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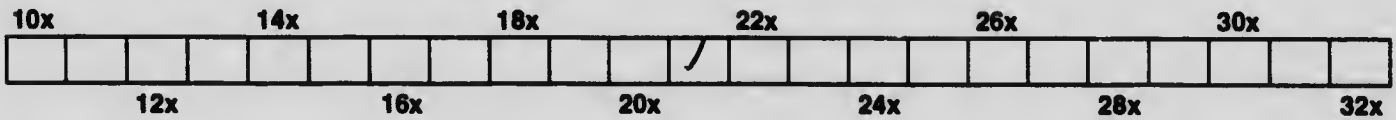


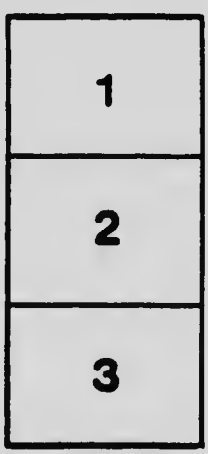


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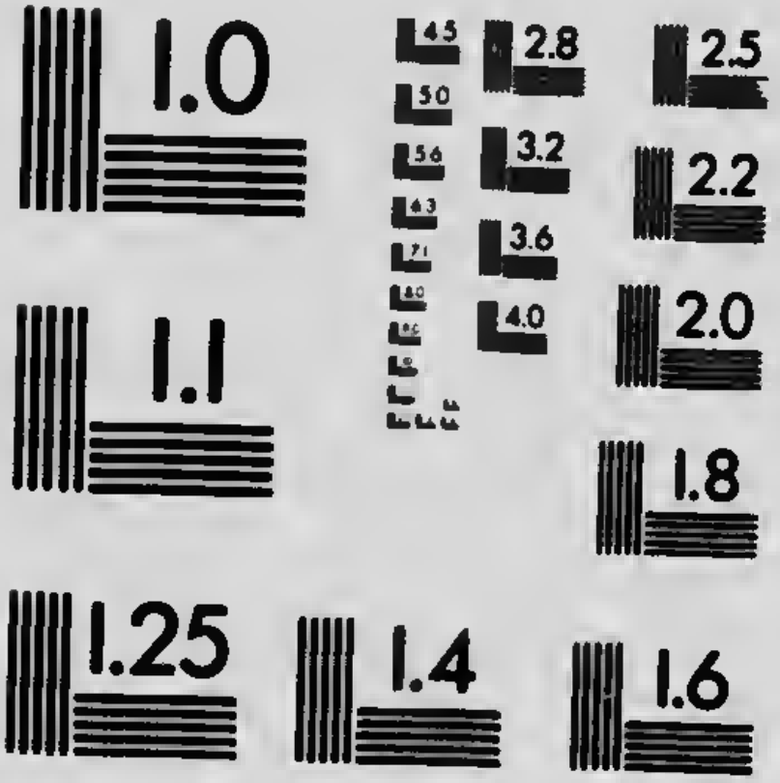


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MINES BRANCH

HON. ROBERT ROGERS, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;
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THE

# PRODUCTION OF CEMENT, LIME, CLAY PRODUCTS, STONE,

AND OTHER STRUCTURAL MATERIALS

IN

# CANADA

During the Calendar Year

# 1911

**JOHN McLEISH, B.A.**

*Chief of the Division of Mineral Resources and Statistics.*

OTTAWA
GOVERNMENT PRINTING BUREAU
1912

**No. 181.**

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# ADVANCE CHAPTER OF THE ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA DURING THE CALENDAR YEAR 1911.

## STRUCTURAL MATERIALS AND CLAY PRODUCTS.

The subjects included under this heading comprise, in the order treated: cement; clay products of various kinds, such as brick, sewerpipe and tile, pottery, etc.; lime; sand-lime brick; sands and gravels; slate; and stone for building and other purposes, including granite, marble, limestone, sandstone, etc. In the case of sands and gravels no complete record of production throughout Canada has been obtained, but statistics of exports are published. The statistics of stone production do not include the stone used in making cement or lime, but are as complete as possible for all other established stone quarries; nevertheless there is undoubtedly a large production of stone for foundation work, road-making, and railway construction of which no record is available.

The total value of the production of these structural products in 1911 according to the record obtained was $22,709,611, as compared with a value of $19,627,592 in 1910, an increase of $3,082,019, or 15·7 per cent. The total production in 1909 was valued at $16,533,349, as compared with which the 1910 production showed an increase of $3,094,243, or 18·7 per cent.

The Canadian consumption of products of this class is apparently increasing at an even more rapid rate than the production. The consumption based upon the above figures of production in conjunction with the record of exports and imports was in 1911 only a little less than $30,000,000, as against about $25,250,000 in 1910 and $20,350,000 in 1909, the increase in 1911 being 18 per cent and in 1910, 24 per cent.

The large increase in production and consumption of structural materials is only a natural accompaniment of the great national development taking place in Canada. The normal growth of population supplemented by the large immigration now constantly in progress has resulted in a great wave of construction in the building up of cities, the construction of railways, highways, and public works of all kinds.

The building permits issued in a number of the principal cities and towns are but one proof of this growth.

Building permits in thirty-four cities in 1911 aggregated nearly $32,000,000 in value, as against $29,000,000 in 1910, an increase of over 28 per cent, and the year 1910 shows a similar increase over 1909 in permits issued of nearly 46 per cent.

A summary of the production of structural materials and clay products since 1907 is shown below:—

| — | 1907. | 1908. | 1909. | 1910. | 1911. |
|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ |
| Cement | 3,781,371 | 3,709,964 | 5,345,802 | 6,412,215 | 7,644,537 |
| Clay products | 5,772,117 | 4,500,702 | 6,450,840 | 7,329,956 | 8,359,933 |
| Lime | 974,595 | 712,947 | 1,132,756 | 1,137,079 | 1,517,599 |
| Sand-lime brick | 167,795 | 152,856 | 201,059 | 371,857 | 112,427 |
| Sand and gravels (exports) | 119,853 | 161,387 | 256,166 | 407,974 | 408,119 |
| Slate | 20,656 | 13,496 | 19,000 | 18,492 | 8,248 |
| Stone | 2,027,262 | 2,088,813 | 3,127,135 | 3,650,019 | 4,328,757 |
| Total | 12,863,049 | 11,339,965 | 16,533,349 | 19,627,592 | 22,709,611 |

The increase in the value of cement sales in 1911 over 1910 was 19 per cent; clay products show an increased production of 9·6 per cent; stone an increase of 18·6 per cent; lime an increase of nearly 29 per cent; sand-lime brick an increase of 15·6 per cent. The production of slate is at no time large, but shows a falling off in 1911.

The export of products of this class is comparatively small, being valued at only $484,047 in 1911, of which over 90 per cent was made up of sand and gravel. The imports, on the other hand, aggregated $7,710,552 in value, and included Portland cement, $834,876; clay products, $5,156,544; lime, $161,985; sand and gravel, $246,613; slate, $169,685; and stone, $1,140,846.

## CEMENT.

The production of cement in Canada during the past few years, though all classed as Portland, has included an output of Puzzolan cement, made from blast furnace slag at Sydney, N.S., and a small production of 'natural Portland,' made at Babcock, Manitoba, 75 miles southwest of Winnipeg, on the Canadian Northern railway.

The total quantity of cement made in Canada during 1911 as per reports received from the manufacturers, was 5,677,539 barrels of 350 pounds net each (993,569 tons), as compared with 4,396,282 barrels (769,349 tons) made in 1910—an increase of 1,281,257 barrels, or over 29 per cent.

The total quantity of Canadian Portland cement sold in 1911 was 5,692,915 barrels (996,260 tons), as compared with 4,753,9[illegible] barrels (831,946 tons) in 1910—an increase of 938,940 barrels, or nearly [illegible] per cent.

The total consumption of Portland cement in 1911, including Canadian and imported cement, was 6,354,831 barrels of 350 pounds net (1,112,095 tons) as compared with 5,103,285 barrels (893,075 tons) in 1910—or an increase of 1,251,546 barrels, or nearly 25 per cent.

The cement industry has been rapidly growing in importance, and its output is now exceeded in value among non-metallic products by coal and clay products only.

An average of 3,010 men were employed in 1911, the total wages paid being reported as $2,103,838.

The increase in annual production since 1905 has been nearly four-fold. The production per capita in 1911 was about 278 pounds, as against only 79 pounds in 1905. The approximate consumption per capita has increased during the same period from 115 pounds to 310 pounds.

A similar rapid increase in both production and consumption has taken place in the United States, where the annual production now exceeds 75,000,000 barrels.

The production per capita in the United States was in 1910 about 332 pounds, as against 204 pounds in 1905.

Statistics of the total annual sales of natural rock and Portland cement since 1887 are shown in the following table:—

## Annual Production of Cement.*

| Calendar Year. | Natural rock cement. | | Portland cement. | | Totals. | |
|---|---|---|---|---|---|---|
| | Barrels. | Value. | Barrels. | Value. | Barrels. | Value. |
| | | $ | | $ | | $ |
| 1887 | ..... | ..... | ..... | ..... | 60,843 | 81,909 |
| 1888 | ..... | ..... | ..... | ..... | 50,668 | 35,593 |
| 1889 | 90,474 | 69,790 | Nil. | Nil. | 90,474 | 69,790 |
| 1890 | 87,521 | 74,822 | 14,695 | 17,583 | 102,216 | 92,405 |
| 1891 | 90,846 | 103,479 | 2,633 | 5,082 | 93,479 | 108,561 |
| 1892 | 88,187 | 94,912 | 29,221 | 52,751 | 117,40 | 147,663 |
| 1893 | 126,673 | 130,167 | 31,924 | 63,848 | 158,5 | 194,015 |
| 1894 | 72,965 | 74,842 | 35,177 | 69,795 | 108,1 | 144,637 |
| 1895 | 66,219 | 60,795 | 62,075 | 112,889 | 128,29 | 173,675 |
| 1896 | 70,705 | 60,500 | 78,385 | 141,15 | 149,09 | 201,651 |
| 1897 | 85,450 | 65,893 | 119,763 | [illegible] | [illegible] | 275,273 |
| 1898 | 87,125 | 73,412 | 163,084 | [illegible] | 250,209 | 397,580 |
| 1899 | 147,387 | 119,308 | 255,366 | 513,983 | 396,755 | 633,291 |
| 1900 | 125,428 | 99,994 | [illegible] 124 | 562,9 | 417,552 | 662,910 |
| 1901 | 133,328 | 94,415 | 517,056 | 565,61 | 450,394 | 660,030 |
| 1902 | 127,931 | 98,932 | [illegible] 4 | 1,028,618 | 722,525 | 1,127,550 |
| 1903 | 92,252 | 74,655 | 627,[illegible] 1 | 1,150,592 | 719,903 | 1,225,247 |
| 1904 | 56,811 | 50,247 | 910,358 | 1,287,992 | 967,172 | 1,338,239 |
| 1905 | 14,184 | 10,274 | 1,346,548 | 1,913,740 | 1,360,732 | 1,924,014 |
| 1906 | 8,610 | 6,052 | 2,119,764 | 3,161,807 | 2,128,374 | 3,170,859 |
| 1907 | 5,775 | 4,043 | 2,436,903 | 3,777,328 | 2,441,868 | 3,781,371 |
| 1908 | 1,044 | 815 | 2,665,289 | 3,709,139 | 2,666,333 | 3,709,954 |
| 1909 | 0 | 0 | 4,067,709 | 5,345,802 | 4,067,709 | 5,345,802 |
| 1910 | 0 | 0 | 4,753,975 | 6,412,215 | 4,753,975 | 6,412,215 |
| 1911 | 0 | 0 | 5,692,915 | 7,644,537 | 5,692,915 | 7,644,537 |

* Quantities sold or shipped.

The production of cement in 1911 was derived from twenty-four operating plants, having a total daily capacity of 28,810 barrels, the operating plants being distributed as follows: one in Nova Scotia using blast furnace slag; one in Manitoba making a natural Portland cement; one in British Columbia; three in Alberta; three in Quebec using limestone and clay; and fifteen in Ontario, of which twelve use marl and three limestone.

A comparison of the principal statistics for 1910 and 1911, showing the increases or decreases, as the case may be, is given in the next table.

**Comparison of Production, Sales, and Imports of Portland Cement in 1910 and 1911.**

| | 1910. | 1911. | Increase. | % | Decrease. | % |
|---|---|---|---|---|---|---|
| Cement sold ....Bls | 4,753,975 | 5,692,915 | 938,940 | 19·8 | | |
| Cement manufactured. » | 4,396,282 | 5,677,539 | 1,281,257 | 29·1 | | |
| Stock on hand Jan. 1.... » | 1,189,731 | 918,965 | | | 270,766 | 22·8 |
| Stock on hand Dec. 31 .... » | 832,038 | 903,589 | 71,551 | 8·6 | | |
| Value of cement sold.... $ | 6,412,215 | 7,644,537 | 1,232,322 | 19·2 | | |
| Average price per barrel .... » | 1·35 | 1·34 | | | 0·01 | 0·9 |
| Wages paid.... » | 1,409,715 | 2,103,838 | 694,123 | 49·2 | | |
| Men employed .... No. | 2,220 | 3,010 | 790 | 35·6 | | |
| Imports of Portland cement ..Bls | 349,310 | 661,916 | 312,606 | 89·5 | | |
| Value of cement.... $ | 468,046 | 834,879 | 366,833 | 78·4 | | |
| Average price per barrel.... » | 1·34 | 1·26 | | | 0·08 | 5·9 |
| Total consumption of cement in Canada ....Bls. | 5,103,285 | 6,354,831 | 1,251,546 | 24·5 | | |
| No. of completed plants operated.... | 22 | 24 | 2 | 9·1 | | |
| Total daily capacity of operating plants as on Dec. 31 ....Bls. | 25,835 | 28,810 | 2,975 | 11·5 | | |

The large increase in output and sales of cement has already been referred to. It will be observed that the stocks on hand December 31, 1911, were approximately 900,000 barrels. The average price per barrel at the mill for all plants practically remains unchanged, being $1.34 in 1911. There was a considerable increase in the number of men employed and the total wages paid The imports of Portland cement in 1911 show a very decided increase, nearly 90 per cent, over those of 1910. The average price per barrel of 350 pounds of imported cement shows, however, a falling off of nearly 6 per cent, being $1.26 in 1911, as compared with $1.34 in 1910.

The increase in the number of operating plants and in total daily capacity is not due to the building of new plants, but rather to the resumption of

operations at the Exshaw plant in Alberta, and the Point Ann plant of the Canada Cement Company at Belleville, Ontario, neither of which was operated during 1910.

Of the total quantity of cement made in 1911, 1,626,857 barrels were made from marl and 4,050,682 barrels from limestone and slag. In 1910, there were 1,214,479 barrels made from marl and 3,181,803 barrels from limestone and slag, and in 1909, 810,706 barrels were made from marl and 3,336,002 barrels from limestone and slag. Practically all of the newer plants erected during the past few years have been limestone plants. The proportion of cement made from marl in 1908 was about 45 per cent of the total output, as compared with about 28 per cent in 1911.

Statistics of the annual production of Portland cement since 1897, showing the quantity made, the quantity sold, stocks on hand at the end of the year, value of sales, etc., are shown in the next table.

**Annual Production of Portland Cement.**

| Year. | Number of operating plants. | Quantity made. | Quantity sold. | On hand Dec. 31. | Value of sales. | Average per barrel. | Daily capacity. |
|---|---|---|---|---|---|---|---|
| | | Barrels. | Barrels. | Barrels. | $ | $ cts. | Barrels. |
| 1897 | | | 119,763 | | 209,380 | 1 75 | |
| 1898 | | | 163,084 | | 324,168 | 1 99 | |
| 1899 | | | 255,366 | | 513,983 | 2 01 | |
| 1900 | | | 292,124 | | 562,916 | 1 91 | |
| 1901 | 4 | 360,160 | 317,066 | 58,094 | 565,615 | 1 78 | |
| 1902 | 8 | 562,335 | 504,594 | 33,446 | 1,028,618 | 1 73 | 3,900 |
| 1903 | 9 | 714,136 | 627,741 | 128,386 | 1,150,592 | 1 83 | 4,850 |
| 1904 | 10 | 968,960 | 910,358 | 112,051 | 1,287,992 | 1 41 | |
| 1905 | 13 | 1,541,568 | 1,346,548 | 306,466 | 1,913,740 | 1 42 | 8,000 |
| 1906 | 15 | 2,152,562 | 2,119,764 | 302,356 | 3,164,807 | 1 49 | 10,500 |
| 1907 | 17 | 2,491,513 | 2,436,093 | 354,435 | 3,777,328 | 1 55 | 14,400 |
| 1908 | 23 | 3,495,961 | 2,665,289 | 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 |

*Imports and Exports.*—There has been very little cement exported from Canada during past years. The quantity is not shown in the export records of the Customs Department, but the value of the exports during 1911 was only $4,067, as against a value of $12,914 in 1910, and $113,362 in 1909.

The imports of cement previous to 1901 were larger than Canadian production, but gave way steadily to the increasing domestic output until 1909, during which year the imports amounted to 142,194 barrels, or about 3 per cent of the total Canadian consumption. During the past two years there has been an increase in the importation of cement—the imports for 1911 being 661,916 barrels, as compared with 349,310 barrels in 1910. A duty of 12½ cents per 100 pounds general tariff is levied on cement, and 20 per cent on the value of bags

containing the product. The British Preferential and Intermediate tariffs are reduced in proportion. The following items in the Customs tariff of 1907 cover the duty on cement:—

| — | British Preferential tariff. | Intermediate tariff. | General tariff. |
|---|---|---|---|
| Cement, Portland, and hydraulic or water lime, in barrels, bags, or casks, the weight of the package to be included in the weight for duty per hundred pounds | 8 cents | 11 cents | 12½ cents. |
| Bags in which cement or lime mentioned in the next preceding item is imported | 15 per cent | 20 per cent | 20 per cent. |

The duty on cement alone is equivalent to 43¾ 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 51¾ cents. As the weight of the bag is included in taking the weight for duty, the general rate will be practically 52 cents per barrel.

The United States was the principal source of imports during the past two years, supplying about 66 per cent of the imports in 1911, as compared with about 29 per cent from Great Britain.

The imports of cement during 1910 and 1911, by countries, are shown in the next table:—

**Imports of Cement.**

| — | 1910. | | | 1911. | | |
|---|---|---|---|---|---|---|
| | Cwt. | % | Value. | Cwt | % | Value. |
| | | | $ | | | $ |
| Great Britain | 433,578 | 35·5 | 130,951 | 666,771 | 28·8 | 210,839 |
| United States | 591,403 | 48·4 | 253,463 | 1,544,612 | 66·7 | 575,768 |
| Belgium | 66,595 | 5·4 | 20,618 | 9,389 | 0·4 | 2,018 |
| Other countries | 131,010 | 10·7 | 63,014 | 18,727 | 0·8 | 7,962 |
| Hong Kong | (a) | | | 77,208 | 3·3 | 38,292 |
| Totals | 1,222,586 | 100·0 | 468,046 | 2,316,707 | 100·0 | 834,879 |
| Equivalent in barrels of 350 lbs. | 349,310 | | | 661,916 | | |

(a) In 1910 included "in other countries."

Statistics of the exports of cement since 1891 and of the imports since 1880 are given in the next two tables:—

## Exports of Cement.

| Calendar Year. | Value. | Calendar Year. | Value. | Calendar Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1891 | 2,881 | 1898 | 2,117 | 1905 | 3,143 |
| 1892 | 938 | 1899 | 2,733 | 1906 | 7,551 |
| 1893 | 1,172 | 1900 | 3,296 | 1907 | 9,618 |
| 1894 | 482 | 1901 | 1,514 | 1908 | 34,591 |
| 1895 | 957 | 1902 | 2,267 | 1909 | 113,362 |
| 1896 | 1,328 | 1903 | 2,851 | 1910 | 12,914 |
| 1897 | 644 | 1904 | 5,494 | 1911 | 4,067 |

## Imports of Cement into Canada.

| Fiscal Year. | Cement and Mfrs. of, N.E.S.* | Hydraulic cement. | | Portland cement. | |
|---|---|---|---|---|---|
| | | Barrels. | Value. | Barrels. | Value. |
| | $ | | $ | | $ |
| 1880 | 28 | 10,034 | 10,306 | | 55,774 |
| 1881 | 298 | 7,812 | 7,821 | | 45,646 |
| 1882 | 86 | 11,945 | 13,410 | | 66,579 |
| 1883 | 548 | 11,659 | 13,755 | | 102,537 |
| 1884 | 1,236 | 8,606 | 9,514 | | 102,857 |
| 1885 | 1,315 | 5,613 | 5,396 | | 111,521 |
| 1886 | 1,851 | 6,164 | 6,028 | | 120,398 |
| 1887 | 1,419 | 6,160 | 8,784 | 102,750 | 148,054 |
| 1888 | 5,787 | 5,636 | 7,522 | 122,402 | 177,158 |
| 1889 | 10,668 | 5,835 | 7,467 | 122,273 | 179,406 |
| 1890 | 5,443 | 5,410 | 9,048 | 192,322 | 313,572 |
| 1891 | 2,890 | 3,515 | 6,152 | 183,728 | 304,648 |
| 1892 | 3,394 | 2,211 | 2,782 | 187,233 | 281,553 |
| 1893 | 2,909 | 4,896 | 8,060 | 229,492 | 316,179 |
| 1894 | 2,618 | 1,054 | 985 | 224,150 | 280,841 |
| 1895 | 2,112 | 5,333 | 7,001 | 196,281 | 242,813 |
| 1896 | 3,672 | 5,688 | 8,948 | 204,107 | 242,409 |
| 1897 | 4,318 | 2,494 | 3,937 | 210,871 | 252,587 |
| | | Cwt. | | Cwt. | |
| 1898 | 3,263 | 16,033 | 7,097 | 1,073,058 | 355,264 |
| 1899 | 8,929 | 1,678 | 694 | 1,300,424 | 467,994 |
| 1900 | 10,452 | 10,418 | 4,711 | 1,301,361 | 498,607 |
| 1901 | 4,890 | 17,784 | 6,865 | 1,612,432 | 654,595 |
| 1902 | 12,234 | 29,585 | 17,755 | 1,971,616 | 833,657 |
| 1903 | 16,281 | 13,690 | 6,333 | 2,316,853 | 868,131 |
| 1904 | 14,305 | 12,088 | 5,391 | 2,476,388 | 995,017 |
| 1905 | 18,489 | 16,961 | 10,690 | 4,228,394 | 1,234,649 |
| 1906 | 27,858 | 10,794 | 4,034 | 2,848,582 | 963,839 |
| 1907 | 16,201 | 1,192 | 685 | 1,551,493 | 523,120 |
| 1908 | 12,418 | 18,860 | 6,710 | 2,427,381 | 852,041 |
| 1909 | 5,733 | 438 | 466 | 1,460,850 | 475,676 |
| 1910 | 7,678 | 588 | 553 | 490,809 | 158,487 |
| 1911 | 6,275 | 389 | 365 | 1,283,121 | 494,081 |

* Cement not elsewhere specified and manufactures of cement.

*Consumption of Cement.*—The consumption of cement is represented practically by the domestic production together with the imports, the exports being so comparatively small as to be negligible. The total consumption of Portland cement in Canada in 1911 was 6,354,831 barrels (1,112,095 tons), made up of 5,692,915 barrels (996,260 tons) of Canadian cement, and 661,916 barrels (115,835 tons) of imported cement; the Canadian cement representing 90 per cent and the imported cement 10 per cent of the total.

In 1910 the total consumption of cement was 5,103,285 barrels (893,075 tons), of which 93 per cent was of domestic production and 7 per cent imported. In 1901 the total consumption was 872,966 barrels (152,769 tons), of which only 36 per cent was made in Canada and 64 per cent imported. The following is an estimate of the annual consumption of Portland cement in Canada during the past eleven years:—

**Annual Consumption of Portland Cement.**

| Calendar Year. | Canadian. | | Imported. | | Total. |
|---|---|---|---|---|---|
| | Barrels. | % | Barrels. | % | Barrels. |
| 1901.. | 317,066 | 36 | 555,900 | 64 | 872,966 |
| 1902.. | 594,594 | 52 | 544,954 | 48 | 1,139,548 |
| 1903.. | 627,741 | 45 | 773,678 | 55 | 1,401,419 |
| 1904.. | 910,358 | 54 | 784,630 | 46 | 1,694,988 |
| 1905.. | 1,346,548 | 59 | 918,701 | 41 | 2,265,249 |
| 1906.. | 2,119,764 | 76 | 665,845 | 24 | 2,785,609 |
| 1907.. | 2,436,093 | 78 | 672,630 | 22 | 3,108,723 |
| 1908.. | 2,665,289 | 85 | 469,049 | 15 | 3,134,338 |
| 1909.. | 4,067,709 | 97 | 142,194 | 3 | 4,209,903 |
| 1910.. | 4,753,975 | 93 | 349,310 | 7 | 5,103,285 |
| 1911.. | 5,692,915 | 90 | 661,916 | 10 | 6,354,831 |

*Nova Scotia.*—There is only one cement plant in Nova Scotia located at Sydney and operated by the Sydney Cement Company, Limited. Puzzolan cement is made from a mixture of blast furnace slag and lime. The capacity of the mill is about 500 barrels per day of twenty-four hours.

*Quebec.*—This Province has three cement mills all operated by the Canada Cement Company, Limited: two situated near Montreal at Longue Pointe and Point aux Trembles, and the third at Hull. The Montreal mills have a combined capacity of 5,300 barrels per day, and the Hull mill, 2,000 barrels. The quantity of cement sold or used during 1911 was 1,614,730 barrels, valued at $1,963,439.

*Ontario.*—Ontario is the most important cement producing province, having 15 mills, of which 6, with a total daily capacity of 9,200 barrels, are operated by the Canada Cement Company, and 9 mills, having a total daily capacity of 6,550 barrels, by independent companies. Four plants are operated on limestone and

have a daily capacity of 6,800 barrels, while 11 plants with an aggregate daily capacity of 8,950 barrels are utilizing marl deposits.

The names of the operating companies and location of plants are shown in the list of cement producers following.

The total sales of cement in Ontario during 1911 were 3,090,786 barrels, valued at $3,741,039, as compared with 2,504,650 barrels, valued at $3,150,479, sold in 1910.

The detailed statistics of production during 1910 and 1911 are shown in the next table.

**Cement Production in Ontario, 1910 and 1911.**

| — | | 1910. | 1911. | Increase. | % | Decrease. | % |
|---|---|---|---|---|---|---|---|
| Cement sold | Bls. | 2,504,650 | 3,090,786 | 586,136 | 23·4 | | |
| Cement manufactured | " | 2,496,200 | 2,973,958 | 477,758 | 19·1 | | |
| Stock on hand Jan. 1 | " | 600,971 | 682,598 | 81,627 | 13·6 | | |
| Stock on hand Dec. 31 | " | 592,521 | 565,770 | | | 26,751 | 4·5 |
| Value of cement sold | $ | 3,150,479 | 3,741,039 | 590,560 | 18·7 | | |
| Wages paid | " | 743,213 | 945,971 | 202,758 | 27·3 | | |
| Men employed | No. | 1,306 | 1,464 | 158 | 12·1 | | |
| Total daily capacity of operating plants | Bls. | 15,300 | 15,750 | 450 | 29·4 | | |

*Manitoba.*—There is as yet only one cement plant in this Province, located at Babcock, 75 miles southwest of Winnipeg on the Canadian Northern railway.

This plant is operated by the Commercial Cement Company of Winnipeg, and a natural Portland cement is manufactured. The capacity of the plant is about 216 barrels a day. The Canada Cement Company is also constructing near Winnipeg a grinding plant, in which it is proposed for the present to grind clinker produced in the Company's plants in Ontario.

*Alberta.*—Alberta has three cement plants, located at Exshaw, Calgary, and Blairmore, respectively. All three plants are operated on limestone and shale. The first two, operated by the Canada Cement Company, have an aggregate daily capacity of 2,800 barrels. The Rocky Mountain Cement Company is doubling the capacity of its Blairmore plant, which in 1911 was 500 barrels per day; while the Keystone Portland Cement Company is erecting a mill at the same place.

*British Columbia.*—The Tod Inlet plant of the Vancouver Portland Cement Company, Limited, near Victoria, B.C., with a capacity of 2,250 barrels per day, is as yet the only operating plant in British Columbia. Limestone and clay are obtained from the Company's property adjoining the works.

At Princeton, B.C., the British Columbia Portland Cement Company, Limited, is constructing a plant with capacity of from 500 to 700 barrels per day.

The Portland Cement Construction Company of London, England, has also commenced the erection of a new cement plant at Tod Inlet.

The production of cement in Ontario has already been shown separately, and the aggregate production in all other provinces during 1910 and 1911 is given in the next table:—

**Cement Production in other Provinces, 1910 and 1911.**

| | | 1910. | 1911. | Increase. | % | Decrease. | % |
|---|---|---|---|---|---|---|---|
| Cement sold | Bls. | 2,249,325 | 2,602,129 | 352,804 | 15·7 | .... | .... |
| Cement manufactured | " | 1,900,082 | 2,703,581 | 803,499 | 42·3 | .... | .... |
| Stock on hand Jan. 1 | " | 588,760 | 236,367 | .... | .... | 352,393 | 59·9 |
| Stock on hand Dec. 31 | " | 239,517 | 337,819 | 98,302 | 41·0 | .... | .... |
| Value of cement sold | $ | 3,261,736 | 3,903,498 | 641,762 | 19·7 | .... | .... |
| Wages paid | " | 666,502 | 1,157,867 | 491,365 | 73·7 | .... | .... |
| Men employed | No. | 914 | 1,546 | 632 | 69·1 | .... | .... |
| Total daily capacity of operating plants | Bls. | 10,535 | 13,060 | 2,525 | 23·9 | .... | .... |

Following is a list of cement manufacturing companies:—

| Name. | Location of plant. | Head office. |
|---|---|---|
| Sydney Cement Company, Ltd | Sydney, N.S | Sydney, N.S. |
| Canada Cement Company, Ltd | .... | Montreal, Que. |
| Montreal Mill No. 1 | Longue Pointe, Que. | |
| Montreal Mill No. 2 | Pointe Aux Trembles, Q. | |
| International Mill | Hull, Que. | |
| Owen Sound Mill | Shallow Lake, Ont. | |
| Belleville Mill | Belleville, O. (Point Ann) | |
| Lehigh Mill | " | |
| Lakefield Mill | Lakefield, Ont. | |
| Marlbank Mill | Marlbank, Ont. | |
| Port Colborne Mill | Port Colborne, Ont. | |
| Alberta Mill | Calgary, Alta. | |
| Exshaw Mill | Exshaw, Alta | |
| Grey & Bruce Portland Cement Co. (assigned.) | Owen Sound, Ont. | Owen Sound, Ont |
| The Sun Portland Cement Co., Ltd. | " " | " " |
| The Imperial Cement Co. Ltd. | " " | " " |
| Hanover Portland Cement Co., Ltd. | Hanover, Ont. | Hanover, Ont. |
| The Ontario Portland Cement Co., Ltd | Blue Lake, Ont. | Brantford, Ont. |
| The National Portland Cement Co., Ltd. | Durham, Ont. | Durham, Ont. |
| Kirkfield Portland Cement Co., Ltd | Raven Lake, Ont. | Toronto, Ont. |
| Superior Portland Cement Co., Ltd. | Orangeville, Ont. | Orangeville, Ont. |
| The Maple Leaf Portland Cement Co., Ltd. | Atwood, Ont. | Listowel, Ont. |
| The Crown Portland Cement Co., Ltd. | Wiarton, Ont. | Wiarton, Ont. |
| The Commercial Cement Co., Ltd. | Babcock, Man. | Winnipeg, Man. |
| The Rocky Mountain Cement Co. | Blairmore, Alta. | Calgary, Alta. |
| Vancouver Portland Cement Co | Tod Inlet, B.C | Victoria, B.C. |

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

| | | |
|---|---|---|
| Ben Allan Portland Cement Co. | .... | Owen Sound, Ont. |
| Lake Medal Portland Cement Co. | .... | Hamilton, Ont. |
| The Brant Portland Cement Co. | .... | Brantford, Ont. |
| Canada Cement Co. (Quebec Mill) | Norville, Que. | Montreal, Que. |
| The Edmonton Portland Cement Co. | .... | Edmonton, Alta. |
| The Keystone Portland Cement Co. | Blairmore, Alta. | Calgary, Alta. |
| British Columbia Portland Cement Co. | .... | Princetown, B.C. |
| The Portland Cement Construction Co. | Tod Inlet, B.C. | |

# CLAY PRODUCTS.

The actual production and sale of clay as such in Canada is as yet very small and practically limited to a small quantity of fireclay sold by a few operators. With this exception, all of the clay production in Canada is manufactured by the producer, and this report, therefore, treats almost altogether of the manufactured product.

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

The production of clay products has been rapidly increasing, the value of the output having almost doubled in three years. The total value of the production in 1911 was $8,359,933, as compared with a value of $7,629,956 in 1910, showing an increase of $729,977, or over 9·5 per cent.

While the increase in gross output was not as large as that shown in 1910, the industry apparently made very satisfactory progress during the year. Demand in most districts exceeded supply and higher prices generally were realized. For the year 1911 about 419 active firms reported, as against 438 active firms reporting for 1910. A larger number of men were, however, employed in 1911, an average of 9,131 being engaged, as compared with 8,656 in 1910; while the wages paid were $3,524,958 in 1911, as against $3,308,699 in 1910.

Considered by provinces, Ontario in 1911 had the largest output, being credited with 47 per cent of the total value. Quebec was second with 16 per cent, Alberta third with 12½ per cent, Manitoba fourth with 10 per cent, followed by British Columbia with 8 per cent.

In 1907, Ontario contributed 54 per cent of the production of clay products, while the western provinces contributed only 21 per cent, as against over 33 per cent in 1911.

Of the total value of production in 1911, building and paving brick, including fireproofing, contributed $6,915,792, or nearly 84 per cent; sewerpipe and tile production were valued at $1,152,528, or about 14 per cent of the total. The total value of the production of pottery was reported as $139,264, of which $102,193 is estimated as being attributable to Canadian clays and the balance to imported clays; the value of product of fireclay and firebrick was $89,130. Compared with the previous year, the production of building, paving, and fireproofing brick shows an increase of nearly 12 per cent, while the production of sewerpipe and drain tile increased less than one per cent.

The average price of common building brick for the whole of Canada in 1911 was $8.37, as compared with $8.13 in 1910 and $7.81 in 1909. The average

price of pressed or front brick for the same years was, respectively, $12.53, $11.89, and $11.01, thus showing the general increase in cost of building brick.

A comparison of statistics of imports of clay products shown in the table following, with those of production, is worth special attention. It will be noted in the first place that the total value of the imports in 1911 was at least $5,156,544 (certain items probably covering clay products not being included), showing a total approximate consumption of clay products valued at $13,416,537, of which only 62 per cent was of domestic production.

In 1909 the approximate consumption was valued at $9,172,995, of which about 70 per cent was of domestic production.

In the case of building brick, the imports while increasing rapidly are still small compared with the home production: it is different, however, with paving brick and firebrick. The imports of paving brick in 1911 were over twice, and the imports of firebrick nearly ten times the Canadian output.

While the production of sewerpipe and drain tile remained nearly stationary, the imports of these products more than doubled in 1911, and amounted in value to about one-third the domestic production.

Statistics of the production in 1911 of the several classes of clay products by provinces are shown in the next table, and of the total production for a number of years past in subsequent tables following:—

## Production of Clay Products by Provinces, 1911.

| Province. | No. of active firms reporting. | No. of men employed. | Wages. | Common brick. | | | | Pressed brick. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | No. manufactured. | No. sold. | Value of sales. | Per M. | No. manufactured. | No. sold. | Value of sales. | Per M. |
| | | | $ | | | $ | $ cts. | | | $ | $ cts. |
| Nova Scotia | 13 | 336 | 97,513 | 22,300,000 | 22,680,000 | 133,540 | 5·88 | 850,000 | 850,000 | 8,100 | 9·52 |
| New Brunswick | 6 | 126 | 24,091 | 4,811,470 | 4,300,900 | 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 | 696 | 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. | Fireproofing and terra-cotta, etc., Value. | Pottery, Value. | Sewerpipe, Value. | Tiles, drain, Value. | Total value, Clay products. |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. sold. | Value. | No. sold. | Value. | | | | | | |
| | | $ | | $ | $ | $ | $ | $ | $ | $ |
| Nova Scotia | | | | | 15,207 | 11,256 | 1,800 | 98,946 | 5,400 | 274,249 |
| New Brunswick | | | | | | | | | | 38,000 |
| Quebec | | | 192,000 | 3,840 | 18,000 | 76,199 | 59,400 | 150,303 | 455 | 1,341,467 |
| Ontario | 5,220,400 | 79,444 | 113,643 | 7,441 | | 51,080 | 41,293 | 409,242 | 300,029 | 3,916,575 |
| Manitoba | | | | | | | | | 7,500 | 834,428 |
| Saskatchewan | | | | | 2,200 | | | | | 226,958 |
| Alberta | | | | | | 270,750 | | | 3,000 | 1,052,751 |
| British Columbia | | | | | 53,723 | 300 | | 154,225 | 23,428 | 675,505 |
| Totals | 5,220,400 | 79,444 | 605,643 | 11,281 | 89,130 | 409,585 | *102,493 | 812,716 | 339,812 | 8,359,933 |

*There was also a production of $336,771 from imported clays.

## Production of Clay Products, 1909 and 1910.

| | 1909. | | | 1910. | | |
|---|---|---|---|---|---|---|
| | Quantity. | Value. | Per M. | Quantity. | Value. | Per M. |
| Bricks— | | $ | $ cts. | | $ | $ cts. |
| Common ... ... No. | 539,228,708 | 4,212,424 | 7 81 | 627,715,319 | 5,105,354 | 8 13 |
| Pressed... ... " | 57,264,656 | 630,677 | 11 01 | 67,895,034 | 807,294 | 11 89 |
| Paving... ... " | 3,759,803 | 67,408 | 17 93 | 4,214,917 | 78,980 | 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, 1906-1911.

| Province. | 1906. | 1907. | 1908. | 1909. | 1910. | 1911. |
|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ |
| Nova Scotia... | 160,506 | 125,560 | 117,833 | 188,185 | 204,782 | 274,249 |
| New Brunswick... | 49,220 | 57,377 | 75,513 | 65,570 | 56,475 | 38,000 |
| Quebec ... ... | 769,458 | 1,214,108 | 893,717 | 1,153,832 | 1,442,842 | 1,341,467 |
| Ontario... ... | 3,136,870 | 3,123,372 | 2,476,152 | 3,425,841 | 3,667,810 | 3,916,575 |
| Manitoba... ... | 517,065 | 466,432 | 265,091 | 559,608 | 781,605 | 834,428 |
| Saskatchewan... | 136,022 | 125,459 | 87,566 | 145,516 | 160,850 | 226,958 |
| Alberta... ... | 180,217 | 353,672 | 240,384 | 442,486 | 753,232 | 1,052,751 |
| British Columbia.. | 123,277 | 306,137 | 344,446 | 470,402 | 562,360 | 675,505 |
| | 5,072,635 | 5,772,117 | 4,509,702 | 6,450,840 | 7,629,956 | 8,359,933 |

## Annual Value of Production of Clay Products, 1899-1911.

| Calendar Year. | Value. | Calendar Year. | Value. | Calendar Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1899 ... ... | 2,988,099 | 1904. ... ... | 3,841,560 | 1909... ... | 6,450,840 |
| 1900 ... ... | 3,195,105 | 1905. ... ... | 4,709,842 | 1910... ... | 7,629,956 |
| 1901... ... | 3,382,706 | 1906. ... ... | 5,072,635 | 1911... ... | 8,359,933 |
| 1902... ... | 3,625,489 | 1907... ... | 5,772,117 | | |
| 1903 ... ... | 4,034,289 | 1908. ... ... | 4,509,702 | | |

*Exports and Imports.*—The only export of clay products recorded is that of building brick [illegible] which the exports in 1911 were 394,000, valued at $3,977, as compared w[illegible] 0,000, valued at $2,762, in 1910, and 365,000, valued at $2,255, in 1909.

The imports of clay products and of clay are, on the other hand, as already pointed out, quite considerable, and amounted in total value during the calendar year 1911 to $5,156,544, equivalent to about 62 per cent of the domestic production. The total imports in 1910 were valued at $4,331,397, showing an increase in 1911 of $825,147, or 19 per cent, as against an increase in 1910 over 1909 of 33 per cent. In both years the imports have increased at a higher rate than the domestic production. Clay imports are classified by the Department of Customs under three main subdivisions: clays, brick and tile, and earthenware and chinaware. The imports of clays in 1911 were valued at $270,247, and included chiefly china-clay and fireclay with a small quantity of pipeclay, and other clays not classified. The value of china-clay imports was $125,768, and of fireclay, $125,199. The imports of these clays have varied considerably from year to year, and do not show the same general increase as do the imports of manufactured clays. A reference to the next table will show the changes since 1905. The imports classified under brick and tile were valued in 1911 at $2,369,761, of which about 34 per cent was firebrick, other important items being building brick, sewerpipe, and paving brick. There was also an importation under this class of manufactures of clay not specifically designated, valued at $523,998. The imports of these 'unclassified' brick and tile have increased steadily year by year, the value of such imports in 1905 having been only $20,804. The total imports of brick and tile in 1910 were valued at $1,755,773, showing an increase in 1911 of about 35 per cent. The imports of earthenware and chinaware, of which the most important class is tableware, were valued in 1911 at $2,516,536, as against $2,283,116, an increase of about 10 per cent.

The detailed record of imports since 1905 is shown in the next table, the figures for the years 1905 to 1909 covering the fiscal year, and for the last three years the calendar year is used.

## Imports of Clay Products, 1905 to 1911.

| Imports. | 12 months ending June, 1905. | 12 months ending June, 1906. | 12 months ending March, 1907. | 12 months ending March, 1908. | 12 months ending March, 1909. | Calendar year 1909. | Calendar year 1910. | Calendar year 1911. |
|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ |
| Brick and tile :— | | | | | | | | |
| Bath brick | 916 | 1,466 | 1,076 | 1,884 | 4,432 | 1,495 | 2,280 | 2,623 |
| Building brick | 168,122 | 194,897 | 88,144 | 129,105 | 108,773 | 195,360 | 274,482 | 475,865 |
| Paving brick | 32,578 | 46,008 | 23,256 | 61,346 | 101,187 | 139,366 | 124,994 | 164,292 |
| Firebrick, of a class or kind not made in Canada | *436,941 | *591,854 | *306,801 | 639,347 | 350,457 | 485,994 | 811,927 | 814,414 |
| Drain tile, not glazed | 1,229 | 4,727 | 12,106 | 2,080 | 2,394 | 2,785 | 4,485 | 5,640 |
| Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed | 101,166 | 131,353 | 93,458 | 125,747 | 106,399 | 170,280 | 175,599 | 382,929 |
| Manufactures of clay, N.O.P. | 26,804 | 30,067 | 45,845 | 110,097 | 141,391 | 254,170 | 361,996 | 523,998 |
| Total | 761,756 | 1,000,572 | 770,686 | 1,079,556 | 815,033 | 1,249,450 | 1,755,773 | 2,369,761 |
| Earthenware and chinaware :— | | | | | | | | |
| Brown or coloured earthenware and stoneware, and Rockingham ware | 15,464 | 8,363 | 9,625 | 22,847 | 28,273 | 36,673 | 53,413 | 52,100 |
| C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P. | 169,102 | 191,552 | 154,879 | 239,513 | 197,623 | 219,936 | 262,475 | 184,291 |
| Demijohns, churns, or crocks | 8,158 | 10,508 | 9,342 | 17,836 | 10,571 | 8,888 | 6,607 | 4,933 |
| Tableware of china, porcelain, white granite or iron-stoneware | 1,033,171 | 1,004,024 | 902,798 | 1,555,517 | 1,202,537 | 1,212,365 | 1,545,538 | 1,718,582 |
| China and porcelain ware, N.O.P. | 199,960 | 214,013 | 134,675 | 109,446 | 87,798 | 87,467 | 95,509 | 62,025 |
| Tiles or blocks of earthenware or stone prepared for mosaic flooring | | | 62,547 | 45,836 | 43,299 | 56,974 | 90,524 | 123,203 |
| Earthenware tiles, N.O.P. | 65,181 | 78,247 | 67,027 | 116,480 | 79,854 | 81,393 | 125,772 | 154,351 |
| Manufacture of earthenware, N.O.P. | 71,609 | 117,824 | 81,987 | 83,309 | 66,932 | 78,063 | 163,278 | 217,051 |
| Total | 1,562,645 | 1,624,531 | 1,422,880 | 2,190,784 | 1,716,887 | 1,781,759 | 2,283,116 | 2,516,536 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Clays:— | | | | | | | | |
| China-clay, ground or unground | 94,501 | 65,909 | 78,772 | 97,236 | 90,922 | 100,066 | 142,125 | 125,768 |
| Fireclay, ground or unground | 73,837 | 131,130 | 85,044 | 155,873 | 77,146 | 86,161 | 124,293 | 125,199 |
| Pipeclay, ground or unground | 1,189 | 1,333 | 307 | 319 | 887 | 310 | 114 | 1,786 |
| Clays, all other, N.O.P. | 7,278 | 22,132 | 14,117 | 14,292 | 21,280 | 29,793 | 25,976 | 17,494 |
| Total | 176,805 | 220,504 | 178,240 | 267,720 | 190,235 | 216,330 | 292,508 | 270,247 |
| Grand total | 2,501,206 | 2,845,407 | 2,371,806 | 3,538,060 | 2,722,155 | 3,247,539 | 4,331,397 | 5,156,544 |
| Baths, bath-tubs, basins, closets, lavatories, urinals, sinks and laundry tubs of any material | 73,569 | 67,828 | 62,547 | 234,505 | 157,881 | 211,837 | 262,667 | 285,847 |
| Chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite, ground or unground | 5,276 | 9,053 | 7,376 | 72,467 | 81,675 | 96,747 | 121,959 | 147,640 |

* Includes stove linings, N. E. S.

In addition to the imports shown in the above table, there is also a considerable annual importation of 'chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite ground or unground,' much of which is no doubt used in connexion with the manufacture of clay products. The value of these imports during the calendar year 1911 was $147,640: of which $90,119 was from the United States, $54,548 from Great Britain, and $2,973 from other countries. The value of the imports under this item during the calendar year 1910 was $121,959. There is also an annual importation of 'baths, bath tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material,' the value of such imports during 1911 being $285,847, as compared with $262,667 during the year 1910.

Imported clay products are derived chiefly from Great Britain and the United States, although considerable quantities of earthenware, china, and porcelain ware, white granite or ironstoneware, etc., are brought from Germany, France, Austria-Hungary, and Japan. The imports during the fiscal year, showing the country of origin, are shown in the next table. Of the brick and tile imported, 76·7 per cent was from the United States and 23·2 per cent from Great Britain; and only $578 worth from other countries. Of the earthenware and chinaware, 62 per cent was imported from Great Britain; 15 per cent from the United States; 9 per cent from Germany; 7 per cent from France, and considerable values also from Japan, Austria-Hungary, and other countries. The crude clays were imported principally from Great Britain and the United States.

## Imports of Clay Products during the twelve months ending March, 1911, showing Countries of Origin.

| Imports. | Great Britain. | United States. | Germany. | France. | Austria-Hungary. | Japan. | Other countries. | Total. |
|---|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ | $ |
| Brick and tile:— | | | | | | | | |
| Bath brick | 2,250 | 17 | ..... | ..... | ..... | ..... | ..... | 2,267 |
| Building brick | 30,837 | 278,716 | ..... | ..... | ..... | ..... | ..... | 309,553 |
| Paving brick | 94,885 | 35,976 | ..... | ..... | ..... | ..... | ..... | 130,861 |
| Firebrick, of a class or kind not made in Canada | 73,128 | 791,202 | ..... | ..... | ..... | ..... | 135 | 864,465 |
| Drain tile, not glazed | 395 | 4,073 | ..... | ..... | ..... | ..... | ..... | 4,378 |
| Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed | 23,179 | 151,283 | 191 | ..... | ..... | ..... | ..... | 174,653 |
| Manufactures of clay, N.O.P. | 216,950 | 191,822 | 194 | 29 | 17 | ..... | 12 | 409,024 |
| Total | 441,534 | 1,453,089 | 385 | 29 | 17 | ..... | 147 | 1,895,201 |
| Earthenware and chinaware:— | | | | | | | | |
| Brown or coloured earthenware and stoneware, and Rockingham ware | 13,747 | 39,728 | 718 | 90 | ..... | 123 | ..... | 54,406 |
| C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P. | 112,956 | 46,260 | 12,892 | 2,186 | 2,438 | 12,949 | 1,829 | 191,510 |
| Demijohns, churns, or crocks | 1,622 | 5,615 | ..... | ..... | ..... | ..... | ..... | 7,237 |
| Tableware of china, porcelain, white granite or ironstone-ware | 1,133,279 | 29,893 | 174,405 | 157,325 | 47,446 | 69,525 | 28,162 | 1,640,035 |
| China and porcelain ware, N.O.P. | 44,866 | 18,330 | 15,869 | 2,330 | 4,893 | 3,975 | 4,312 | 94,575 |
| Tiles or blocks of earthenware or stone prepared for mosaic flooring | 24,216 | 66,057 | 13 | 3,448 | ..... | ..... | 150 | 93,884 |
| Earthenware tiles, N.O.P. | 85,489 | 50,032 | 236 | 566 | ..... | ..... | 162 | 136,485 |
| Manufacture of earthenware, N.O.P. | 60,143 | 95,983 | 15,539 | 2,606 | 1,026 | 3,399 | 1,588 | 180,284 |
| Total | 1,476,318 | 351,898 | 219,672 | 168,551 | 55,803 | 89,971 | 36,203 | 2,398,416 |

**Imports of Clay Products during the twelve months ending March, 1911, showing Countries of Origin** —*Continued.*

| Imports. | Great Britain. | United States. | Germany. | France. | Austria-Hungary. | Japan. | Other Countries. | Total. |
|---|---|---|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ | £ | £ | £ |
| Clays:— | | | | | | | | |
| China-clay, ground or unground | 110,432 | 34,472 | | | | | | 144,904 |
| Fireclay, ground or unground | 25,218 | 103,811 | | | | | 699 | 129,728 |
| Pipeclay, ground or unground | 100 | 156 | | | | | | 256 |
| Clays, all other, N.O.P. | 486 | 23,660 | 499 | | | | | 24,645 |
| Total | 136,236 | 162,099 | 499 | | | | 699 | 299,533 |
| Grand total | 2,054,088 | 1,967,086 | 220,556 | 168,580 | 55,820 | 89,971 | 37,049 | 4,593,150 |
| Per cent of total | 44·72 | 42·83 | 4·80 | 3·67 | 1·21 | 1·96 | 0·81 | 100·00 |
| Baths, bath-tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material | 65,332 | 195,218 | 160 | | 11 | | 13 | 260,734 |
| Chalk, china or cornwall stone, cliff stone, and feldspar, fluorspar, magnesite, ground or unground | 27,550 | 89,846 | 856 | 332 | 152 | | 1,945 | 120,681 |

A record of the total annual value of the imports of clay products since 1900 by fiscal years is shown in the following table. In twelve years Canada has imported clay products to the value of $30,093,888. The increase in imports has been most pronounced in the case of brick and tile, the imports of which in 1900 amounted to $145,914, as compared with $1,895,201 in 1911. The imports of earthenware and chinaware have a little more than doubled in the same time.

**Imports of Clay Products (total value) 1900-11.**

| Fiscal Year. | Brick and tile. | Earthenware and chinaware. | Clays. | Total |
|---|---|---|---|---|
| | $ | $ | $ | $ |
| 1900 | 145,914 | 959,526 | 122,965 | 1,228,405 |
| 1901 | 133,343 | 1,114,677 | 141,251 | 1,389,271 |
| 1902 | 172,281 | 1,275,093 | 140,521 | 1,587,895 |
| 1903 | 157,783 | 1,406,610 | 176,416 | 1,740,809 |
| 1904 | 259,421 | 1,611,356 | 144,706 | 2,015,483 |
| 1905 | 761,756 | 1,636,214 | 176,805 | 2,574,775 |
| 1906 | 1,000,372 | 1,692,359 | 220,504 | 2,913,235 |
| 1907* | 770,686 | 1,422,880 | 178,240 | 2,371,806 |
| 1908 | 1,079,556 | 2,190,784 | 267,720 | 3,538,060 |
| 1909 | 815,033 | 1,716,887 | 190,235 | 2,722,155 |
| 1910 | 1,341,310 | 1,859,302 | 218,232 | 3,418,844 |
| 1911 | 1,895,201 | 2,398,416 | 299,533 | 4,593,150 |
| | 8,532,656 | 19,284,104 | 2,277,128 | 30,093,888 |

* 9 months ending March 1907.
** Includes fireclay classified as "for use in process of manufactures."

In view of the large import of clay products into Canada, it may be of interest to quote herewith the Customs duties affecting these goods.

**Canadian Customs Duties on Clay Products.**

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

| Item. | | British Preferential tariff. | Intermediate 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 two years in the following tables.

In 1911 the total sales were 732,901,056, valued at $6,515,472, made up of 645,550,517 common, valued at $5,420,890, or an average value per thousand of $8.37; and 87,350,539 pressed brick, valued at $1,094,582, or an average value per thousand of $12.53. In addition to the common and pressed brick there was a production of ornamental brick of 605,643, valued at $11,281, and a production of fireproofing brick and architectural terra-cotta valued at $409,585.

In 1910 the production was 627,715,319 common brick, valued at $5,105,354, or an average value per thousand of $8.13; and 67,895,034 pressed brick, valued at $807,294, or an average value per thousand of $11.89; the total of the two classes being 695,610,353, valued at $5,912,648. The production of ornamental brick in 1910 was 703,345, valued at $16,092; and of fireproofing and architectural terra-cotta, $176,979.

The increase in production of fireproofing has been particularly marked, and is due to the establishment of new plants, including the National Fire Proofing Company of Canada at Hamilton, Ont., and the Alberta Clay Products Company, Limited, of Medicine Hat, Alta.

The demand for brick has been very strong, particularly throughout the west, where numbers of plants are being increased in capacity and many new plants either contemplated or in course of construction.

**Production of Clay Building Brick (Common and Pressed) 1910 and 1911.**

| Province. | 1910. | | | | 1911. | | | |
|---|---|---|---|---|---|---|---|---|
| | No. of active firms reporting. | No. sold. | Value. | Per cent of total value. | No. of active firms reporting. | No. sold. | Value. | Per cent of total value. |
| | | | $ | | | | $ | |
| Nova Scotia | 15 | 18,730,000 | 113,436 | 1·92 | 15 | 23,530,000 | 141,640 | 2·17 |
| New Brunswick | 4 | 3,950,000 | 31,350 | 0·53 | 6 | 4,400,000 | 38,000 | 0·58 |
| Quebec | 62 | 130,278,310 | 929,492 | 15·72 | 60 | 122,041,580 | 1,033,270 | 15·86 |
| Ontario | 235 | 342,119,078 | 2,785,361 | 47·11 | 262 | 369,034,371 | 3,028,046 | 46·48 |
| Manitoba | 22 | 75,834,550 | 746,704 | 12·63 | 18 | 81,400,000 | 826,928 | 12·69 |
| Saskatchewan | 11 | 14,733,310 | 160,850 | 2·72 | 13 | 21,071,660 | 224,758 | 3·45 |
| Alberta | 29 | 73,639,771 | 750,982 | 12·70 | 28 | 71,772,930 | 779,001 | 11 96 |
| British Columbia | 19 | 36,316,304 | 394,473 | 6 67 | 19 | 39,680,515 | 443,829 | 6·81 |
| Totals | 397 | 695,610,353 | 5,912,648 | 100 | 419 | 732,901,056 | 6,515,472 | 100 00 |

## Production of Clay Building Brick (Common and Pressed) 1908 and 1909.

| Province. | 1908. | | | 1909. | | |
|---|---|---|---|---|---|---|
| | No. sold. | Value. | Per cent of total value. | No. sold. | Value. | Per cent of total value. |
| | | $ | | | $ | |
| Nova Scotia | 9,125,000 | 56,064 | 1·79 | 18,875,000 | 114,795 | 2·37 |
| New Brunswick | 6,594,011 | 54,573 | 1·74 | 6,170,000 | 44,330 | 0·91 |
| Quebec | 90,667,177 | 601,874 | 19·24 | 101,171,567 | 690,918 | 14·27 |
| Ontario | 221,600,575 | 1,664,184 | 53·19 | 322,524,414 | 2,557,068 | 52·80 |
| Manitoba | 26,818,000 | 254,591 | 8·14 | 59,110,000 | 544,548 | 11·24 |
| Saskatchewan | 8,262,996 | 87,566 | 2·80 | 14,416,770 | 144,316 | 2·98 |
| Alberta | 25,521,911 | 240,336 | 7·68 | 45,479,855 | 441,606 | 9·12 |
| British Columbia | 18,152,362 | 169,546 | 5·42 | 28,445,758 | 305,520 | 6·31 |
| Totals | 406,742,032 | 3,128,734 | 100·00 | 596,493,364 | 4,843,101 | 100·00 |

The exports and imports of building brick since 1891 and 1880, respectively, are shown in the two following tables. The exports have never been large, averaging for a number of years past about $6,000 in value per annum, but falling in 1910 and 1911 to $2,762 and $3,977, respectively. The annual imports for a number of years previous to 1903 averaged only about $20,000 in value. During the past eight years, however, the imports have rapidly increased from $100,000 to nearly $500,000 per annum. During the calendar year 1911 the imports were 51,102,000 brick, valued at $475,865; of which 6,404,000, valued at $72,675, or an average of $11.35 per thousand, were imported from Great Britain; and 44,698,000, valued at $403,190, or an average of $9.02 per thousand, from the United States. The imports during the calendar year 1910 were 29,049,000 brick, valued at $274,482; of which 1,093,000, valued at $26,447, or an average of $13.27 per thousand, were imported from Great Britain; and 27,056,000, valued at $248,035, or an average of $9.15 per thousand, from the United States.

### Exports of Building Brick.

| Calendar Year. | M. | Value. | Calendar Year. | M. | Value. | Calendar Year. | M. | Value. |
|---|---|---|---|---|---|---|---|---|
| | | $ | | | $ | | | $ |
| 1891 | 246 | 1,163 | 1898 | 65 | 442 | 1905 | 754 | 5,888 |
| 1892 | 1,963 | 12,192 | 1899 | 172 | 1,351 | 1906 | 697 | 6,541 |
| 1893 | 6,073 | 44,110 | 1900 | 546 | 4,528 | 1907 | 802 | 6,193 |
| 1894 | 1,095 | 7,405 | 1901 | 646 | 5,189 | 1908 | 2,344 | 9,047 |
| 1895 | 1,655 | 8,665 | 1902 | 2,110 | 12,786 | 1909 | 365 | 2,255 |
| 1896 | 983 | 5,678 | 1903 | 891 | 5,699 | 1910 | 330 | 2,762 |
| 1897 | 573 | 2,479 | 1904 | 696 | 5,357 | 1911 | 394 | 3,977 |

## Imports of Building Brick.

| Fiscal Year. | M. | Value. | Fiscal Year. | M. | Value. | Fiscal Year. | M. | Value. |
|---|---|---|---|---|---|---|---|---|
| | | $ | | | $ | | | $ |
| 1880.. | 340 | 2,067 | 1891.. | 589 | 5,744 | 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 | 130,105 |
| 1887.. | 276 | 2,440 | 1898 | 639 | 6,652 | 1909.. | 10,894 | 105,773 |
| 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 | | | |

*Prices.* The price of brick varies greatly with the quality, locality, market, or demand. The values as given in the table of production are those at the yard or kiln and do not include costs of delivery. They do not, therefore, represent the price to the consumer. The average price of common brick at the kiln in 1911 according to these returns was $8.37, as compared with $8.13 in 1910, and $7.81 in 1909; and of pressed brick $12.53, as compared with $11.89 in 1910 and $11.01 in 1909.

In the Maritime Provinces, during 1911, the price of common brick varied from $5 to $9, averaging for Nova Scotia $5.88, and for New Brunswick $5.55.

In Quebec the price of common brick varied between $4.50 and $11, averaging $7.67; while the price of pressed brick averaged $16.20, with only one firm reporting production. The average price of common brick in Ontario was $7.89, the limits of variation being $5 and $11; while for pressed brick the average was $10.21 and the variation from $8 to $12.

In the western provinces the averages for common brick were fairly uniform—$9.19 to $10.11. In individual yards the prices varied from $8 to $12. Pressed brick in the west averaged $12.08 per thousand in Manitoba; $15.31 in Saskatchewan; $13.81 in Alberta; and $24.94 in British Columbia. With the exception of Saskatchewan, the average prices for pressed brick in the western provinces were all lower than in 1910.

The following table shows the average values at the kilns of common and pressed brick during 1909, 1910, and 1911, as furnished by the producers:—

**Average Prices per Thousand of Common and Pressed Brick.**

| | Common brick. | | | Pressed brick. | | |
|---|---|---|---|---|---|---|
| | 1909. | 1910. | 1911. | 1909. | 1910. | 1911. |
| | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. |
| Nova Scotia | 5 69 | 5 77 | 5 88 | 12 36 | 12 27 | 9 52 |
| New Brunswick | 7 14 | 7 83 | 5 55 | 12 00 | 12 00 | 12 00 |
| Quebec | 6 38 | 6 63 | 7 67 | 14 00 | 15 00 | 16 20 |
| Ontario | 7 71 | 7 88 | 7 89 | 9 46 | 9 74 | 10 21 |
| Manitoba | 9 14 | 9 81 | 10 11 | 12 00 | 16 27 | 12 08 |
| Saskatchewan | 9 66 | 9 63 | 9 49 | 14 00 | 14 97 | 15 31 |
| Alberta | 9 21 | 9 63 | 10 10 | 13 03 | 19 01 | 13 81 |
| British Columbia | 9 73 | 9 77 | 9 70 | 31 05 | 33 56 | 24 94 |
| Canada | 7 81 | 8 13 | 8 37 | 11 01 | 11 89 | 12 53 |

*Nova Scotia and New Brunswick.*—An increase is shown in the brick production of both these Provinces in 1911, the total production in Nova Scotia being 23,530 thousand, valued at $141,640; and in New Brunswick, 4,400 thousand, valued at $38,000. In addition to brick there was a production in Nova Scotia of fireproofing, terra-cotta, tile, etc., valued at $11,256, and a production of pottery valued at $1,800. The principal brick plants are located at Pugwash, Elmsdale, New Glasgow, Middleton, and Annapolis in Nova Scotia, and at Fredericton, St. John, and Chatham, New Brunswick.

*Quebec.*—The total production of brick in Quebec in 1911 is reported by sixty operative firms as 122,042 thousand, valued at $1,033,270, comprising 110,702 thousand common brick, valued at $849,654, or $7.67 per thousand, and 11,340 thousand pressed brick, valued at $183,616, or $16.20 per thousand. The production by sixty-two active firms in 1910 was 130,287 thousand brick, valued at $929,492.

The production of brick is widely scattered throughout the Province, but the principal brickmaking plants are located at Laprairie, Sherbrooke, and St. Jean Deschaillons.

*Ontario.*—This Province has for a number of years produced over 50 per cent of the clay building brick production in Canada, though the percentage in 1910 and 1911 has fallen to a little over 46. The city of Toronto and vicinity, including the counties of York and Halton, is the principal brick-making section, and in 1911 produced about 59 per cent of the Ontario production, or about 28 per cent of the total Canadian production of brick.

The district next in importance is the county of Wentworth, comprising the city of Hamilton and vicinity, producing over 7½ per cent of the Ontario production. The Ottawa district, including the counties of Russell and Carleton, produced over 6½ per cent. Other important districts are Algoma and Nipissing, which cover a wide area, and the counties of Waterloo, Middlesex, Grey, Simcoe, Essex, and Kent. These thirteen counties contributed over 86 per cent of the Ontario production. The greater part of the pressed brick reported as such was made in the Toronto and Hamilton districts.

**Production of Common and Pressed Brick by Principal Counties, 1911.**

| County. | Common. | | | Pressed. | | | Total value. | Per cent. |
|---|---|---|---|---|---|---|---|---|
| | No. | Value. | Per M. | No. | Value. | Per M. | | |
| | | $ | $ c. | | $ | $ c. | $ | % |
| York | 163,102,300 | 1,353,096 | 8 30 | 14,146,000 | 162,865 | 11 51 | 1,515,961 | 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 39 | 6,612,314 | 63,766 | 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 | 9,696,000 | 74,189 | 8 16 | | | | 74,189 | 2·45 |
| Waterloo | 8,120,565 | 60,913 | 7 50 | | | | 60,913 | 2·01 |
| Nipissing | 6,100,000 | 57,500 | 9 43 | | | | 57,500 | 1·90 |
| Middlesex | 6,849,530 | 52,502 | 7 66 | | | | 52,502 | 1·73 |
| Grey | 6,099,400 | 48,952 | 8 03 | | | | 48,952 | 1·62 |
| Simcoe | 4,995,000 | 38,940 | 7 80 | | | | 38,940 | 1·29 |
| Essex | 5,255,200 | 35,197 | 6 75 | 120,000 | 1,200 | 10 00 | 36,697 | 1·21 |
| Kent | 4,997,500 | 33,453 | 6 69 | | | | 33,453 | 1·10 |
| Total, 13 counties | 269,395,171 | 2,130,843 | 7 91 | 47,826,714 | 487,430 | 10 19 | 2,618,273 | 86·46 |
| Total, other counties | 49,275,450 | 383,122 | 7 77 | 2,507,036 | 26,651 | 10 63 | 409,773 | 13·54 |
| Total, Ontario | 318,670,621 | 2,513,965 | 7 89 | 50,333,750 | 514,081 | 10 21 | 3,028,046 | 100 00 |

The annual production of common and pressed brick in this Province since 1898, as ascertained by the Ontario Bureau of Mines, is shown in the following table. The figures differ only slightly from those reported directly to the Mines Branch:—

**Building Brick made in Ontario since 1898.**

| | Common Brick. | | | Pressed Brick. | | |
|---|---|---|---|---|---|---|
| | M. | Value. | Average per M. | M. | Value. | Average per M. |
| | | $ | $ cts. | | $ | $ cts. |
| 1898 | 170,000 | 914,000 | 5.376 | 8,970 | 100,344 | 11.187 |
| 1899 | 233,898 | 1,313,750 | 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 | 104,394 | 8.127 |
| 1902 | 220,500 | 1,411,000 | 6.399 | 19,755 | 144,171 | 7.298 |
| 1903 | 230,000 | 1,561,700 | 6.790 | 25,703 | 218,550 | 9.220 |
| 1904 | 200,000 | 1,430,000 | 7.150 | 26,857 | 226,750 | 8.443 |
| 1905 | 250,000 | 1,937,500 | 7.750 | 26,000 | 234,000 | 9.000 |
| 1906 | 300,000 | 2,157,000 | 7.190 | 39,860 | 337,795 | 8.475 |
| 1907 | 273,882 | 2,109,978 | 7.704 | 69,763 | 648,683 | 9.298 |
| 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 | 2,374,287 | 7 785 | 44,204 | 458,596 | 10.375 |
| *1911 | 316,000 | 2,480,177 | 7 845 | 51,844 | 562,345 | 10.847 |

* Preliminary.

In addition to the ordinary building brick, there was produced in this Province in 1911, ornamental brick valued at $7,441, and fireproofing and terra-cotta valued at $51,080.

*Manitoba.*—The production of building brick in Manitoba in 1911 was 81,400 thousand, valued at $826,928, comprising 79,600 thousand common brick, valued at $805,178, or an average of $10.11 per thousand; and 1,800 thousand pressed brick, valued at $21,750, or $12.08 per thousand. The total production in 1910 was 75,835 thousand, valued at $746,704, showing an increase of over 10 per cent in the value of the production.

The principal brickmaking plants are located at Winnipeg, Morris, Lac du Bonnet, Portage La Prairie, Sidney, Brandon, Brookdale, Gilbert Plains, and Virden.

*Saskatchewan.*—Returns from thirteen operating firms show a production in 1911 of 21,072 thousand brick, valued at $224,758, as compared with 14,733 thousand brick, valued at $160,850, produced by eleven firms during 1910.

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

*Alberta.*—The production in 1911 reported by twenty-eight firms was 71,773 thousand, valued at $779,001, as against 73,619 thousand, valued at $750,982, reported by twenty-nine firms in 1910. The 1911 production included 56,944 thousand common brick, valued at $574,243, or an average of $10.10 per thousand, and 14,829 thousand pressed brick, valued at $204,758, or an average of $13.81 per thousand.

In addition to building brick, there was a production in this Province during 1911 of fireproofing valued at $270,750.

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

Throughout the three prairie provinces the demand for brick was particularly heavy, and the prices of common ranged from $8 to $12 per thousand, while pressed brick sold at from $14 to $20 per thousand.

*British Columbia.*—The production during 1911 by nineteen active firms was 39,681 thousand brick, valued at $443,829, and included 35,835 thousand common brick, valued at $347,876, or an average of $9.70 per thousand; and 3,846 thousand pressed brick, valued at $95,953, or an average of $24.94 per thousand. The total production by the same number of firms in 1910 was 36,313 thousand brick, valued at $394,473. Vancouver, New Westminster, Port Haney and vicinity, Anvil Island, Victoria, and Sidney are the principal centres for the production of common brick, while pressed brick are made in considerable quantities at Clayburn and Anvil Island.

*Paving Brick.*—The total production of paving brick and paving blocks in Canada in 1911 was reported as 5,220,400, valued at $79,444, as compared with a production of 4,215,000, valued at $78,980 in 1910.

This paving brick is made at West Toronto, Ont., from shale obtained from the banks of the Humber river. The annual production has for a number of years varied from 3,000,000 to over 5,000,000 per season, and the output finds a market chiefly in Toronto. Statistics of production are available since 1897 and are shown in the next table; the average price per thousand has varied from $8 to $20.

The imports of paving brick have during the past three years exceeded the domestic production. During the calendar year 1911 the imports were 17,450 thousand, valued at $164,292, or $14.34 per thousand, and included 4,988 thousand, valued at $78,201, or $15.68 per thousand, from the United States, and 6,462 thousand, valued at $86,091, or $13.32 per thousand, from Great Britain. The imports during the calendar year 1910 were 10,503 thousand, valued at $124,994.

**Annual Production of Paving Brick.***

| Year. | M. | Value. | Average per M. | Year. | M. | Value. | Average per M. |
|---|---|---|---|---|---|---|---|
| | | $ | $ cts. | | | $ | $ cts. |
| 1897 | 4,568 | 45,670 | 10 00 | 1904 | 4,436 | 55,450 | 12 50 |
| 1898 | ..... | ..... | ..... | 1905 | 4,500 | 54,000 | 12 00 |
| 1899 | 5,309 | 42,550 | 8 03 | 1906 | 3,000 | 45,000 | 15 00 |
| 1900 | 2,710 | 26,950 | 9 94 | 1907 | 3,618 | 72,354 | 20 00 |
| 1901 | 3,689 | 37,000 | 10 03 | 1908 | 3,720 | 59,456 | 15 98 |
| 1902 | 4,211 | 42,000 | 9 97 | 1909 | 3,760 | 67,408 | 17 93 |
| 1903 | 3,785 | 45,288 | 11 95 | 1910 | 4,215 | 78,980 | 18 74 |
| | | | | 1911 | 5,220 | 79,444 | 15 22 |

* Figures previous to 1907 compiled from Ontario Bureau of Mines.

## Imports of Paving Brick.*

| Fiscal Year. | M. | Value. | Average per M. | Fiscal Year. | M. | Value. | Average per M. |
|---|---|---|---|---|---|---|---|
| | | $ | $ cts. | | | $ | $ cts. |
| 1895 | 275 | 5,006 | 18 20 | 1903 | 1,337 | 18,811 | 14 07 |
| 1896 | 918 | 10,132 | 11 04 | 1904 | 1,986 | 29,753 | 14 98 |
| 1897 | 52 | 719 | 13 83 | 1905 | 3,350 | 32,578 | 13 86 |
| 1898 | 367 | 2,337 | 6 37 | 1906 | 4,104 | 46,008 | 11 21 |
| 1899 | 1,583 | 23,648 | 14 94 | 1907 (9 mos.) | 2,182 | 23,256 | 10 66 |
| 1900 | 2,175 | 35,644 | 16 39 | 1908 | 5,310 | 61,346 | 11 49 |
| 1901 | 901 | 10,414 | 11 57 | 1909 | .... | 101,187 | † |
| 1902 | 1,030 | 16,788 | 16 30 | 1910 | ..... | 138,763 | |
| | | | | 1911 | 10,836 | 130,861 | 12 08 |

* Duty 20 per cent.

† The imports during July, 1908, under the general tariff, are reported as 6,581 M., value $7,317, an apparent error. There appears also to be an error in the entries for July, August, and September of the same year. Similar errors were apparently made in the figures for the fiscal year 1910 and the total number has, therefore, been omitted for these years. The actual value of the imported brick varies from $10 to $12 per M.

*Fireclay and Fireclay Products.*—There are a number of clays from different localities that have been used in the manufacture of refractory brick or firebrick, and for furnace linings, etc., which have been usually termed fireclays. These include clays found with the coal measures at Westville, Nova Scotia, and at Comox, Vancouver island; also clays found south of Moosejaw, Saskatchewan, and at Clayburn, near the city of Vancouver, British Columbia. Stove lining and other refractory clay products are made at several places in Ontario and Quebec from imported fireclays.

The total value of the sales of fireclay, firebrick, and fireclay products in 1911 was $89,130, as compared with a valuation of $50,215 in 1910, and $78,132 in 1909.

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

The imports of firebrick during the calendar year 1911 were valued at $814,414, of which $659,602 worth was imported from the United States, and $154,020 from Great Britain. The imports of firebrick in 1910 were valued at $811,927, and included $734,908 from the United States and $76,902 from Great Britain. Fireclay was imported during the calendar year 1911 to the value of $125,199, as compared with a value of $121,293 in 1910, and $86,161 in 1909.

Statistics of the annual production since 1907 of firebrick, refractory clay or fireclay sold as such, and of fireclay products and statistics of the imports of firebrick and fireclay are shown in the following tables:—

## Production of Fireclay and Fireclay Products.

| Year. | Firebrick. | | | Fireclay. | | | Other fireclay products. | Total value. |
|---|---|---|---|---|---|---|---|---|
| | No. sold. | Value. | Per M. | Tons. | Value. | Per Ton. | Value. | |
| | | $ | $ cts. | | $ | $ cts. | $ | $ |
| 1907 | 1,323,179 | 113,322 | 26 21 | ... | ... | ... | 18,000 | 131,322 |
| 1908 | 2,415,871 | 70,120 | 29 16 | 1,984 | 8,121 | 4 09 | 31,752 | 110,302 |
| 1909 | 1,059,250 | 32,712 | 30 92 | 1,105 | 12,390 | 2 81 | 33,000 | 78,132 |
| 1910 | 1,375,400 | 24,312 | 21 31 | 1,425 | 5,863 | 4 11 | 15,000 | 50,215 |
| 1911 | 2,367,937 | 41,122 | 18 63 | 7,532 | 24,128 | 3 20 | 20,880 | 89,130 |

## Imports of Firebrick and Fireclay, 1900-11.

| Fiscal Year. | Fireclay. | Firebrick. | Fiscal Year. | Fireclay. | Firebrick. |
|---|---|---|---|---|---|
| | $ | $ | | $ | $ |
| 1900 | 59,291 | 39,535 | 1906 | 131,150 | 51,892 |
| 1901 | 79,530 | 32,831 | 1907* | 85,044 | 349,185 |
| 1902 | 64,511 | 45,608 | 1908 | 155,873 | 639,347 |
| 1903 | 94,569 | 34,522 | 1909 | 77 116 | 350,457 |
| 1904 | 52,716 | 38,335 | 1910. | 86,151 | 519,454 |
| 1905 | 73,837 | 11,746 | 1911. | 129,728 | 864,465 |

* 9 months ending March.

*Sewerpipe and Drain Tile.*—The total value of the sales of sewerpipe in 1911 was $812,716, as compared with a value of $774,110 in 1910, and a value of $645,722 in 1909. Nearly 50 per cent of the production in 1911 was made in Ontario.

Following is a list of firms reporting production of sewerpipe in 1911:—

Standard Drain Pipe Co., St. Johns, Que., and New Glasgow, N.S.
Ontario Sewerpipe Company, Toronto, Ont.
Dominion Sewer Pipe Company, Toronto, Ont.
Hamilton and Toronto Sewer Pipe Co., Ltd., Hamilton, Ont.
Clayburn Company Ltd., Clayburn, B.C.
B.C. Pottery Company, Victoria, B.C.

The imports of drain pipe and sewerpipe during the calendar year 1911 were valued at $382,929, of which $338,644 worth was imported from the United States, $44,278 from Great Britain, and $7 from other countries.

The production of drain tile as reported to this Branch was not as large in 1911 as in 1910 or 1909. The total sales in 1911 were valued at $239,812, as against $370,008 in 1910, and $408,449 in 1909.

The Ontario Bureau of Mines reports the total number made in that Province during 1911 as 21,461,000, valued at $343,956, or an average of $16.03 per thousand, as compared with 21,028,000, valued at $318,456, or an average of $15.14 per thousand, in 1910. The sales in Ontario in 1911 as reported to the Mines Branch were valued at $360,029, as against a value of $334,402 in 1910.

The imports of unglazed [illegible] are comparatively small, the value during the calendar year 1911 being $5,640 only, as compared with $4,485 in 1910, and $2,785 in 1909.

Statistics of the annual production of sewerpipe and of the imports of drain tile and sewerpipe are shown in the next three tables:—

## Production of Sewerpipe, etc.

| Calendar Year. | Value. | Calendar Year. | Value. | Calendar Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1888 | 266,320 | 1896 | 153,875 | 1904 | 440,894 |
| 1889 | Not available. | 1897 | 164,250 | 1905 | 382,000 |
| 1890 | 348,000 | 1898 | 181,717 | 1906 | 350,045 |
| 1891 | 227,300 | 1899 | 161,546 | 1907 | 667,100 |
| 1892 | 367,660 | 1900 | 231,525 | 1908 | 514,362 |
| 1893 | 350,000 | 1901 | 248,115 | 1909 | 645,722 |
| 1894 | 250,325 | 1902 | 301,995 | 1910 | 774,110 |
| 1895 | 257,045 | 1903 | 317,970 | 1911 | 812,716 |

## Production of Drain Tile in Ontario.

*(As ascertained by the Ontario Bureau of Mines).*

| Year. | No. | Value. | Year. | No. | Value. | Year. | No. | Value. |
|---|---|---|---|---|---|---|---|---|
| | | $ | | | $ | | | $ |
| 1891 | 7,500,000 | 90,000 | 1898 | 22,668,000 | 225,000 | 1905 | 15,000,000 | 220,000 |
| 1892 | 10,000,000 | 100,000 | 1899 | 21,027,400 | 240,246 | 1906 | 17,700,000 | 252,560 |
| 1893 | 17,300,000 | 190,000 | 1900 | 19,544,000 | 209,738 | 1907 | 15,578,000 | 250,122 |
| 1894 | 25,000,000 | 280,000 | 1901 | 21,592,000 | 231,374 | 1908 | 24,800,000 | 338,658 |
| 1895 | 14,330,000 | 157,000 | 1902 | 17,510,000 | 199,000 | 1909 | 27,418,000 | 363,550 |
| 1896 | 13,200,000 | 144,000 | 1903 | 18,200,000 | 227,000 | 1910 | 21,028,000 | 318,456 |
| 1897 | * | * | 1904 | 16,000,000 | 210,000 | 1911 | 21,461,000 | 343,956 |

* Not stated.

## Imports of Drain Tile and Sewerpipe.

| Fiscal Year. | Drain tile (*a*). | Sewerpipe (*b*). | Fiscal Year. | Drain tile (*a*). | Sewerpipe (*b*). |
|---|---|---|---|---|---|
| | $ | $ | | $ | $ |
| 1880 | | | 1896 | 339 | 18,957 |
| 1881 | | 33,796 | 1897 | 416 | 33,870 |
| 1882 | | 37,768 | 1898 | 157 | 29,454 |
| 1883 | | 70,061 | 1899 | 1,817 | 32,071 |
| 1884 | | 70,699 | 1900 | 1,383 | 37,766 |
| 1885 | 5,585 | 66,470 | 1901 | 1,264 | 54,819 |
| 1886 | 2,911 | 56,678 | 1902 | 269 | 55,261 |
| 1887 | 1,905 | 56,048 | 1903 | 252 | 57,100 |
| 1888 | 2,183 | 69,020 | 1904 | 1,637 | 53,958 |
| 1889 | 4,290 | 96,967 | 1905 | 1,229 | 101,166 |
| 1890 | 2,346 | 80,869 | 1906 | 4,727 | 131,353 |
| 1894 | 3,780 | 73,654 | 1907 (9 mos.) | 12,106 | 93,458 |
| 1892 | 673 | 86,522 | 1908 | 2,080 | 125,747 |
| 1893 | 473 | 59,064 | 1909 | 2,394 | 106,399 |
| 1894 | 110 | 38,891 | 1910 | 2,739 | 196,002 |
| 1895 | 53 | 24,572 | 1911 | 4,378 | 174,653 |
| | 695 | 20,358 | | | |

(*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, jardinieres, crocks, jars, churns, etc. A number of potters make a higher grade product of stoneware, but the majority of these use imported clays. Sanitaryware is made at St. Johns, Que., and other points; but the raw material, including clays and feldspar, is nearly all imported.

The total value of the production of pottery and clay sanitaryware in 1911, according to returns received, was $439,264, of which it is estimated that a value of $336,771 is attributable to imported clays. The value of the production reported in 1910 was $250,924, and in 1909, $285,285. Annual statistics of production are shown herewith.

## Annual Production of Pottery.

| Calendar Year. | Value. | Calendar Year. | Value. | Calendar Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1888 | 27,750 | 1896 | 163,427 | 1904 | 140,000 |
| 1889 | Not available. | 1897 | 129,629 | 1905 | 120,000 |
| 1890 | 195,242 | 1898 | 214,675 | 1906 | 150,000 |
| 1891 | 258,841 | 1899 | 185,000 | 1907 | 253,809 |
| 1892 | 265,811 | 1900 | 200,000 | 1908 | 200,541 |
| 1893 | 213,186 | 1901 | 200,000 | 1909 | 285,285 |
| 1894 | 162,144 | 1902 | 200,000 | 1910 | 250,924 |
| 1895 | 151,588 | 1903 | 200,000 | 1911 | 102,493 |

Details of the imports of earthenware and chinaware, showing the values imported and the countries of origin, have already been given in the general table of imports, pages 21 and 22.

The total imports in 1911 were valued at $2,516,536, as compared with a value of $2,283,116 in 1910. These imports are subdivided into eight classes and in 1911 include: brown or coloured earthenware, etc., $52,100; C.C. or cream coloured ware, decorated, printed, or sponged, etc., $184,291; demijohns, churns, or crocks, $4,933; tableware of china, porcelain, white granite, etc., $1,718,582; clay and porcelain ware, N.O.P., $62,025; tiles or blocks of earthenware or stone prepared for mosaic flooring, $123,203; earthenware tiles, N.O.P., $154,351; manufactures of earthenware, N.O.P., $217,051.

Great Britain is the principal source of the imports of this class of products, but quite large supplies are also obtained from the United States, Germany, France, Austria-Hungary, Japan, Belgium, and other countries.

**Imports of Earthenware and Chinaware.**

| Fiscal Year. | Value. | Fiscal Year. | Value. | Fiscal Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1880 | 322,333 | 1891 | 634,907 | 1902 | 1,275,033 |
| 1881 | 439,020 | 1892 | 748,810 | 1903 | 1,406,610 |
| 1882 | 646,734 | 1893 | 709,737 | 1904 | 1,611,356 |
| 1883 | 657,886 | 1894 | 695,514 | 1905 | 1,636,214 |
| 1884 | 544,586 | 1895 | 547,935 | 1906 | 1,692,359 |
| 1885 | 511,853 | 1896 | 575,493 | 1907 (9 mos.) | 1,422,880 |
| 1886 | 593,269 | 1897 | 595,822 | 1908 | 2,190,784 |
| 1887 | 750,691 | 1898 | 675,874 | 1909 | 1,716,887 |
| 1888 | 697,082 | 1899 | 916,727 | 1910 | 1,859,302 |
| 1889 | 697,949 | 1900 | 959,526 | 1911 | 2,398,416 |
| 1890 | 695,266 | 1901 | 1,114,077 | | |

*Kaolin.*—Although there has as yet been no actual commercial production of china-clay or kaolin in Canada, the development of kaolin deposits in the township of Amherst, Ottawa county, and the construction of a washing or refining plant at St. Remi d'Amherst, are worthy of note.

The present operators are the Canadian China Clay Co., incorporated at Ottawa, February 3, 1912, with a capital of $250,000; head office, 151 St. James street, Montreal. The property is located on parts of lots 4, 5, 6, 7, and 8 of range VI south, township of Amherst, county of Ottawa, Quebec.

Mr. John C. Broderick, St. Remi d'Amherst, is mine manager, and Mr. Jas. G. Ross, B.Sc., consulting engineer.

The plant[1] for refining the clay is situated 2 miles from St. Remi d'Amherst and 7 miles from Huberdeau station, the terminus of the Canadian Northern Quebec railway, 94 miles northwest of Montreal.

Development work was begun by the present operators in June, 1911, and the washing plant completed in April of 1912.

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

The clay is mined by digging, no drilling or blasting being necessary, trammed 600 feet to the plant, washed free from grit and allowed to settle. After the filter presses have extracted the surplus moisture, it is dried in the open air in stacks. Dry kilns are being built for drying in the winter and wet seasons. After drying it will be pulverized and bagged for shipment. It is expected that an immediate market will be found in the demand of the Canadian paper mills.

The imports of china-clay, ground and unground, into Canada during the twelve months ending December 31, 1911, were valued at $125,768, as against a value of $142,125 in 1910, and $100,066 in 1909, thus indicating to some extent at least the present actual demand for this product. The imports of earthenware and chinaware, however, valued at $2,516,536 in 1911, and composed chiefly of tableware of china, porcelain, etc., show the possibilities in the development of industries utilizing china-clays.

Kaolin or china-clay is also in considerable demand in the United States, the imports into that country in 1910 being valued at $1,593,472.

The kaolin deposits of Amherst were first brought to the attention of the Department in 1894, when samples were submitted to the Geological Survey Museum by Mr. R. Lanigan, of Calumet, Que. In 1896, samples were sent to porcelain works at Trenton, N.J., and were very favourably reported upon, but no serious attempt to develop the property was made until the past season.

## LIME.

The production of lime in Canada in 1911, according to returns received from the producers, was 7,533,525 bushels, this being the amount sold or used (equivalent to about 263,673 tons), and valued at $1,517,599, or an average of 20 cents per bushel, or $5.75 per ton.

The production in 1910 was reported as 5,848,146 bushels (204,685 tons), valued at $1,137,079, an average of 19 cents per bushel, thus showing an increased production in 1911 of 1,685,379 bushels, or 22 per cent.

Returns were received from seventy-five active firms in 1911, as compared with seventy firms in 1910. The average number of men employed was 1,056, and wages paid, $523,518, during the past year, as against 976 men employed and $466,876 paid in wages in 1910. Statistics of labour and wages should be used with discrimination, however, as many firms producing lime are also engaged in quarrying stone for purposes other than lime making, and are unable to make separate reports as to labour employed. This is particularly evident in the record for Nova Scotia and New Brunswick, since for the first mentioned the record includes only the labour employed at the kilns, while for the latter the quarry costs are also included.

The average price per bushel varied from a minimum of 16 cents in Ontario to a maximum of 34 cents in British Columbia.

Hydrated lime was produced by three firms only, the sales being 5,023 tons.

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

## Lime Production by Provinces, 1911.

| Province. | No. of active firms reporting. | Men employed. | Wages paid. | Sales. | | | |
|---|---|---|---|---|---|---|---|
| | | | | Bushels. | Value. | Average per bushel. | Per cent of total. |
| | | | $ | | $ | cts. | % |
| P. E. Island* | 3 | 8 | 852 | 20,250 | 6,765 | 33 | 0·44 |
| Nova Scotia | 1 | 10 | 3,964 | 618,950 | 123,790 | 20 | 8·16 |
| New Brunswick | 5 | 109 | 41,378 | 613,728 | 132,897 | 22 | 8·76 |
| Quebec | 22 | 307 | 139,466 | 1,428,392 | 356,453 | 25 | 23·49 |
| Ontario | 31 | 423 | 205,618 | 3,360,265 | 538,902 | 16 | 35·51 |
| Manitoba | 5 | 89 | 44,379 | 706,888 | 140,629 | 20 | 9·27 |
| Alberta | 4 | 33 | 33,960 | 431,038 | 100,407 | 23 | 6·61 |
| British Columbia | 4 | 86 | 53,901 | 351,014 | 117,756 | 34 | 7·76 |
| Total | 75 | 1,056 | 523,518 | 7,533,525 | 1,517,599 | 20 | 100·00 |

* Production in previous years included in Nova Scotia figures.

## Lime Production by Provinces, 1910.

| Province. | No. of active firms reporting. | Men employed. | Wages paid. | Sales. | | | |
|---|---|---|---|---|---|---|---|
| | | | | Bushels. | Value. | Average per bushel. | Per cent of total. |
| | | | $ | | $ | cts. | % |
| Nova Scotia | 4 | 45 | 10,504 | 55,750 | 13,490 | 24 | 1·2 |
| New Brunswick | 6 | 109 | 42,524 | 470,050 | 105,593 | 22 | 9·3 |
| Quebec | 17 | 223 | 107,275 | 1,227,555 | 299,126 | 23 | 26·3 |
| Ontario | 31 | 410 | 180,557 | 2,988,020 | 476,137 | 16 | 41·9 |
| Manitoba | | 95 | 48,707 | 606,679 | 100,808 | 17 | 8·8 |
| Alberta | 3 | 29 | 21,700 | 303,214 | 69,268 | 23 | 6·1 |
| British Columbia | 4 | 65 | 55,608 | 196,878 | 72,657 | 37 | 6·4 |
| Total | 70 | 976 | 466,876 | 5,848,146 | 1,137,079 | 19 | 100·0 |

## Lime Production by Provinces, 1908 and 1909.

| Province. | 1908. | | | | 1909. | | | |
|---|---|---|---|---|---|---|---|---|
| | Bushels. | Value. | Average per bushel. | Per cent. | Bushels. | Value. | Average per bushel. | Per cent. |
| | | $ | cts. | % | | $ | cts. | % |
| Nova Scotia | 51,068 | 16,102 | 32 | 2·3 | 57,730 | 16,729 | 29 | 1·5 |
| New Brunswick | 155,748 | 34,262 | 22 | 4·8 | 697,466 | 154,151 | 22 | 13·6 |
| Quebec | 857,700 | 201,357 | 23 | 28·2 | 1,281,827 | 315,633 | 25 | 27·9 |
| Ontario | 2,087,731 | 358,507 | 17 | 50·3 | 2,619,553 | 434,147 | 17 | 38·3 |
| Manitoba | 138,786 | 24,192 | 17 | 3·4 | 423,954 | 69,670 | 16 | 6·2 |
| Alberta | 135,000 | 34,500 | 26 | 4·8 | 281,125 | 67,350 | 24 | 5·9 |
| British Columbia | 176,435 | 44,027 | 25 | 6·2 | 231,269 | 75,076 | 32 | 6·6 |
| | 3,601,468 | 712,947 | 20 | 100·0 | 5,592,924 | 1,132,756 | 20 | 100·0 |

*Exports and Imports.*—The value of the lime exported during the calendar year 1911 was $39,536, the destination of shipments being mainly the United States. The quantity is not reported, but at the average price of lime in Canada (20 cents a bushel) the quantity would be about 692 tons.

The imports of lime during the same period were 228,538 barrels (22,853 tons), valued at $161,985: an average of 70 cents per barrel, or $7.08 per ton, and were derived chiefly from the United States.

Annual statistics of exports and imports are given in the next two tables:—

## Exports of Lime.

| Calendar Year. | Value. | Calendar Year. | Value. | Calendar Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1891 | 119,853 | 1898 | 49,594 | 1905 | 85,723 |
| 1892 | 121,535 | 1899 | 73,565 | 1906 | 57,072 |
| 1893 | 86,623 | 1900 | 80,852 | 1907 | 55,903 |
| 1894 | 83,670 | 1901 | 99,194 | 1908 | 43,316 |
| 1895 | 71,697 | 1902 | 116,009 | 1909 | 48,821 |
| 1896 | 70,820 | 1903 | 131,412 | 1910 | 44,762 |
| 1897 | 53,177 | 1904 | 73,838 | 1911 | 39,536 |

## Imports of Lime.

| Fiscal Year. | Barrels. | Value. | Fiscal Year. | Barrels. | Value. |
|---|---|---|---|---|---|
| | | $ | | | $ |
| 1880 | 6,100 | 6,013 | 1896 | 10,239 | 7,331 |
| 1881 | 5,796 | 4,177 | 1897 | 16,108 | 1 ,529 |
| 1882 | 5,064 | 5,365 | 1898 | 12,850 | 9,002 |
| 1883 | 7,623 | 9,224 | 1899 | 15,720 | 11,124 |
| 1884 | 10,804 | 11,200 | 1900 | 12,865 | 11,211 |
| 1885 | 12,072 | 11,503 | 1901 | 19,657 | 14,534 |
| 1886 | 11,021 | 9,347 | 1902 | 24,692 | 17,584 |
| 1887 | 10,835 | 8,524 | 1903 | 31,108 | 22,470 |
| 1888 | 10,142 | 7,537 | 1904 | 54,359 | 39,639 |
| 1889 | 13,079 | 9,363 | 1905 | 98,676 | 71,588 |
| 1890 | 8,149 | 5,360 | 1906 | 134,334 | 93,630 |
| 1891 | 6,259 | 4,273 | 1907 (9 mos.) | 129,379 | 99,611 |
| 1892 | 6,132 | 4,241 | 1908 | 88,919 | 67,573 |
| 1893 | 6,879 | 4,917 | 1909 | 153,934 | 106,263 |
| 1894 | 6,766 | 4,907 | 1910 | 191,53. | 116,964 |
| 1895 | 12,008 | 5,743 | 1911 Duty 20 per cent | 194,869 | 142,338 |

In reviewing the production of lime by provinces it will be observed that the Provinces of Ontario and Quebec, being the chief centres of population, are the largest producers, the former contributing in 1911 over 35 per cent of the total quantity, and the latter 23 per cent: the production west of the great lakes has, however, been rapidly increasing, these provinces accounting for nearly 24 per cent of the total in 1911, as against 14 per cent in 1908.

Statistics of the annual production of lime in Ontario as published by the Ontario Bureau of Mines are available since 1896, and are shown in the next table. For the years previous to 1910, these returns are slightly higher than those obtained by the Mines Branch.

## Annual Production of Lime in Ontario.

*(As ascertained by the Ontario Bureau of Mines.)*

| Calendar Year. | Bushels. | Value. | Cents per bushel. | Calendar Year. | Bushels. | Value. | Cents per bushel. |
|---|---|---|---|---|---|---|---|
| | | $ | | | | $ | |
| 1896 | 1,800,000 | 222,000 | 12 | 1904 | 2,600,000 | 406,800 | 16 |
| 1897 | | | | 1905 | 3,100,000 | 424,700 | 14 |
| 1898 | 2,020,000 | 308,000 | 12 | 1906 | 2,885,000 | 496,785 | 17 |
| 1899 | 4,342,500 | 535,000 | 12 | 1907 | 2,650,000 | 448,700 | 17 |
| 1900 | 3,893,000 | 544,000 | 14 | 1908 | 2,442,331 | 448,596 | 18 |
| 1901 | 4,100,000 | 550,000 | 13 | 1909 | 2,633,500 | 470,858 | 18 |
| 1902 | 4,300,000 | 617,000 | 14 | 1910 | 2,889,235 | 474,531 | 16 |
| 1903 | 3,400,000 | 520,000 | 15 | *1911 | 2,335,085 | 394,551 | 17 |

* Provisional.

## SAND-LIME BRICK.

The manufacture of sand-lime or silica brick, although of comparatively recent origin in Canada, has developed with considerable rapidity during the past five years, for which statistics have been collected.

Returns received from sixteen producing firms showed total sales in 1911 of 51,535,243 brick, valued at $442,427, or an average of $8.58 per thousand, as compared with a production of 44,593,541 brick, valued at $371,857, or an average of $8.34 per thousand, by thirteen firms in 1910.

The total sales by nine firms in 1909 were 27,052,864 brick, valued at $201,650, or an average of $7.45 per thousand.

The number of men employed in 1911 was 337, and wages paid, $166,902.

The number of completed plants at the end of 1911 was seventeen, of which eight were in Ontario, four in Manitoba, two in Saskatchewan, one in Alberta, and two in British Columbia. Two additional plants were under construction.

Annual statistics of production since 1907 are shown below:—

**Annual Production of Sand-Lime Brick.**

| Calendar Year. | Number sold. | Value. | Per M. |
|---|---|---|---|
| | | $ | $ cts. |
| 1907 | 16,492,971 | 167,795 | 10 17 |
| 1908 | 17,288,260 | 152,856 | 8 84 |
| 1909 | 27,052,864 | 201,650 | 7 45 |
| 1910 | 44,593,541 | 371,857 | 8 34 |
| 1911 | 51,535,243 | 442,427 | 8 58 |

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

Completed plants—

The Schultz Bros. Co., Ltd., Brantford, Ont.
The Jno. Mann Brick Co., Ltd., Brantford, Ont.
The Silicate Brick Co. of Ottawa, Ltd., Ottawa, Ont.
The Peterboro Sandstone Brick Co., Ltd., Peterborough, Ont.
Toronto Brick Co., Ltd., 64 Wellington St. W., Toronto, Ont.
Canada Sand Lime Pressed Brick Co., 1161 Dundas St., Toronto, Ont.
Harbour Brick Co., Ltd., 50 Front St. E., Toronto, Ont.
The Port Arthur Sand Lime Brick Co., Port Arthur, Ont.
The Brandon Sandstone Co., Ltd., Brandon, Man.
Manitoba Pressed Brick Co., Ltd., 215 McIntyre Block, Winnipeg, Man.
Winnipeg Sandstone Brick Co., 410 Builders' Exchange, Winnipeg, Man.

The Alsip Sandstone Brick Co., Ltd., 502 Builders' Exchange, Winnipeg, Man.

Moosejaw Pressed Brick Co., Moosejaw, Sask.

Interocean Pressed Brick Co., Regina, Sask.

Calgary Siliente Pressed Brick Co., Calgary, Alta.

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

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

Plants under construction—

The Wilcox Lake Brick Co., 79 Adelaide St. E., Toronto, Ont

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

## SAND AND GRAVEL.

No attempt has yet been made by this Department to obtain complete statistics of the production of building sand or gravel, but the record of exports and imports as collected by the Department of Customs has been published from year to year and is shown in tables below.

The business of obtaining and supplying sand and gravel is, however, becoming well organized in many districts. In the Province of Quebec, coarse river sand is being taken from the beds of certain streams under mining license from the Quebec Government, the sand being shipped to Montreal and other large centres, where it finds a ready market for building purposes. The Superintendent of Mines of Quebec reports a production from such sources in 1911 valued at $62,000. This will, of course, be only a small fraction of the value of such material produced in that Province during the year.

The Provincial Mineralogist for British Columbia states that near Vancouver and Victoria, companies have been formed for supplying washed sand and gravel properly screened to size, some of these companies having installed a system of mining the gravel by hydraulic streams and carrying the product to the screens by the water used. The value of the sand and gravel produced for use in these two cities amounted during the past year to over $360,000.

### Annual Exports of Sand and Gravel.

| Calendar Year. | Tons. | Value. | Calendar Year. | Tons. | Value. |
|---|---|---|---|---|---|
| | | $ | | | $ |
| 1893 | 329,116 | 121,795 | 1903 | 355,792 | 124,006 |
| 1894 | 324,656 | 86,940 | 1904 | 330,809 | 129,803 |
| 1895 | 277,162 | 118,359 | 1905 | 306,935 | 152,805 |
| 1896 | 224,769 | 80,110 | 1906 | 336,550 | 139,712 |
| 1897 | 152,963 | 76,729 | 1907 | 298,095 | 119,853 |
| 1898 | 165,954 | 90,498 | 1908 | 298,954 | 161,387 |
| 1899 | 242,450 | 101,640 | 1909 | 481,584 | 256,166 |
| 1900 | 197,558 | 101,666 | 1910 | 624,824 | 197,971 |
| 1901 | 197,302 | 117,465 | 1911 | 573,494 | 108,110 |
| 1902 | 159,793 | 119,120 | | | |

### Annual Imports of Sand and Gravel.

| Fiscal Year. | Tons. | Value. | Fiscal Year. | Tons. | Value. |
|---|---|---|---|---|---|
| | | $ | | | $ |
| 1893 | 26,065 | 31,739 | 1903 | 91,518 | 95,647 |
| 1894 | 41,573 | 53,506 | 1904 | 110,634 | 107,547 |
| 1895 | 19,609 | 24,779 | 1905 | 85,339 | 92,722 |
| 1896 | 18,953 | 24,604 | 1906 | 116,500 | 173,727 |
| 1897 | 21,308 | 25,222 | 1907 (9 mos.) | 171,700 | 177,412 |
| 1898 | 32,148 | 43,287 | 1908 | 266,704 | 223,043 |
| 1899 | 30,288 | 42,209 | 1909 | 132,158 | 136,011 |
| 1900 | 35,713 | 41,280 | 1910 | 151,982 | 155,012 |
| 1901 | 35,749 | 42,891 | 1911 | 241,375 | 246,613 |
| 1902 | 47,381 | 58,668 | | | |

## SLATE.

The production of slate in 1911 is reported as 1,833 squares, valued at $8,248, which is a little less than one-half the production of 1910, which was 3,959 squares, valued at $18,492.

The output was as usual obtained from the New Rockland quarries, in Melbourne township, Richmond county, Quebec, operated under lease by Messrs. Frazer and Davies. The same firm also opened up a quarry during the year at Botsford, Temiscouata county.

In the Province of Ontario some development work was undertaken on a slate property near New Liskeard, in Hudson township, lot 10, concession V, this property being owned by the Canada Slate Co., Ltd., of New Liskeard. No shipments were made.

Statistics of annual production are shown herewith:—

### Annual Production of Slate.

| Calendar Year. | Tons. | Value. | Calendar Year. | Tons. | Value. |
|---|---|---|---|---|---|
| | | $ | | | $ |
| 1886 | 5,345 | 64,675 | 1899 | | 33,406 |
| 1887 | 7,357 | 89,000 | 1900 | | 12,100 |
| 1888 | 5,314 | 90,689 | 1901 | | 9,980 |
| 1889 | 6,935 | 119,160 | 1902 | | 19,200 |
| 1890 | 6,368 | 100,250 | 1903 | 5,510 | 22,040 |
| 1891 | 5,000 | 65,000 | 1904 | 5,277 | 23,247 |
| 1892 | 5,180 | 69,070 | 1905 | | 21,568 |
| 1893 | 7,112 | 90,825 | 1906 | | 24,446 |
| 1894 | | 75,550 | 1907 | 4,335 | 20,056 |
| 1895 | | 58,900 | 1908 | 2,950 | 13,496 |
| 1896 | | 53,370 | 1909 | 4,000 | 19,000 |
| 1897 | | 42,800 | 1910 | 3,959 | 18,492 |
| 1898 | | 40,791 | 1911 | 1,833 | 8,248 |

No exports of slate have been reported since 1909.

The imports of slate have ranged in value during the past six years from $100,000 to $170,000 per annum. The total value of the imports during the calendar year 1911 was $169,685, comprising: roofing slate, $83,075; school writing slate, $35,049; slate pencils, $6,036; other slates and manufactures of slate, $45,525. The total value of the imports during the calendar year 1910 was $142,285. The imports of roofing slate, school writing slate, and manufactures of slate N.O.P. are chiefly from the United States. Some roofing slate is also imported from Great Britain, while slate pencils come chiefly from Germany and the United States.

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

**Imports of Slate during the Years 1909, 1910, and 1911.**

| Slate and manufactures of | Calendar Year 1909. | Calendar Year 1910. | Calendar Year 1911. |
|---|---|---|---|
| | $ | $ | $ |
| Roofing slate | 71,914 | 67,063 | 83,075 |
| School writing slate | 24,085 | 31,397 | 35,049 |
| Slate pencils | 6,154 | 6,948 | 6,036 |
| Slate of all kinds and manufactures of | 23,068 | 36,877 | 45,525 |
| | 135,221 | 142,285 | 169,685 |

**Exports of Slate.**

| Calendar Year. | Tons. | Value. | Calendar Year. | Tons. | Value. |
|---|---|---|---|---|---|
| | | $ | | | $ |
| 1884 | 539 | 6,845 | 1893 | 178 | 3,168 |
| 1885 | 346 | 5,274 | 1894 | 187 | 3,610 |
| 1886 | 34 | 495 | 1895 | 36 | 574 |
| 1887 | 27 | 373 | 1896 | 301 | 8,913 |
| 1888 | 22 | 475 | 1897 to 1907 | Nil. | Nil. |
| 1889 | 26 | 3,303 | 1908 | | 2,539 |
| 1890 | 12 | 153 | 1909 | 134 | 612 |
| 1891 | 15 | 195 | 1910 | Nil. | Nil. |
| 1892 | 87 | 2,038 | 1911 | Nil. | Nil. |

**Imports of Slate.**

| Fiscal Year. | Value. | Fiscal Year. | Value. | Fiscal Year. | Value. |
|---|---|---|---|---|---|
| | $ | | $ | | $ |
| 1880 | 21,431 | 1891 | 46,104 | 1902 | 72,601 |
| 1881 | 22,184 | 1892 | 59,441 | 1903 | 84,437 |
| 1882 | 24,543 | 1893 | 51,179 | 1904 | 86,057 |
| 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 mons.) | 95,520 |
| 1886 | 27,852 | 1897 | 21,615 | 1908 | 131,069 |
| 1887 | 27,845 | 1898 | 24,907 | 1909 | 124,065 |
| 1888 | 23,151 | 1899 | 33,100 | 1910 | 136,401 |
| 1889 | 41,370 | 1900 | 53,707 | 1911 | 147,172 |
| 1890 | 22,871 | 1901 | 72,187 | | |

# STONE.

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

The kinds of stone quarried have been classed as granite, limestone, sandstone, and marble.

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

It is impossible, except in a few cases, to show the quantity of stone production, so that the value only of the shipment can be given.

The total value of the production of stone in 1911, according to returns received, was $4,328,727, as compared with a value of $3,650,019 in 1910, showing an increased production of $678,738 or 18·6 per cent.

The number of active firms reporting in 1911 was 191, the total number of men employed 5,437, and the total wages paid, $2,500,005. In 1910 the number of active firms reporting was 166, the number of men employed 5,105, and wages paid, $2,225,791.

Of the total value of the 1911 production, limestone contributed $2,594,926, or nearly 60 per cent; granite, $1,119,865, or nearly 26 per cent; sand-stone, $451,183, or 10·4 per cent; and marble, $162,783, or 3·8 per cent.

Stone was used for building purposes to the value of $1,368,693, or 31·6 per cent of the total; monumental and ornamental stone, a value of $303,050, or 7 per cent; curb, paving, and flagstone, $233,723, or 5·4 per cent; rubble, $160,803, or 10·6 per cent; crushed stone, $1,509,498, or 34·9 per cent; and furnace flux, 871,224 tons, valued at $452,990, or 10·5 per cent.

By provinces, Quebec again shows the largest output, having a value of $1,894,892, or 43·8 per cent of the total, being made up of limestone to the value of $1,296,577, granite valued at $462,678, marble, $135,187, and sandstone, $450. Ontario takes second place with a production of $892,305, or 20·6 per cent of the total, of which limestone is credited with $680,461; granite, $131,816; sandstone, $54,032, and marble, $25,996. British Columbia ranked third in order of importance, with a total of $698,811, including granite, $160,851;

sandstone, $179,580; limestone, $56,780, and marble, $1,000. The production in Manitoba was valued at $318,050, made up of limestone, $315,782, and granite, $2,268. The Nova Scotia production was valued at $292,914, comprising limestone, $245,216; granite, $24,258, and sandstone, $23,440. The Alberta production was reported as $158,344, all sandstone. New Brunswick is credited with $73,441, made up chiefly of sandstone and granite.

## Production of Stone by Provinces, 1911.

| Province. | Granite. | Limestone. | Marble. | Sandstone. | Total. | % |
|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | |
| Nova Scotia | 24,258 | 245,216 | | 23,440 | 292,914 | 6·8 |
| New Brunswick | 37,991 | 110 | | 35,337 | 73,441 | 1·7 |
| Quebec | 462,678 | 1,290,577 | 135,187 | 450 | 1,891,892 | 43·8 |
| Ontario | 131,816 | 680,461 | 2,596 | 54,032 | 862,305 | 20·6 |
| Manitoba | 2,268 | 315,782 | | | 318,050 | 7·3 |
| Alberta | | | | 158,344 | 158,344 | 3·7 |
| British Columbia | 460,851 | 56,780 | 1,000 | 179,580 | 698,811 | 16·1 |
| Total | 1,119,865 | 2,591,926 | 162,783 | 451,183 | 4,328,757 | |
| Per cent | 25·9 | 59·9 | 3·8 | 10·4 | | 100·0 |

## Production of Stone by Provinces, 1910.

| Province. | Granite. | Limestone. | Marble. | Sandstone. | Total. | % |
|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | |
| Nova Scotia | 18,291 | 192,919 | | 16,425 | 227,635 | 6·2 |
| New Brunswick | 6,880 | 315 | | 51,793 | 58,988 | 1·6 |
| Quebec | 356,257 | 962,429 | 151,000 | | 1,469,686 | 40·2 |
| Ontario | 109,078 | 722,763 | 4,100 | 62,247 | 898,788 | 24·6 |
| Manitoba | 3,643 | 328,029 | | | 331,672 | 9·1 |
| Alberta | | | | 240,858 | 240,858 | 6·6 |
| British Columbia | 244,767 | 43,121 | 3,679 | 130,825 | 422,392 | 11·6 |
| Total | 739,516 | 2,249,576 | 158,779 | 502,148 | 3,650,019 | |
| Per cent | 20·3 | 61·7 | 4·3 | 13·7 | | 100·0 |

## Value of Stone Sold for Various Purposes in 1911.

| Kind. | Building. | Ornamental and monumental. | Paving and curbstone. | Rubble. | Crushed. | Furnace flux. | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ |
| Granite | 321,011 | 129,017 | 172,246 | 51,962 | 442,639 | | 1,119,865 |
| Limestone | 625,402 | 38,746 | 36,902 | 374,327 | 1,066,559 | 452,990 | 2,591,926 |
| Marble | 27,596 | 135,187 | | | | | 162,783 |
| Sandstone | 391,684 | 100 | 24,575 | 34,524 | 300 | | 451,183 |
| Total | 1,368,693 | 353,050 | 233,723 | 460,803 | 1,509,498 | 452,990 | 4,328,757 |

## Value of Stone Sold for Various Purposes in 1910.

| Kind. | Building. | Ornamental and monumental. | Paving and curbstone. | Rubble. | Crushed. | Furnace flux. | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ |
| Granite | 268,197 | 74,576 | 79,501 | 46,639 | 270,603 | ..... | 739,516 |
| Limestone | 623,149 | 72,580 | 125,637 | 295,168 | 701,556 | 431,486 | 2,249,576 |
| Marble | 158,700 | ..... | ..... | 15 | ..... | 64 | 158,779 |
| Sandstone | 453,955 | 265 | 31,530 | 10,178 | 3,220 | ..... | 502,148 |
| Total | 1,504,001 | 147,421 | 239,668 | 352,000 | 975,379 | 431,550 | 3,650,019 |

## Production of Stone by Provinces and for Purposes used, 1911.

| Province. | Building. | Ornamental and monumental. | Paving and curbstone. | Rubble. | Crushed. | Furnace flux. | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ |
| Nova Scotia | 26,710 | 17,148 | 1,400 | 3,717 | 2,422 | 211,517 | 292,914 |
| New Brunswick | 45,348 | 22,986 | ..... | 5,677 | ..... | 30 | 73,441 |
| Quebec | 599,758 | 242,269 | 151,242 | 299,243 | 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 | ..... | ..... | 158,344 |
| 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 |

## Production of Stone by Provinces and for Purposes used, 1910.

| Province | Building | Ornamental and monumental. | Paving and curbstone. | Rubble. | Crushed. | Furnace flux. | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ | $ |
| Nova Scotia | 18,610 | 11,156 | 4,600 | ..... | 350 | 192,919 | 227,635 |
| New Brunswick | 49,017 | 6,880 | ..... | 2,761 | 200 | 100 | 58,988 |
| Quebec | 707,890 | 116,456 | 165,730 | 143,930 | 329,627 | 6,053 | 1,469,686 |
| Ontario | 83,602 | 9,929 | 65,588 | 135,550 | 414,826 | 189,293 | 898,788 |
| Manitoba | 215,378 | ..... | ..... | 53,302 | 62,992 | ..... | 331,672 |
| Alberta | 234,487 | ..... | ..... | 6,371 | ..... | ..... | 240,858 |
| British Columbia | 194,987 | 3,000 | 3,750 | 10,086 | 167,384 | 43,185 | 422,392 |
| Total | 1,504,001 | 147,421 | 239,668 | 352,000 | 975,379 | 431,550 | 3,650,019 |
| Per cent | 41·2 | 4·0 | 6·6 | 9·7 | 26·7 | 11·8 | 100·0 |

*Exports and Imports.*—The exports of stone from Canada in 1911 were valued at $28,335, as against $27,571 in 1910 and $57,685 in 1909. The principal item in the 1911 export was building stone, unwrought, of which the exports were 83,767 tons, valued at $25,103. The exports of dressed stone in 1911, including both ornamental and building stone, were valued at $1,436 only.

The exports of several classes of stone during the past three years, as shown by the Customs record, was as follows:—

**Exports of Stone during the Calendar Years 1909, 1910, 1911.**

| | 1909. | | 1910. | | 1911. | |
|---|---|---|---|---|---|---|
| | Tons. | Value. | Tons. | Value. | Tons. | Value. |
| | | $ | | $ | | $ |
| Stone— | | | | | | |
| Ornamental, granite, marble, etc., unwrought | 1,027 | 8,606 | 146 | 3,352 | 168 | 1,796 |
| Building, freestone, limestone, etc., unwrought | 26,672 | 15,481 | 63,467 | 18,867 | 83,767 | 25,103 |
| Ornamental, granite, marble, etc., dressed | ... | 33,097 | ... | 5,272 | ... | 980 |
| Building, freestone, limestone, etc., dressed | ... | 501 | ... | 80 | ... | 456 |
| | ... | 57,685 | ... | 27,571 | ... | 28,335 |

The annual exports since 1890 are shown in the following table:—

**Exports of Stone and Marble, Wrought and Unwrought.**

| Calendar Year. | Wrought. | Unwrought. | Calendar Year. | Wrought. | Unwrought. |
|---|---|---|---|---|---|
| | $ | $ | | $ | $ |
| 1890 | 21,725 | 43,611 | 1901 | 5,917 | 157,739 |
| 1891 | 13,398 | 46,162 | 1902 | 8,632 | 124,829 |
| 1892 | 7,698 | 47,424 | 1903 | 7,684 | 46,295 |
| 1893 | 9,102 | 12,532 | 1904 | 4,760 | 17,802 |
| 1894 | 22,576 | 34,130 | 1905 | 3,545 | 13,089 |
| 1895 | 8,587 | 51,616 | 1906 | 23,097 | 4,675 |
| 1896 | 4,934 | 32,897 | 1907 | 4,233 | 3,087 |
| 1897 | 9,415 | 42,034 | 1908 | 15,194 | 36,820 |
| 1898 | 2,526 | 65,370 | 1909 | 32,598 | 24,087 |
| 1899 | 5,092 | 101,931 | 1910 | 5,352 | 22,219 |
| 1900 | 5,933 | 115,711 | 1911 | 1,436 | 26,899 |

The imports of stone are classified as building stone of all kinds, except marble, manufactures of granite and other stone, and marble and its manufactures. The total value of the imports during the calendar year 1911 was $1,140,846, as compared with a value of $845,123 in 1910; showing an increase of $295,723, or about 35 per cent. Of the total imports in 1911, $392,868 in value was classed as building stone, and included 21,356 tons of rough stone,

valued at about $3.98 per ton, and 52,908 tons of dressed stone, valued at about $5.82 per ton. The imports of sawn granite, manufactures of granite, and manufactures of stone N.O.P., were valued at $207,836; paving blocks, $64,676; marble and manufactures of, $384,252. There was also an importation of refuse stone of 226,122 tons, valued at $91,214.

During 1910 the imports of building stone were $311,595; manufactured granite, $192,213; paving blocks, $74,100, and marble, $267,215. The imports during both years were derived chiefly from the United States and Great Britain; the United States supplying building stone, paving blocks, and marble principally, and Great Britain mainly manufactures of granite. Marble is obtained in some quantity also from Italy and other countries. The total value of the imports from the United States in 1911 was $946,624; from Great Britain, $175,169; from Italy, $6,334, and from other countries, $12,719.

The value of the imports from the United States in 1910 was $640,084; from Great Britain, $160,664; from Italy, $31,314, and from other countries, $13,061.

**Total Imports of Stone during the Calendar Years 1910 and 1911.**

| Imports. | 1910. | | 1911. | |
|---|---|---|---|---|
| | Tons. | Value. | Tons. | Value. |
| | | $ | | $ |
| Building stone, rough (1) | 27,658 | 125,531 | 21,356 | 85,084 |
| " " dressed (2) | 33,996 | 186,064 | 52,908 | 307,784 |
| Refuse stone (3) | | | 226,122 | 91,214 |
| Granite, sawn only | 789 | 3,287 | 539 | 4,231 |
| " manufactures of | | 154,798 | | 164,229 |
| Paving blocks | | 74,100 | | 64,676 |
| Manufactures of stone, N.O.P. | | 34,128 | | 39,376 |
| Marble and manufactures of: – | | | | |
| Marble, sawn or sand rubbed, not polished | | 154,153 | | 186,174 |
| " rough, not hammered or chiselled | | 18,368 | | 46,839 |
| " manufactures of, N.O.P. | | 94,694 | | 151,239 |
| | | 845,123 | | 1,140,846 |

(1) Flagstone, granite, rough sandstone, and all building stone not hammered, sawn, or chiselled.
(2) Flagstone and all other building stone, sawn or dressed.
(3) Stone refuse not sawn, hammered, or chiselled, not fit for flagstone, building stone, or paving.

## Imports of Stone, showing Country of Origin, Calendar Year 1911.

| Imports. | Great Britain. | | United States. | | Italy. | Other countries. |
|---|---|---|---|---|---|---|
| | Tons. | Value. | Tons. | Value. | Value. | Value. |
| | | $ | | $ | $ | $ |
| Building stone, rough (1) | 196 | 1,764 | 20,496 | 81,157 | | 2,163 |
| " " dressed (2) | 109 | 419 | 52,659 | 306,694 | | 671 |
| Refuse " | | | 226,122 | 91,214 | | |
| Granite, sawn only | 118 | 911 | 421 | 3,320 | | |
| " manufactures of | | 156,101 | | 8,128 | | |
| Paving blocks | | 43 | | 64,633 | | |
| Manufactures of stone, N.O.P. | | 4,297 | | 32,257 | | 2,822 |
| Marble and manufactures of :— | | | | | | |
| Marble, sawn or sand rubbed, not polished | | 3,825 | | 174,618 | 6,334 | 1,397 |
| Marble, rough, not hammered or chiselled | | | | 45,589 | | 1,250 |
| Marble, manufactures of, N.O.P. | | 7,809 | | 139,014 | | 4,416 |
| | | 175,169 | | 946,624 | 6,334 | 12,719 |

(1) Flagstone, granite, rough sandstone, and all building stone not hammered, sawn, or chiselled
(2) Flagstone; all other building stone, sawn or dressed.

## Imports of Stone, Fiscal Years 1910 and 1911.

| Imports. | 1910. | | 1911. | |
|---|---|---|---|---|
| | Tons. | Value. | Tons. | Value. |
| | | $ | | $ |
| Building stone, rough (1) | 23,928 | 110,997 | 28,001 | 126,386 |
| " " dressed (2) | 36,884 | 184,620 | 36,578 | 206,224 |
| Granite, sawn only | 280 | 2,146 | 773 | 3,213 |
| " manufactures of | | 130,697 | | 159,377 |
| Paving blocks | | 58,247 | | 74,143 |
| Manufactures of stone, N.O.P. | | 32,372 | | 34,861 |
| Marble and manufactures of :— | | | | |
| Marble, sawn or sand rubbed, not polished | | 128,897 | | 174,001 |
| " rough, not hammered or chiselled | | 1,398 | | 25,606 |
| " manufactures of, N.O.P. | | 54,503 | | 107,821 |
| | | 703,877 | | 911,632 |

(1) Flagstone, granite, rough sandstone, and all building stone not hammered, sawn, or chiselled
(2) Flagstone; all other building stone, sawn or dressed.

## Annual Imports of Stone.

| Fiscal Year. | Building Stone. | | Manufactures of granite, etc. | Marble. | Flagstone. | Total value. |
|---|---|---|---|---|---|---|
| | Rough. | Dressed. | | | | |
| | $ | $ | $ | $ | $ | $ |
| 1880 | 32,824 | 3,146 | 29,408 | 63,015 | ..... | 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 | 41,984 | 117,752 | 9,443 | 210,854 |
| 1887 | 47,819 | 6,549 | 41,829 | 104,250 | 10,966 | 211,413 |
| 1888 | 84,263 | 2,110 | 47,487 | 94,681 | 21,077 | 249,618 |
| 1889 | 89,723 | 10,591 | 61,341 | 118,421 | 15,451 | 295,527 |
| 1890 | 126,456 | 5,699 | 84,396 | 99,353 | 48,995 | 364,899 |
| 1891 | 151,119 | 19,771 | 61,051 | 107,661 | 36,348 | 372,950 |
| 1892 | 85,169 | 10,381 | 39,179 | 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 | 81 | 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 | 208,992 |
| 1902 | 69,972 | 29,102 | 72,396 | 130,424 | 1,231 | 303,126 |
| 1903 | 71,202 | 16,664 | 78,629 | 153,481 | Nil | 319,976 |
| 1904 | 59,864 | 33,914 | 141,165 | 181,511 | Nil | 416,454 |
| 1905 | 49,004 | 53,813 | 150,160 | 145,466 | Nil | 398,443 |
| 1906 | 66,994 | 65,134 | 178,435 | 189,589 | Nil | 500,152 |
| 1907* | 58,398 | 78,967 | 136,779 | 176,450 | Nil | 450,594 |
| 1908 | 80,950 | 90,740 | 192,248 | 287,587 | Nil | 651,525 |
| 1909 | 63,984 | 72,961 | 193,949 | 200,928 | Nil | 531,822 |
| 1910 | 110,997 | 184,620 | 223,462 | 184,798 | Nil | 703,877 |
| 1911 | 126,386 | 206,224 | 271,599 | 307,428 | Nil | 911,632 |

* 9 months ending March 1907.

## GRANITE.

The production of granite and trap-rock in 1911, according to returns from forty-seven active firms reporting, was valued at $1,119,865, as compared with a production by thirty-three firms, valued at $739,516, in 1910; showing an increase of $380,349, or 51·4 per cent. There was a particularly large increase in the value of granite used for building purposes and in the production of crushed stone.

Quebec province was again the largest producer, the value of sales in 1911 being $462,678, as compared with $356,257 in 1910. The value of sales in British Columbia in 1911, however, approached very closely to that of Quebec, being $460,851, as against $244,767 in 1910. Ontario produced granite to the value of $131,816 in 1911, as compared with $109,678 in 1910. Both New Brunswick and Nova Scotia showed an increased production, the value of the New Brunswick output being $37,994. Much of the rough stone quarried in New Bruns-

wick, as well as stone imported from Redbeach, Maine, and Mt. Johnston, Que., is worked up into finished monumental and ornamental stone at mills at St. George, the value of the finished product here in 1911 being $86,658.

Statistics of the production by provinces for 1911 and 1910, showing the purposes for which the stone was sold and the annual total production since 1886, are shown in the following tables:—

## Value of Granite Production by Provinces, 1911.

| Province. | Building. | Monumental or ornamental. | Curb, or paving. | Rubble. | Crushed. | Total. |
|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ |
| Nova Scotia | 5,670 | 17,048 | 1,400 | 140 | ... | 24,258 |
| New Brunswick | 15,008 | *22,986 | ... | ... | ... | 37,994 |
| Quebec | 168,759 | 74,687 | 116,256 | ... | 102,976 | 462,678 |
| Ontario | 13,100 | 2,296 | 27,600 | 12,000 | 76,820 | 131,816 |
| Manitoba | ... | ... | ... | ... | 2,268 | 2,268 |
| British Columbia | 121,174 | 12,000 | 26,990 | 39,812 | 260,575 | 460,851 |
| Total | 324,011 | 129,017 | 172,246 | 51,952 | 442,639 | 1,119,865 |

* The value of the "Finished" stone in 1911 was $86,658.

## Value of Granite Production by Provinces, 1910.

| Province. | Building. | Monumental or ornamental. | Curb, or paving. | Rubble. | Crushed. | Total. |
|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ |
| Nova Scotia | 2,000 | 11,691 | 4,600 | ... | ... | 18,291 |
| New Brunswick | ... | *6,880 | ... | ... | ... | 6,880 |
| Quebec | 202,435 | 53,405 | 40,831 | 3,055 | 56,531 | 356,257 |
| Ontario | 1,100 | 200 | 30,320 | 33,513 | 44,545 | 109,678 |
| Manitoba | ... | ... | ... | ... | 3,643 | 3,643 |
| British Columbia | 62,062 | 3,000 | 3,750 | 10,071 | 165,884 | 244,767 |
| Total | 268,197 | 74,576 | 79,501 | 46,639 | 270,603 | 739,516 |

* "Finished" stone was valued at $70,000.

## Annual Production of Granite.

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

## LIMESTONE.

The statistics given herewith do not include the value of the stone burned into lime by the quarry operators nor that of the stone used in the manufacture of cement, a record of lime and cement production being separately given. With these exceptions, the total value of the production of limestone in Canada in 1911 was $2,594,926, as compared with a value of $2,249,576 in 1910, or an increase of about 15 per cent.

There was a decrease in the production of limestone for building and monumental purposes and for curbstone and paving, but an increased production of crushed stone and rubble. The production of furnace flux was slightly less in tonnage, but of increased value.

The production during 1911 of limestone for building purposes was valued at $664,148, as against $695,729 in 1910. The value of crushed stone in 1911 was $1,066,559, as against $701,576 in the previous year. Curbstone and paving blocks were produced to the value of $36,902 in 1911, as compared with $125,637 in 1910. The value of rubble in 1911 was $374,327, as against $295,168 in 1910. The production of furnace flux in 1911 was 874,224 tons, valued at $452,990, as compared with 896,677 tons, valued at $431,486, in 1910.

### Value of Limestone Production by Provinces, 1911.

| Province. | Building and ornamental. | Crushed. | Curbstone and paving. | Rubble. | Furnace flux. | | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | Tons. | $ | $ |
| Nova Scotia | .... .... | 2,122 | .... .... | 1,577 | 483,035 | 241,517 | 245,216 |
| New Brunswick | 80 | .... .... | .... .... | .... .... | 60 | 30 | 110 |
| Quebec | 462,944 | 597,811 | 34,986 | 200,243 | 659 | 593 | 1,296,577 |
| Ontario | 126,700 | 332,050 | 1,916 | 65,725 | 295,837 | 154,070 | 680,461 |
| Manitoba | 74,424 | 134,576 | .... .... | 106,782 | .... .... | .... .... | 315,782 |
| British Columbia | .... .... | .... .... | .... .... | .... .... | 94,633 | 56,780 | 56,780 |
| Total | 664,148 | 1,066,559 | 36,902 | 374,327 | 874,224 | 452,990 | 2,594,926 |

### Value of Limestone Production by Provinces, 1910.

| Province. | Building and ornamental. | Crushed. | Curbstone and paving. | Rubble. | Furnace flux. | | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | Tons. | $ | $ |
| Nova Scotia | .... .... | .... .... | .... .... | .... .... | 385,838 | 192,919 | 192,919 |
| New Brunswick | 15 | 200 | .... .... | .... .... | 100 | 100 | 315 |
| Quebec | 417,506 | 273,096 | 124,899 | 140,875 | 9,573 | 6,053 | 962,429 |
| Ontario | 62,830 | 368,911 | 738 | 100,991 | 406,391 | 189,293 | 722,763 |
| 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 |

## Value of Limestone Production by Provinces, 1909.

| Province. | Building and ornamental. | Crushed. | Curbstone and paving. | Rubble. | Furnace flux. | | Total. |
|---|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | Tons. | $ | $ |
| Nova Scotia | 2,025 | | | | 319,795 | 159,897 | 161,922 |
| New Brunswick | 30 | | | | | | 30 |
| Quebec | 456,338 | 257,185 | 154,259 | 94,221 | 20,500 | 10,250 | 972,253 |
| Ontario | 78,823 | 297,589 | 169 | 66,885 | 427,422 | 196,208 | 639,674 |
| Manitoba | 224,605 | 54,575 | 62 | 49,312 | | | 328,554 |
| British Columbia | | | | | 74,515 | 37,258 | 37,258 |
| Total | 761,821 | 609,349 | 154,490 | 210,418 | 842,232 | 403,613 | 2,139,691 |

## MARBLE.

From 1886 to 1896 there was a small production of marble, aggregating, however, only $4,167 in value for the eleven years. During the next eleven years—1897 to 1907—there is no record of any production. But the opening up of the quarries at Philipsburg, Que., by the Missisquoi Marble Company, Limited, together with the development of quarries in Ontario and British Columbia, has resulted in a considerable production of marble during the past four years. The total value of the production in 1911 was returned as $162,783, as compared with $158,779 in 1910 and $158,441 in 1909.

Marble quarries were operated during 1911 at Philipsburg and South Stukely, Que.; Dungannon and Gerford townships in Ontario, and Marblehead, British Columbia.

The value of the Quebec production was $135,187, as compared with $151,000 in 1910 and $130,000 in 1909. Ontario produced marble to the value of $25,996, as against $4,100 in 1910 and $3,441 in 1909. British Columbia production was $1,600, as compared with $3,679 in 1910 and $25,000 in 1909.

With the exception of the Philipsburg and Bancroft quarries, the operations were practically confined to the development of quarries.

## Annual Production of Marble.

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

The imports of marble during the calendar year 1911 were valued at $384,252, as compared with $267,215 in 1910 and $182,147 in 1909.

The annual imports of marble since 1880 are shown in the general table of imports of stone, page 50.

## SANDSTONE.

The value of sandstone production in 1911 was reported as $451,183, being a slight falling off as compared with the production in 1910, which was valued at $502,148. The greater part of the sandstone quarried is used for building purposes, though small quantities are also used as rubble and for paving purposes.

Of the production in 1911, building and ornamental sandstone was sold to the value of $391,784, or 86·8 per cent of the total sandstone sales. This amount comprised $86,502 in rough stone and $305,282 in dressed stone sold by the quarry operators. The production in 1910 of building and ornamental stone was valued at $454,220, comprising $118,364 in rough stone and $335,856 in dressed stone.

Statistics of production in 1909, 1910, and 1911 are shown in the next three tables. There is no complete record of the sandstone production throughout Canada in previous years.

### Value of Sandstone Production by Provinces, 1911.

| Province. | Building and ornamental. | Crushed. | Paving. | Rubble. | Total. |
|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ |
| Nova Scotia | 21,140 | 300 | | 2,000 | 23,440 |
| New Brunswick | 30,260 | | | 5,077 | 35,337 |
| Quebec | 450 | | | | 450 |
| Ontario | 8,567 | | 24,575 | 20,890 | 54,032 |
| Alberta | 151,787 | | | 6,557 | 158,344 |
| British Columbia | 179,580 | | | | 179,580 |
| Total | 391,784 | 300 | 24,575 | 34,524 | 451,183 |

### Value of Sandstone Production by Provinces, 1910.

| Province. | Building and ornamental. | Crushed. | Paving. | Rubble. | Total. |
|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ |
| Nova Scotia | 16,075 | 350 | | | 16,425 |
| New Brunswick | 49,032 | | | 2,761 | 51,793 |
| Ontario | 25,301 | 1,370 | 34,530 | 1,046 | 62,247 |
| Alberta | 234,487 | | | 6,371 | 240,858 |
| British Columbia | 129,325 | 1,500 | | | 130,825 |
| Total | 454,220 | 3,220 | 34,530 | 10,178 | 502,148 |

## Value of Sandstone Production by Provinces, 1909.

| Province. | Building and ornamental. | Crushed. | Paving. | Rubble. | Total. |
|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ |
| Nova Scotia | 15,050 | 800 | ..... | 6,000 | 21,850 |
| New Brunswick | 25,784 | ..... | ..... | 4,825 | 30,609 |
| Ontario | 29,584 | 2,563 | 17,774 | 12,903 | 62,824 |
| Alberta | 87,450 | ..... | ..... | 2,933 | 90,383 |
| British Columbia | 168,338 | ..... | ..... | 175 | 168,513 |
| Total | 326,206 | 3,363 | 17,774 | 6,836 | 374,179 |