	10,651	16,078	23,900	59,240
Alberta.....	66,135		5,145	10,061	81,391
British Columbia.....	99,816				99,816
Total.....	260,229	10,651	21,223	37,249	329,352

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.....	151,737			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	1,016	62,247
Alberta.....	234,437			6,371	240,858
British Columbia.....	129,325	1,500			130,825
Total.....	454,220	3,220	34,530	10,178	502,148