CANADA

DEPARTMENT OF MINES

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

MINES BRANCH

EUGENE HAANEL, PH.D., DIRECTOR.

ANNUAL REPORT

ON THE

MINERAL PRODUCTION OF CANADA

During the Calendar Year

1912

JOHN McLEISH, B.A.

Chief of the Division of Mineral Resources and Statistics.

OTTAWA

GOVERNMENT PRINTING BUREAU

1914

No. 262.

49509—1

LETTER OF TRANSMITTAL.

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

SIR,—I beg to hand you, herewith, the Annual Report on the Mineral Production of Canada, giving revised statistical information descriptive of the mining and metallurgical production in Canada during the calendar year 1912.

A preliminary report on the mineral production during 1912 was sent to press February 27, 1913, and issued within the following week.

Parts of the present report—including a "General Summary of the Mineral Production in Canada during 1912," "Report on the Production of Iron and Steel in Canada during 1912," "Report on the Production of Copper, Gold, Lead, Nickel, Silver, Zinc, and Other Metals in Canada during 1912," "Report on the Production of Coal and Coke in Canada during 1912," and "Report on the Production of Cement, Lime, Clay Products, Stone, and Other Structural Materials in Canada during 1912"—have already been published as separate bulletins.

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

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

I have the honour to be, Sir,
Your obedient servant,

(Signed) **John McLeish.**

DIVISION OF MINERAL RESOURCES AND STATISTICS,
October 15, 1913.

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

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

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

The value of the metallic minerals produced, whether refined in Canada or not, is calculated on the basis of the average price of the metal in some recognized market. New York prices have usually been taken as the standard. In the case of lead, however, the New York price is so much higher than that of London, that the Montreal price—about midway between these two—is now used. The value of non-metallic products is given as at the mine or point of shipment.

THE

MINERAL PRODUCTION OF CANADA

During the Calendar Year

1912

General Summary.

Canada's progress and growth in industrial development is strongly reflected in the statistical record of her mineral production. An annual record has been published since 1886, in which year the total value of the production was a little in excess of ten million dollars, or $2.23 per capita of population. In 1912 the value of the production according to revised statistics now completed was $135,048,296, or nearly $19 per capita, the preliminary record published in March last showing a value of $133,127,489 having been exceeded by nearly two million dollars.

Comparing last year's production with that of the years immediately preceding we find an increase over the 1911 value of output of $31,827,302 or 30·8 per cent. It will be remembered, however, that the mineral output in 1911 was somewhat restricted owing to long extended labour disputes in the coal mines of Alberta and British Columbia, and was less than that of 1910, in which year the production was valued at $106,823,623 or $14.93 per capita, and the highest record up to that year. Compared with 1910 the production in 1912 still shows an increase in total value of $28,224,673 or 26·5 per cent, and an increase in per capita production from $14.93 to $18.27 or 22·3 per cent.

Annual Mineral Production in Canada since 1886.

Year.	Value of production.	Value per capita.	Year.	Value of production.	Value per capita.
	$	$ cts.		$	$ cts.
1886	10,221,255	2 23	1900	64,420,877	12 04
1887	10,321,331	2 23	1901	65,797,911	12 16
1888	12,518,894	2 67	1902	63,231,836	11 36
1889	14,013,113	2 96	1903	61,740,513	10 83
1890	16,763,353	3 50	1904	60,082,771	10 27
1891	18,976,616	3 92	1905	69,078,999	11 49
1892	16,623,415	3 39	1906	79,286,697	12 81
1893	20,035,082	4 04	1907	86,865,202	13 75
1894	19,931,158	3 98	1908	85,557,101	13 16
1895	20,505,917	4 05	1909	91,831,441	12 70
1896	22,474,256	4 38	1910	106,823,623	14 93
1897	28,485,023	5 49	1911	103,220,994	14 42
1898	38,412,431	7 32	1912	135,048,296	18 27
1899	49,234,005	9 27			

Comparative Statement of Mineral Production for Years 1911 and 1912.

Product.		1911.			1912.			Increase (+) or Decrease (−).		Increase (+) or Decrease (−).	
		Quantity.	Value. (a)	Per cent of total.	Quantity.	Value (a)	Per cent of total.	Quantity.	%	Value.	%
Metallic.			$	%		$	%			$	
Cobalt oxide and nickel oxide	Lbs.	154,174	221,690	0·22	349,054	156,256	0·24	+ 194,880	126·00	+ 98,554	44·46
Cobalt material, mixed cobalt and nickel oxides	"	1,260,832			1,285,280	163,988		+ 24,448	1·94		
Copper (b)	"	55,648,011	6,886,998	6·67	77,832,127	12,718,548	9·42	+ 22,184,116	39·87	+ 5,831,550	84·67
Gold	Ozs.	473,159	9,781,077	9·48	611,885	12,648,794	9·37	+ 138,726	29·32	+ 2,867,717	29·32
Iron pig from Canadian ore (c)	Tons.	42,186	613,404	0·59	36,355	450,886	0·33	− 5,831	14·82	− 162,518	26·49
Iron ore sold for export (k)	"	40,137	88,570	0·09	118,129	328,950	0·24	+ 77,992	194·00	+ 240,380	271·00
Lead (d)	Lbs.	23,784,969	827,717	0·80	35,763,476	1,597,554	1·18	+ 11,978,507	50·36	+ 769,837	93·01
Nickel (e)	"	34,098,744	10,229,623	9·91	44,841,542	13,452,463	9·96	+ 10,742,798	31 50	+ 3,222,840	31·50
Silver (f)	Ozs.	32,559,044	17,355,272	16·81	31,955,560	19,440,165	14·40	− 603,484	1·85	+ 2,084,893	12·01
Zinc ore	Tons.	2,590	101,072	0·10	6,415	215,149	0·16	+ 3,825	148·00	+ 114,077	113·00
Total			46,105,423	44·67		61,172,753	45·30			+ 15,067,330	32·69
Non-metallic.											
Actinolite	Tons.	67	736		92	1,000		+ 25	37·31	+ 264	35·87
Arsenious oxide	"	2,097	76,237		2,045	89,262		− 52	2·48	+ 13,025	17·08
Asbestos	"	101,393	2,922,062	2·83	111,561	3,117,572	2·30	+ 10,168	10 03	+ 195,510	6·69
Asbestic	"	26,021	21,046		24,740	19,707		− 1,281	4·92	− 1,339	6·36
Chromite	"	157	2,587					− 157		− 2,587	
Coal	"	11,323,388	26,467,646	25·64	14,512,829	36,019,044	26·67	+ 3,189,441	28·04	+ 9,551,398	36·09
Corundum	"	1,472	161,873	0·15	1,960	239,091	0·18	+ 488	33·15	+ 77,218	47·70
Feldspar	"	17,723	51,939		13,733	30,916		− 3,990	22·51	− 21,023	40·48
Fluorspar	"	34	238		40	240		+ 6	17·65	+ 2	0·80
Graphite	"	1,269	69,576		2,060	117,122		+ 791	62·33	+ 47,546	68·34
" artificial	"	1,086			1,151			+ 65	5·99		
Grindstones	"	4,566	52,942		4,412	52,090		− 154	3·37	− 852	1·61
Gypsum	"	518,383	993,394	0·96	578,458	1,324,620	0·98	+ 60,075	11·59	+ 331,226	33·34
Magnesite	"	991	5,531		1,714	9,645		+ 723	72·96	+ 4,114	74·38
Manganese	"	5½	300		75	1,875		+ 69½		+ 1,575	
Mica	"		128,677	0·12		143,796	0·10			+ 15,299	11·89

Mineral pigments—												
Barytes	Tons.	50	400	.....	464	5,104	.....	+	414	.....	+	4,704	.....
Ochres	"	3,622	28,333	.....	7,654	32,410	.....	+	4,032	111·00	+	4,077	14·39
Mineral water	.....	.....	223,758	0·21	.....	172,465	0·13	.....	.....	.....	−	51,293	22·92
Natural gas (*g*)	.....	.....	1,917,678	1·85	15,286,803	2,362,700	1·75	+	3,642,646	31·28	+	445,022	23·21
Peat	Tons.	1,463	3,817	.....	700	2,900	.....	−	763	52·15	−	917	24·02
Petroleum (*h*)	Bls.	291,092	357,073	0·34	243,336	345,050	0·26	−	47,756	16·41	−	12,023	3·37
Phosphate	Tons.	621	5,206	.....	164	1,640	.....	−	457	73·59	−	3,566	68 50
Pyrites	"	82,666	365,820	0·35	81,526	314,085	0·23	−	1,140	1·38	−	51,735	14·14
Quartz	"	60,526	83,865	.....	100,242	195,216	0·14	+	39,716	65·62	+	111,351	133·00
Salt	"	91,582	443,004	0·42	95,053	459,582	0·34	+	3,471	3·79	+	16,578	3·74
Talc	"	7,300	22,100	.....	8,270	23,132	.....	÷	970	13·29	+	1,032	4·67
Tripolite	"	20	122	.....	38	230	.....	+	18	90·00	+	108	88·52
Total	.....	.....	34,405,960	33·33	.....	45,980,674	33·38	.....	.....	.....	+	10,674,714	31·03

*Short tons throughout. (*a*) The metals copper, lead, nickel, and silver are for statistical and comparative purposes valued at the final average value of the refined metal. Pig iron, zinc ore, and cobalt oxides are valued at the furnace or spot, and non-metallic products at the mine or point of shipment. (*b*) Copper content of smelter products and estimated recoveries from ores exported, at 16·341 cents per pound, in 1912; and 12·376 cents per pound in 1911. (*c*) The total production of pig iron in Canada in 1912 was 1,014,587 tons valued at $14,550,999, of which it is estimated 978,232 tons valued at $14,100,113 should be credited to imported ores; in 1911, the total production was 917,535 tons valued at $12,307,125, of which 875,349 tons valued at $11,693,721 are credited to imported ores. (*d*) Refined lead and lead contained in base bullion exported at 4·467 cents per pound in 1912, and 3·480 cents in 1911, the average prices in Montreal. (*e*) Nickel content of matte produced valued at 30 cents in 1912 and 1911. (Increasing quantities of nickel-copper matte are now being used in making monel metal which is sold at a price much below that of refined nickel). The value of the nickel contained in matte, as returned by the operators, was about 10 cents per pound for both years. (*f*) Estimated recoverable silver at 60·835 cents per ounce in 1912, and at 53·304 cents in 1911. (*g*) Gross returns for sale of gas. (*h*) Quantity on which bounty was paid and valued at $1,418 per barrel in 1912, and at $1.22½ in 1911. (*k*) In 1912 and 1911 figures as reported by the producers, which differ slightly from those of the Trade and Navigation reports.

Comparative Statement of Mineral Production for Years 1911 and 1912.—*Continued.*

Product.	1911.			1912.			Increase (+) or Decrease (−).		Increase (+) or Decrease (−).	
	Quantity.	Value.	Per cent of total.	Quantity.	Value. (*a*)	Per cent of total.	Quantity.	%	Value.	%
Structural Materials and Clay Products.		$	%		$	%			$	
Cement, Portland ..... Bls.	5,692,915	7,644,537	7·41	7,132,732	9,106,556	6·74	+ 1,439,817	25·29	+ 1,462,019	19·13
Clay products—										
Brick, common..... No.	645,550,517	5,420,890	5·25	769,191,532	7,010,375	5·19	+123,641,015	19·15	+ 1,589,485	29·32
Brick, pressed..... "	87,350,539	1,094,582	1·06	125,180,422	1,609,854	1·19	+ 37,829,883	43·31	+ 515,272	47·07
Brick, paving..... "	5,220,400	79,444	.....	4,579,500	85,989	.....	− 640,900	12·27	+ 6,545	8·24
Brick, moulded and ornamental.....	605,643	11,281	.....	371,356	8,595	.....	− 234,287	38·68	− 2,686	23·81
Fireclay, and fireclay products.....	.....	89,130	.....	.....	125,585	.....	.....	.....	+ 36,455	40·90
Fireproofing and architectural terra-cotta	.....	409,585	0·39	.....	448,853	0·33	.....	.....	+ 39,268	9·59
Pottery..	.....	102,493	0·10	.....	43,955	.....	.....	.....	− 58,538	57·11
Sewer-pipe	.....	812,716	0·79	.....	884,641	0·65	.....	.....	+ 71,925	8·85
Tile, drain..... No.	.....	339,812	0·32	.....	357,862	0·26	.....	.....	+ 18,050	5·31
Kaolin	.....	.....	.....	20	160	.....	.....	.....	.....	.....
Lime..... Bus.	7,533,525	1,517,599	1·47	8,475,839	1,844,849	1·37	+ 942,314	12·51	+ 327,250	21·56
Sand-lime brick..... No.	51,535,243	442,427	0·43	96,448,402	1,020,386	0·76	+ 44,913,159	87·15	+ 577,959	131·00
Sand and gravel (*n*)..... Tons.	573,494	408,110	0·39	.....	1,512,099	1·12	.....	.....	+ 1,103,989	.....
Slate..... Squares	1,333	8,248	.....	1,894	8,939	.....	+ 61	3·33	+ 691	8·38
Stone—										
Granite.....	.....	1,119,865	1·08	.....	1,373,119	1·02	.....	.....	+ 253,254	22·61
Limestone.....	.....	2,594,926	2·51	.....	2,762,936	2·04	.....	.....	+ 168,010	6·47
Marble.	.....	162,783	0·15	.....	260,764	0·19	.....	.....	+ 97,981	60·19
Sandstone	.....	451,183	0·43	.....	329,352	0·24	.....	.....	− 121,831	27·00
Total.....	.....	22,709,611	22·00	.....	28,794,869	21·32	.....	.....	+ 6,085,258	26·80
Grand total	.....	103,220,994	100·00	.....	135,048,296	100·00	.....	.....	+31,827,302	30·83

(*n*) In 1911, exports; in 1912, partial record only of production.

The detailed comparative statement of production during the years 1911 and 1912, shown in the preceding table, is a gratifying indication of the fact that the Canadian mineral industry in 1912 has had by far the most successful year in its history.

This progress is all the more satisfactory because it is evidently due to a widespread and substantial development of the country's mineral resources. The only new camp of importance to contribute largely to the year's output was Porcupine, the gold production of which was about one and three-quarter million dollars. A slight scarcity of labour was reported, particularly in connexion with the asbestos and clay working industries. There were comparatively few labour disputes to interfere with output, the principal difficulties being a strike of coal miners on Vancouver island, beginning in September, and a labour dispute at Porcupine toward the latter part of the year. The actual output of coal and gold were, however, but slightly affected thereby.

A substantial increase in price in most of the metals, which took place early in the year and continued throughout, had a very important bearing on the year's operations, and contributed largely to the increased value of the output.

A feature of particular interest during the year has been the continued and extended development of ore reserves. The satisfactory results from these operations, particularly in the case of the nickel-copper ores of the Sudbury district, the Porcupine gold ores of Ontario, and a number of the copper and lead deposits of British Columbia, point to much greater annual outputs in the future.

Extension of ore smelting and refining facilities, and in a number of cases special improvements in methods of practice, have also been important factors in the year's operations.

In considering the total value of the mineral production as shown in the general table, due weight should be given to the basis on which the statistics are compiled. It is very difficult to draw a fine line of distinction between what may be termed the first or mine product and the subsequent products resulting from the treatment or manufacture of the mine products, so that in the end a compromise is a practical necessity. Thus in the tabular statement given the quantities of the metals shown are in general the quantities actually recovered or estimated as recovered from the ores shipped from the mines during the year, and the values placed upon them are based on the value of the refined metal in a recognized market. Non-metallic products are valued as at the mine, except in the case of clay products, lime, and cement, for which it appears more feasible to use the manufactured products as a basis of compilation both of quantity and value, the first materials having practically no intrinsic value beyond the labour expended upon them.

On this basis then the production of metalliferous products in 1912 was valued at $61,172,753, being 45·3 per cent of the total mineral output, and an

increase in value over the previous year of $15,067,330, or 32·7 per cent. The value of the production of non-metalliferous products (excluding structural materials and clays) in 1912 was $45,080,674, being 33·38 per cent of the total mineral output, and an increase of $10,674,714, or 31 per cent, over the value of the production in 1911.

The value of the production of clay products, lime, and stone, and other similar structural materials in 1912, was $28,794,869, or 21·3 per cent of the total production, and an increase of $6,085,258, or 26·8 per cent over the 1911 output.

It will be observed that these three classes of products maintained very nearly the same relative proportion of total output as in 1911.

Coal, which has for a number of years past been the most important product in point of value, maintained its position in 1912, contributing 26·6 per cent of the total value, as against 25·6 per cent in 1911. Silver was next in importance in both years, accounting for 14·4 per cent of the total in 1912 as compared with 16·8 per cent in 1911. Nickel, copper, and gold followed in the order named in 1912, each being credited with between 9 and 10 per cent. Clay products contributed 7·62 per cent, and cement 6·74 per cent. Copper advanced from seventh place in value of production in 1911 to fourth position in 1912.

In the case of iron only the amount of pig iron produced from Canadian ore is included in the general total. There is an important production of pig iron from imported ore (shown in the footnotes of the general table) and the total value thereof in 1912 exceeds that of the production of any other metal, with the exception of silver. There is also a large production of aluminium from imported ores for which no value is included in the general table of production.

The prices of metals upon which the value of the production directly depends showed in several cases important increases in the beginning of the year, which were well maintained throughout.

The average prices of nearly all metals were higher in 1912. Copper advanced from 12·376 cents per pound to 16·341 cents, an increase of 3·965 cents, or 32 per cent. The average price of lead in Montreal increased from 3·48 cents to 4·467 cents per pound, a gain of 0·987 cent, or 28 per cent.

Silver advanced from 53·304 cents to 60·835 cents per ounce on the New York market, a gain of 7·531 cents, or over 14 per cent.

The average price of spelter in New York increased from 5·768 cents per pound to 6·943 cents in 1912, and tin from 42·281 cents per pound in 1911 to 46·096 cents per pound in 1912.

Metal Prices.

——	1907.	1908.	1909.	1910.	1911.	1912.
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Copper, New York	20·004	13·208	12·982	12·738	12·376	16·341
Lead "	5·325	4·200	4·273	4·446	4·420	4·471
" London	4·143	2·935	2·839	2·807	3·035	3·895
" Montreal*	4·701	3·364	3·268	3·246	3 480	4·467
Nickel, New York	45·000	43·000	40·000	40·000	40·000	40·000
Silver "	65·327	52·864	51·503	53·486	53·304	60·835
Spelter "	5·962	4·720	5·503	5·520	5·758	6·943
Tin "	38·156	29·465	29·725	34·123	42·281	46·096

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

With the exception of petroleum every important mineral mined in Canada shows an increased production in 1912, in so far as value is concerned. In the case of silver only is there a decrease in quantity, and this slightly less than 2 per cent, the increase in total value of silver being due to the much higher price obtained for the metal during the year. Among the metals, increases in quantity of output are shown as follows: pig iron 10·5 per cent; gold 28 per cent; copper 40 per cent, and lead 50 per cent. On account of the generally higher prices of the metals the increases in total value of output considerably exceed the increases in quantity, and are as follows: silver 12 per cent, nickel 31 per cent, copper 85 per cent, and lead 93 per cent.

The most important increases amongst non-metallic products are in coal, asbestos, gypsum, natural gas, and all of the structural materials. Coal shows an increase of 28 per cent in tonnage, asbestos 10 per cent, gypsum 11 per cent, natural gas 31 per cent in number of cubic feet. Cement increased 25 per cent in quantity and 19 per cent in total value, clay products 26·5 per cent in value, stone 9·2 per cent in value, and lime 12·5 per cent in quantity and 21·5 per cent in value.

It is a matter of regret to have to report a continued decrease in the production of petroleum. The Canadian output of this product a few years ago was about 50 per cent of domestic consumption. At the present time not over 5 per cent of Canada's consumption of petroleum and its products is derived from domestic sources.

EXPORTS AND IMPORTS.

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

The total value of the exports of products of the mine, including direct mine products and manufactures thereof, in 1912 was $68,591,225, as compared with $52,546,593 in 1911. This value includes for 1912 mine products to the value of $54,349,640, and manufactures valued at $14,241,585. Practically the whole of the Canadian production of copper, nickel, and silver is exported, also a very large proportion of the production of gold, asbestos, and mica. There are also considerable exports of coal. These items alone contribute about 95 per cent of the value of the mine products exported. Manufactures of mine products exported consist chiefly of iron and steel goods, aluminium, calcium carbide, lime, acetate of lime, and coke.

The United States is the chief destination of Canada's mine exports, about 80 per cent having been exported to that country during the fiscal year 1911-1912, and about 13·4 per cent to Great Britain.

A great variety of mineral products, chiefly in a manufactured or semi-manufactured condition, are annually imported into Canada, and these imports are increasing with much greater rapidity than is Canada's domestic mineral production. The total value of such imports during the calendar year 1912 was $233,924,270, as compared with imports valued at $181,773,708 in 1911, and $147,305,012 in 1910. Of the total imports in 1912 nearly $50,000,000 in value was made up of the cruder forms of mineral products such as coal, ores of metals, diamonds unset and bort, asphaltum, etc., as against $48,000,000 for similar items in 1911. The imports of iron and steel and manufactures thereof in 1912 were valued at $124,376,986, as against $93,171,817 in 1911, and $75,758,594 in 1910. Imports of the metals, aluminium, antimony, copper, gold, silver, lead, platinum, tin, and zinc, and manufactures thereof, and metallic alloys, reached a total value of over $27,000,000, as compared with $19,500,000 in 1911, petroleum and products of, $11,858,533, as against $6,009,730 in 1911; clays and clay products, $6,592,537, as against $5,216,544 in 1911.

It will thus be seen that over 50 per cent of the imports represents iron and steel, and that the increased imports were chiefly in iron and steel and other metals, and in petroleum.

As has already been pointed out in previous reports the great excess of imports over exports would seem to indicate the existence of large opportunities for the development not only of Canada's mineral production, but also of many manufacturing industries which utilize mine products as raw materials.

No matter what Canada's development in industrial activity may be in the future, it seems certain that there must always be a large and mutually advantageous interchange of trade between this country and our neighbour to the south. Thus, notwithstanding Canada's possession of large supplies of coal, both in the east and in the west, the great central provinces of the country, at present the most highly populated, are situated nearer the coal fields of Pennsylvania and Ohio, and derive their chief supplies from that source, while similarly, British Columbia and Alberta coal is finding a considerable market in the adjacent

states of the United States. Our southern neighbours have developed the largest iron and steel industry of any of the world powers, and possess highly developed industries in the treatment and refining of metals of all kinds, and it is perhaps but natural that we send to them the greater part of our metal ores and smelter products, and take from them the refined and manufactured products.

In the case of lead Canada now refines practically the whole of the domestic ore production, and the exports in 1912 were insignificant. Similar development in the future will no doubt result in the refining in Canada of copper, nickel, zinc, and other metals. In like manner, the continued large export of crude unrefined ores and the corresponding imports of refined and manufactured products still point to opportunities for the development of industries for the treatment, refinement, and manufacture of non-metallic products.

EXPORTS.

Exports of the Products of the Mine and of Manufactures of Mine Products—Calendar Years 1911 and 1912.

		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
MINE PRODUCTS.			$		$
Arsenic	Lbs.	4,125,558	31,761	3,847,906	101,310
Asbestos	Tons	75,120	2,067,259	88,008	2,349,353
Barytes	Cwt.	.....	.....	68	114
Coal	"	1,500,639	4,357,074	2,127,133	5,821,593
Copper, fine in ore, etc	Lbs.	55,208,054	5,459,770	76,542,643	8,800,267
" black or coarse and in pigs	"	79,656	7,955	1,945,921	236,212
Feldspar	Tons	16,150	56,085	12,779	44,114
Gold	.....	.....	7,493,523	.....	10,014,654
Gypsum	Tons	362,102	425,161	364,643	423,208
Lead, in ore, etc	Lbs.	65,100	1,826	299,240	8,193
" in pig, etc	"	71,961	2,806	.....	.....
Mica	"	693,940	242,548	895,338	334,054
Mineral pigments	"	3,999,925	27,070	6,032,640	34,513
Mineral water	Gals.	26,495	12,952	9,690	4,710
Nickel, in ore, etc	Lbs.	32,619,971	3,676,396	44,221,860	4,661,758
Oil, mineral, crude, etc	Gals.	.....	.....	18,500	3,964
Oil, refined	"	489	73	36,945	6,147
Ores—					
Antimony	Tons	57	4,946	.....	.....
Corundum	"	742	77,777	1,928	205,819
Iron	"	37,686	133,411	118,129	382,005
Manganese	"	4	225	10	300
Other ores	"	6,919	375,695	15,573	530,270
Phosphate	"	3	100	.....	.....
Platinum	Ozs.	39	961	92	3,821
Plumbago	Cwt.	16,263	43,249	33,074	70,763
Pyrites	Tons	32,102	120,585	5,938	11,935
Salt	Lbs.	454,600	5,055	289,150	3,723
Sand and gravel	Tons	573,494	408,110	660,090	459,952
Silver	Ozs.	31,216,725	15,807,366	34,911,922	19,494,416
Stone, building	Tons.	83,767	25,103	108,516	28,795
" ornamental	"	168	1,796	2,339	1,826
" for manufacture of grindstones	"	15	22	.....	.....
Other products of the mine	.....	.....	204,028	.....	311,851
Total mine products	.....	.....	41,121,688	.....	54,349,640

EXPORTS.

Exports of the Products of the Mine and of Manufactures of Mine Products—Calendar Years 1911 and 1912—*Continued.*

		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
MANUFACTURES.			$		$
Acetate of lime	Lbs.	7,428,157	117,904	14,691,678	312,262
Agricultural implements—					
Cultivators	No.	5,923	138,377	5,059	100,043
Harrows	"	5,412	95,904	4,734	100,579
Harvesters	"	14,355	1,432,911	15,341	1,634,208
Hay rakes	"	11,085	317,842	6,646	199,092
Mowing machines	"	22,859	778,274	16,213	562,502
Parts of			796,246		577,395
Ploughs	No.	20,437	508,095	13,580	412,460
Reapers	"	9,385	574,315	3,243	195,156
Seeders	"	174	13,795	70	7,040
Threshing machine	"	339	92,442	761	214,499
All other	"		1,533,728		1,964,071
Aluminium, in bars	Cwt.	49,901	747,587	182,857	2,002,363
" manufactures of	"		1,555		10,898
Bricks	M	394	3,977	694	8,493
Calcium carbide	Lbs.	4,888,975	142,402	7,549,137	230,503
Cement			4,067		2,436
Clay, manufactures of			2,071		256
Coke	Tons	9,852	39,823	57,744	252,763
Earthenware, and all manufactures of			6,101		10,001
Grindstones, manufactured			29,184		26,535
Gypsum and plaster ground			4,429		6,495
Iron and steel :—					
Castings, N.E.S			33,441		27,113
Gas buoys and parts of			68,485		83,583
Hardware, tools, etc.			94,513		91,731
" N.E.S.			44,199		48,474
Machinery (Linotype machines)			12,239		6,555
" N.E.S.			431,493		474,996
Pig iron	Tons	5,870	271,968	6,976	310,702
Scrap iron and steel	Cwt.	84,153	54,618	332,641	145,250
Sewing machines	No.	18,519	218,075	24,158	259,617
Steel and manufactures of			769,692		785,731
Stoves	No.	1,176	20,626	1,390	21,110
Typewriters	"	4,771	318,935	4,025	277,583
Vehicles—					
Automobiles	"	1,509	1,184,506	3,028	2,013,784
" parts of			45,798		105,330
Bicycles	No.	90	5,936	101	9,058
" parts of			50,828		54,322
Lime			39,536		35,097
Metals, N.O.P.			175,716		261,752
Naphtha and gasoline	Gals.	23,959	4,427	25,791	4,261
Oil, N.E.S.	"			397,039	119,686
Phosphorus	Lbs.			543,626	66,806
Plumbago, manufactures of			33,956		58,920
Stone, building			456		163
" ornamental			980		2,458
Tar			56,669		76,261
Tin, manufactures of			30,176		69,692
Total manufactures			11,424,905		14,241,585
Grand total			52,546,593		68,591,225

EXPORTS.

Showing Destination of Mine Products during the Fiscal Years 1909-10, 1910-11, and 1911-12.

Destination.	1909-10 Value.	1910-11 Value.	1911-12 Value.
	$	$	$
United States	33,488,464	33,129,505	33,259,580
United Kingdom	3,820,574	6,726,015	5,555,599
Newfoundland, and Labrador	528,031	580,632	618,766
Hong Kong	216,514	376,553	434,202
Alaska	.....	392,715	305,086
Germany in Europe	43,975	239,596	248,925
Australia and Tasmania	212,950	161,017	178,260
Mexico	325,153	302,055	159,345
Chinese Empire	777,147	301,870	103,904
Belgium	177,675	220,244	101,661
France	110,222	116,326	74,487
Bermuda	53,071	66,525	62,494
Japan	202,071	85,247	58,773
St. Pierre and Miquelon islands	28,450	24,941	30,205
Argentina	4,516	1,383	24,313
Cuba	14,946	10,161	21,590
Portuguese Africa	.....	.....	20,340
Chili	.....	.....	19,669
British West Indies	13,552	11,904	13,635
British South Africa	.....	.....	10,460
Holland and Netherlands	17,218	21,609	5,260
Italy	10,956	8,000	4,358
Peru	.....	.....	3,682
Philippines	.....	.....	2,824
Dutch Guiana	.....	48	1,492
Spain	.....	.....	1,471
Austria-Hungary	1,030	720	1,410
New Zealand	8,518	2,309	1,050
San Domingo	.....	1,000	1,000
Denmark	.....	.....	448
Switzerland	73	300	159
Uruguay	.....	1,742	68
Other countries	31,911	5,144	.....
Totals	40,087,017	42,787,561	41,324,516

IMPORTS.

Imports of Products of the Mine and Manufacture of Mine Products—Calendar Years 1911 and 1912.

Products.	1911 Value.	1912 Value.
	$	$
Alumina	372,009	448,061
Alum, alum cake, and chloralum	88,516	151,850
Aluminium and manufactures	648,046	533,705
Antimony	36,405	60,456
Antimony salts	2,418	7,197
Arsenic, oxide and sulphide of	6,823	21,153
Asbestos	319,815	461,449
Asphaltum	558,784	863,456
Bells and gongs	104,965	110,015
Bismuth	7,012	6,378
Blanc fixe and satin white	29,796	34,794
Blast furnace slag	141,136	110,148
Borax	120,213	112,022
Brick and tile	1,555,347	2,255,569
Brick, fire, of a kind not made in Canada	814,414	953,621
Bromine	40	145
Burrstones	1,642	1,409
Cement, Portland and manufactures	848,416	1,979,227
Chalk, Cornwall stone, feldspar, fluorspar, etc	147,640	167,990
Clays	270,247	288,394
Coal, anthracite, bituminous, slack, and run of mine	39,292,591	39,478,037
Coal tar and coal pitch	81,555	217,861
Coke	1,843,248	1,358,451
Coke, ground for electric batteries	6,840	4,792
Copper and manufactures of	4,936,769	7,047,356
Cryolite	29,602	56,591
Crucibles, clay or plumbago	56,814	82,324
Chloride of lime	118,501	113,346
Cyanides of potassium, sodium, cyanogen, or cpd of bromine	94,397	143,978
Diamonds, unset, and bort	2,612,150	3,623,424
Earthenware	2,516,536	3,094,956
Earths, crude	9,398	13,007
Electric carbons	56,529	58,951
Emery	150,444	177,187
Fertilizers, compound or manufactured	386,645	580,351
Flint, quartz, silex, etc	56,624	50,571
Foundry facings	21,816	23,536
Fullers earth	7,024	10,390
Fossils	1,180	3,994
Gannister	2,821	2,151
Gold and silver and manufactures of	2,480,017	3,618,701
Graphite and manufactures of	56,132	73,160
Grindstones	123,356	112,020
Gypsum and plaster of Paris	205,782	268,103
Iron and steel—Total, 1911, $93,171,817; 1912, $124,376,986—		
Agricultural implements	4,508,094	4,358,074
Bar iron or steel, rolled, whether in coils, bundles, rods or bars	3,017,349	3,561,709
Castings, iron or steel, N.O.P.	1,073,587	1,592,930
Cutlery	1,041,412	1,337,782
Engines, locomotive and others	1,741,626	2,915,601
Iron, pig	2,610,989	3,512,969
Iron or steel blooms, billets, puddled bars and loops, ingots, cogged ingots, slabs, or other forms, N.O.P., etc	1,671,207	1,553,393
Iron or steel, rolled, angles, tees, beams, channels, girders, etc	5,091,695	6,636,978
" " rolled plates, not less than 30" wide or ¼" thick	1,503,123	1,750,175
" " rolled plate, universal mill or rolled edge bridge plates	857,537	1,158,135
" " skelp, sheared or rolled in grooves, etc	1,914,819	2,631,207
" " sheets, flat galvanized, Canada plates, etc	4,487,900	6,556,517
Machines and machinery	28,250,006	37,826,662
Steel rails	2,583,486	3,761,108
Tubing	2,372,182	4,044,377
Tools and implements	1,091,073	1,501,799

IMPORTS.

Imports of Products of the Mine and Manufactures of Mine Products—Calendar Years 1911 and 1912—*Continued.*

Products.	1911. Value.	1912. Value.
	$	$
Iron and steel—*Con.*		
Wire	3,617,766	4,781,714
All other iron and steel and manufactures of	25,737,966	34,890,856
Iron ore	(a)	(b)3,932,074
Iron sand	8,340	13,347
Kainite	9,262	231
Lead and manufactures; litharge	1,049,276	1,806,221
Lime	161,985	207,481
Lithographic stone	12,344	7,081
Manganese, oxide of	22,612	27,707
Magnesia	11,012	29,641
Meerschaum	150	109
Mercury or quicksilver	67,416	72,171
Metallic alloys:—		
Babbitt metal	35,073	49,387
Brass and manufactures of	3,218,942	4,942,531
Britannia metal	32,430	53,585
German silver, nickel, and nickel silver	147,315	172,344
Type metal	321	1,195
Mineral and bituminous substances	168,577	191,241
Mineral water, including aerated water	229,367	273,698
Nickel anodes	34,199	23,125
Ochres, etc	53,092	69,621
Ores of metals, N.O.P	(c)4,014,748	927,428
Paraffin wax	75,661	85,491
Paraffin candles	30,763	34,029
Petroleum and products of	6,009,730	11,858,533
Phosphate rock (fertilizer)	46,217	24,586
Platinum and manufactures of	176,101	232,163
Potash and manufactures of	203,989	324,964
Precious stones	344,659	522,298
Pumice	18,779	21,310
Salt	436,118	485,950
Saltpetre	101,082	100,500
Sand and gravel	240,613	445,781
Slate and manufactures of	169,635	200,643
Sand paper	164,474	189,782
Soda products: barilla, bichromate, caustic, salt, and salt cake	800,805	896,070
Stone and manufactures of (including marble)	1,140,846	1,467,143
Soda, nitrate of	867,778	1,537,379
Sulphate of iron (copperas)	4,773	5,178
Sulphur and phosphorus	450,875	810,702
Sulphuric acid	9,281	35,325
Talc	6,413	4,414
Tin and manufactures of (including tinware)	5,442,551	6,697,165
Whiting and prepared chalk	136,022	162,864
Zinc and manufactures of	1,227,660	1,824,519
	181,773,708	233,924,270

(a) In 1911 included in ores of metals, N.O.P.; (b) nine months only; (c) includes iron ore in 1911.

METALLIC ORES AND PRODUCTS.

Antimony.—The production of antimony during the past two years was limited to a few pounds of refined antimony recovered at the lead refinery at Trail, B.C. Shipments of antimony ore in 1910 were reported as 364 tons, valued at $13,906, whilst there was no production of refined antimony in 1910. There is no export of antimony ore recorded in 1912, as against 50 tons valued at $4,946, in 1911. The imports of antimony or regulus thereof, in 1912, were 998,045 pounds, valued at $60,456, and of antimony salts 55,683 pounds, valued at $7,197, or a total value of imports of $67,653. In 1911, the imports were antimony and regulus of 561,046 pounds, valued at $36,405, and antimony salts 18,420 pounds, valued at $2,418, or a total value of $38,823.

Cobalt.—Cobalt oxide and cobalt material are being produced in Canadian smelters, the production in 1912 of cobalt oxide and nickel oxide being 349,054 pounds, valued at $156,256, and of cobalt material and mixed cobalt and nickel oxides 1,285,280 pounds, valued at $163,988. During 1911, the shipments included 154,174 pounds of cobalt and nickel oxide, and 1,260,832 pounds of cobalt material and mixed cobalt and nickel oxides, the value being $221,690.

Copper.—The production of copper contained in blister, matte, or ore, which was practically all exported, was 77,832,127 pounds in 1912, valued at $12,718,548, as compared with 55,648,011 pounds in 1911, valued at $6,886,998.

The exports in 1912 were reported as 78,488,564 pounds, valued at $9,036,479, as against exports of 55,287,710 pounds, valued at $5,467,725, in 1911. The total imports of copper in 1912 were valued at $7,047,356; and included crude and manufactured copper to the extent of 42,832,747 pounds, valued at $6,741,895, together with other manufactures of copper of which the quantity is not recorded, valued at $305,461. The copper imports in 1911 were valued at $4,936,769, including 37,352,237 pounds of crude and manufactured copper, valued at $4,721,480, and other copper manufactures of which the quantity is not recorded, valued at $215,289.

Gold.—The total value of the production of gold in 1912 was $12,648,794, representing 611,885 fine ounces, as compared with $9,781,077, representing 473,159 fine ounces of metal in 1911.

The Yukon placer production in 1912 was 267,988 fine ounces, valued at $5,539,808.

Of the total production in 1912 about $6,106,677 were derived from alluvial workings; $2,270,331 as bullion from milling ores, and $4,271,786 from ores and concentrates sent to smelters. In 1911, $5,014,207 were derived from alluvial workings; $513,991 as bullion from milling ores, and $4,252,879 from ores and concentrates sent to smelters.

The exports of gold-bearing dust, quartz, nuggets, and gold in ore, etc., in 1912, were valued at $10,014,654, as against $7,493,523 in 1911.

The imports of gold coin during the calendar year 1912 were $7,496,492, and of gold bullion $1,360,735.

Pig Iron.—The total production of pig iron in Canadian blast furnaces in 1912 was 1,014,587 tons, valued at $14,550,999, of which it is estimated 978,232 tons, valued at $14,100,113, should be credited to imported ores, and 36,355 tons, valued at $450,886, to domestic ores. In 1911 the total production was 917,535 tons, valued at $12,307,125, of which 875,349 tons, valued at $11,693,721, should be credited to imported ores, and 42,186 tons, valued at $613,404, to domestic ores.

The exports of pig iron, including ferro-products, in 1912, were 6,976 tons, valued at $310,702, as against 5,870 tons, valued at $271,968, in 1911. The imports of pig iron in 1912 were 272,565 tons, valued at $3,511,599, ferro-manganese, etc., 19,810 tons, valued at $469,884, and charcoal pig 115 tons, valued at $1,370, as compared with imports in 1911 of pig iron 208,487 tons, valued at $2,610,989, and ferro-manganese, etc., 17,226 tons, valued at $429,465.

The total exports of iron and steel and manufactures thereof, in 1912, were valued at $10,682,484, as against $9,907,281 in 1911. The imports of iron and steel and manufactures thereof during the calendar year 1912 were valued at $124,376,986, as compared with $93,171,817 during the calendar year 1911.

Iron Ore.—The total shipments of iron ore from Canadian mines in 1912 were 215,883 tons, valued at $523,315, as compared with 210,344 tons, valued at $522,319, in 1911. The exports of iron ore in 1912 were 118,129 tons, valued at $382,005, as against 37,686 tons, valued at $133,411, in 1911. The quantity of imported iron ore used in Canada in 1912 was about 2,019,165 tons, as compared with 1,628,368 tons of imported ore used in 1911.

Lead.—The production of lead in 1912 was 35,763,476 pounds, valued at $1,597,554, as against 23,784,969 pounds, valued at $827,717, in 1911. The exports of lead in 1912 were: lead in ore, etc., 299,240 pounds, valued at $8,193; while in 1911 the exports were: lead in ore, etc., 65,100 pounds; pig lead, 71,961 pounds—total, 137,061 pounds. The total value of the imports of lead and manufactures of, in 1912, was $1,806,221, as compared with imports in 1911, valued at $1,049,276.

Nickel.—The production of nickel contained in nickel-copper matte produced in Canada and exported for refinement was, in 1912, 44,841,542 pounds, as compared with a production of 34,098,744 pounds in 1911. During 1912 there were smelted 725,065 tons of ore, producing 41,925 tons of matte, as against 610,834 tons of ore smelted in 1911, producing 32,607 tons of matte. Small quantities of nickel oxide are also produced in connexion with the treatment of the Cobalt District silver ores. The exports of nickel contained in ore, matte, etc., during 1912, were 44,221,860 pounds, valued at $4,661,758: being 5,072,867 pounds to Great Britain and 39,148,993 pounds to the United States. In 1911 the exports were 32,619,971 pounds, valued at $3,676,396: being 5,023,393 pounds

to Great Britain and 27,596,578 pounds to the United States. The imports of nickel and nickel anodes in 1912 were valued at $23,125, as against a value of $34,199 imported in 1911.

Silver.—The production of silver contained in bullion, or estimated as recovered from mattes and ore, etc., exported, was in 1912, 31,955,560 fine ounces valued at $1,440,165, as compared with a production of 32,559,044 fine ounces, valued at $17,355,272, in 1911. About 91·4 per cent of the production in 1912 was derived from "Cobalt District" of Ontario. The production of silver in 1905 was only 6,000,023 ounces, and in 1900, 4,468,225 ounces. The exports of silver contained in ores, mattes, etc., in 1912, were 34,911,922 ounces, valued at $19,494,416; as against exports of 31,216,725 ounces, valued at $15,807,366, in 1911. The imports of silver bullion during the calendar year 1912 were valued at $1,100,344, as compared with bullion imports of $847,645 in 1911.

Zinc.—The shipments of zinc ore in 1912 were 6,415 tons, valued at $215,149, as compared with shipments of 2,590 tons, valued at $101,072, in 1911. The total value of the imports of zinc and manufactures of zinc, in 1912, was $1,824,519, as compared with imports, valued at $1,227,660, in 1911.

NON-METALLIC PRODUCTS.

Actinolite.—A production of 92 tons, valued at $1,000, was reported in 1912, as compared with 67 tons, valued at $736, in 1911.

Arsenic.—Smelter returns show a production in 1912 of 2,045 tons of arsenious oxide, valued at $89,262, as compared with a production in 1911 of 2,097 tons, valued at $76,237.

The exports of arsenic in 1912 were 1,924 tons, valued at $101,310, as against 2,063 tons, valued at $81,761, in 1911. The imports of arsenious oxide in 1912 were 76,528 pounds, valued at $1,722, as compared with 7,338 pounds, valued at $158, in 1911. The imports of sulphide of arsenic in 1912 were 451,928 pounds, valued at $19,431, and in 1911, 330,170 pounds, valued at $6,665.

Asbestos.—The shipments of asbestos in 1912 were 111,561 tons, valued at $3,117,572, and of asbestic, 24,740 tons, valued at $19,707. The shipments in 1911 were 101,393 tons, valued at $2,922,062, and of asbestic 26,021 tons, valued at $21,046. The shipments in 1912 consisted of 5,662·9 tons of crude asbestos, valued at $890,351, and 105,898 tons of mill stock, valued at $2,227,221. Considerable quantities both of crude and of mill stock were held in manufacturers' hands at the close of the year.

Exports in 1912 were 88,008 tons, valued at $2,349,353, as against 75,120 tons, valued at $2,067,259, in 1911.

Imports and manufactures of asbestos in 1912 were valued at $461,449, and in 1911, $319,815.

Chromite.—During 1912 no shipments of chromite were reported. Shipments from stock in 1911 were 157 tons, valued at $2,587.

Coal.—The production of coal in 1912 was 14,512,829 tons, valued at $36,019,044, as against 11,323,388 tons, valued at $26,467,646, in 1911. The exports of coal in 1912 were 2,127,133 tons, valued at $5,821,593, as compared with 1,500,639 tons, valued at $4,357,074, in 1911. The total imports of coal in 1912 were 14,595,810 tons, valued at $39,478,037, as against imports in 1911 of 14,558,892 tons, valued at $39,292,591.

The 1912 imports included 8,491,840 tons of bituminous round and run of mine coal, valued at $16,846,727; 4,184,017 tons of anthracite and anthracite dust, valued at $20,080,388; and 1,919,953 tons of bituminous slack, such as will pass through a ¾" screen, valued at $2,550,922.

In 1911 the imports included 8,905,815 tons of bituminous round and run of mine, valued at $18,407,603; 4,020,577 tons of anthracite and anthracite dust, valued at $18,794,192; and 1,632,500 tons of bituminous slack, such as will pass through a ¾" screen. The consumption of coal in 1912 was approximately 26,924,800 tons, as against 24,247,698 tons in 1911.

Coke.—The total quantity of oven coke made in 1912 was 1,406,028 tons, the quantity sold or used was 1,411,229 tons, valued at $5,164,331; as compared with 954,388 tons made and 935,651 tons sold or used, valued at $3,630,410, in 1911. The quantity of coal charged to coke ovens, in 1912, was 2,053,807 tons, as compared with 1,409,844 tons in 1911. The exports of coke in 1912 were 57,744 tons, valued at $252,763, and, in 1911, 9,852 tons, valued at $39,823. The imports of coke in 1912 were 496,830 tons, valued at $1,358,451, as compared with imports of 751,389 tons, valued at $1,843,248, in 1911.

Corundum.—The total sales of grain corundum in 1912 were 1,960 tons, valued at $239,091, as compared with sales in 1911 of 1,472 tons, valued at $161,873. Exports for 1912 were 1,928 tons, valued at $205,819.

Feldspar.—Shipments of feldspar in 1912 were 13,733 tons, valued at $30,916, as compared with 17,723 tons, valued at $51,939, in 1911. The exports are recorded as 12,779 tons, valued at $44,114, in 1912, and 16,150 tons, valued at $56,085, in 1911.

Fluorspar.—About 40 tons, valued at $240, were shipped from the mine in 1912, and 34 tons, valued at $238, in 1911. Canadian furnaces in 1912 used 9,709 tons of fluorspar. Imports of hydro-fluo-silicic acid were 302,918 pounds, valued at $24,891.

Graphite.—Shipments of crude and milled graphite during 1912 totalled 2,060 tons, valued at $117,122, as against 1,269 tons, valued at $69,576, in 1911. The production of artificial graphite in 1912 was reported as 1,151 tons, as compared with 1,086 tons in 1911.

Exports of plumbago in 1912 are reported as 1,654 tons, valued at $70,763, and manufactures of plumbago valued at $58,920. Exports in 1911 were: plumbago 813 tons, valued at $43,249, and manufactures of plumbago valued at $33,956. Imports of graphite in 1912 were valued at $155,484, and included: plumbago not ground $7,249; blacklead $9,587; plumbago ground and manufactures of, $56,324; and crucibles of clay or plumbago, $82,324. In 1911 the imports were valued at $112,946, including: plumbago not ground $4,940; blacklead $14,172; plumbago ground and manufactures of, $37,020; and crucibles of clay or plumbago $56,814.

Grindstones.—The production of grindstones, scythestones, and wood pulpstones, in 1912, was 4,412 tons, valued at $52,090, as compared with 4,566 tons, valued at $52,942, in 1911. The exports in 1912 were manufactured grindstones valued at $26,535; the exports in 1911 were stone for the manufacture of grindstones, 15 tons valued at $22, and manufactured grindstones valued at $29,184. The imports of abrasives in 1912 included: grindstones valued at $112,020; burrstones, $1,409; emery in bulk, crushed or ground, $46,616; manufactures of emery, carborundum, etc., $130,571; pumice stone, $21,310; also iron sand, $13,347; sandpaper, $189,782. The 1911 imports comprised: grindstones valued at $123,356; burrstones, $1,642; emery in bulk crushed or ground, $46,274, manufactures of emery, carborundum, etc., $104,170; pumice stone, $18,779; also iron sand, $8,340; sandpaper, $164,474.

Gypsum.—The total shipments of gypsum, crude and calcined, in 1912, were 578,458 tons, valued at $1,324,620, as compared with shipments of 518,383 tons, valued at $993,394, in 1911. The tonnage of gypsum mined or quarried in 1912 was 549,856 tons, and the quantity calcined 133,392 tons. In 1911, 495,979 tons of gypsum were mined or quarried and 76,718 tons calcined. The shipments in 1912 included: crude gypsum 453,577 tons, valued at $525,345; ground gypsum 15,487 tons, valued at $29,244, and calcined gypsum 109,394 tons, valued at $770,031. In 1911 shipments comprised: crude gypsum 449,823 tons, valued at $481,077; ground gypsum 7,149 tons, valued at $23,125, and calcined gypsum 61,411 tons, valued at $489,192. The exports of gypsum in 1912 were: 364,643 tons of crude gypsum, valued at $423,208, and gypsum ground or calcined valued at $6,495. The 1911 exports were: 362,102 tons of crude gypsum, valued at $425,161, and gypsum ground or calcined valued at $4,429.

The imports of gypsum in 1912 were valued at $268,103, including: crude gypsum, 3,503 tons, valued at $16,254; ground gypsum, 7,072 tons, valued at $19,651, and plaster of Paris, 32,496 tons, valued at $232,198. The total value of imports in 1911 was $205,782, made up of: crude gypsum 2,035 tons, valued at $11,792; ground gypsum 11,208 tons, valued at $3,619; and plaster of Paris, 28,518 tons, valued at $190,371.

Magnesite.—Shipments of magnesite in 1912 were 1,714 tons, valued at $9,645, and in 1911, 991 tons, valued at $5,531. Imports of magnesia in 1912 were 758,909 pounds, valued at $29,641.

Manganese.—There was a shipment of 75 tons, valued at $1,875, in 1912, as against 5½ tons, valued at $300, in 1911. The exports in 1912 were 10 tons, valued at $300, as against 4 tons, valued at $225, in 1911. The 1912 imports included 1,256 tons manganese oxide, valued at $27,707, as compared with 962 tons, valued at $22,612, in 1911.

Mica.—The value of the mica production in 1912 as reported by mine operators was $143,976, as compared with $128,677 in 1911. The exports of mica in 1912 were 895,338 pounds, valued at $334,054, as against 693,940 pounds, valued at $242,548, in 1911.

Mineral Pigments.—Shipments of barytes in 1912 were 464 tons, valued at $5,104, as against 50 tons, valued at $400, in 1911. The production of iron ochres in 1912 was 7,654 tons, valued at $32,410, as compared with 3,622 tons, valued at $28,333, in 1911.

In 1912 the exports of barytes were 68 hundredweight, valued at $114. The exports of iron oxides in 1912 were 3,016 tons, valued at $34,513, as against 2,000 tons, valued at $27,070, in 1911. The imports in 1912 were: ochres and ochrey earth and raw siennas, 1,737 tons, valued at $40,165; and oxides, dry fillers, fireproof umbers, and burnt siennas, 762 tons, valued at $29,456, as compared with imports in 1911, comprising: ochres and ochrey earth and raw siennas 1,477 tons, valued at $32,032; and oxides, dry fillers, fireproof umbers, and burnt siennas, 722 tons, valued at $21,060.

Mineral Water.—The value of the production of mineral water in 1912 for which returns were received was $172,465, as compared with a value of $223,758 in 1911. The imports of mineral and aerated waters in 1912 were valued at $273,698, as against a value of $229,367 in 1911. The exports in 1912 were valued at $4,667, as against $12,952 in 1911.

Natural Gas.—The value of the production of natural gas in 1912 was 15,287 million cubic feet, valued at $2,362,700, as compared with 11,644 million cubic feet, valued at $1,917,678, in 1911.

Peat.—Shipments of peat for fuel purposes in 1912 were 700 tons, valued at $2,900, as compared with 1,463 tons, valued at $3,817, in 1911.

Petroleum.—The production of crude petroleum shows a further falling off in 1912, the production being 243,336 barrels or 8,516,762 gallons, valued at $345,050; as compared with 291,092 barrels or 10,188,219 gallons, valued at $357,073, in 1911.

Exports of refined oil in 1912 were 36,945 gallons, valued at $6,147, and 489 gallons, valued at $73, in 1911. There was an export in 1912 of naphtha and gasoline of 25,791 gallons, valued at $4,261, and also an export of other oils, N.E.S. of 397,039 gallons, valued at $119,686, which may have included products of petroleum.

While the production has been decreasing the imports have been increasing; the total import of petroleum oils, crude and refined, in 1912, was 186,787,484 gallons, valued at $11,858,533, in addition to 2,144,006 pounds of paraffin wax and candles, valued at $119,520. The oil imports included: crude oil, 120,082,405 gallons, valued at $3,996,842; refined and illuminating oils 14,748,218 gallons, valued at $1,012,735; gasoline 40,904,598 gallons, valued at $5,347,767; lubricating oils 6,763,800 gallons, valued at $1,077,712, and other petroleum products 4,288,463 gallons, valued at $423,477.

The total imports in 1911 were 116,892,689 gallons, valued at $6,009,730, and 1,959,787 pounds of paraffin wax and candles, valued at $106,424. The oil imports included: crude oil 71,653,251 gallons, valued at $2,188,870; refined and illuminating oils, 13,690,962 gallons, valued at $722,403; gasoline 23,338,773 gallons, valued at $1,976,032; lubricating oils 5,308,917 gallons, valued at $806,452, and other petroleum products 2,900,786 gallons, valued at $315,973.

Phosphate.—Shipments of phosphate or apatite in 1912 were 164 tons, valued at $1,640, as compared with 621 tons, valued at $5,206, in 1911. There were no exports in 1912, while exports of 3 tons, valued at $100, were reported in 1911. There was an export of phosphorus in 1912, of 543,620 pounds, valued at $66,806. The imports of phosphate rock (fertilizer) in 1912 were valued at $24,586; phosphorus, 13,807 pounds, valued at $4,012, and manufactured fertilizers valued at $580,351. The imports in 1911 included phosphate rock (fertilizer), valued at $46, 217; phosphorus, 14,818 pounds, valued at $4,384, and manufactured fertilizers valued at $386,645.

Pyrites.—The production of pyrites in 1912 was 81,526 tons, valued at $314,085, as compared with 82,666 tons, valued at $365,820, in 1911. The exports of pyrites in 1912 were 5,938 tons, valued at $11,935, as against exports of 32,102 tons, valued at $120,585, in 1911. The imports of brimstone or sulphur in 1912 were 38,647 tons, valued at $806,690, as against 21,931 tons, valued at $446,491, in 1911.

Quartz.—The production of quartz in 1912 was reported as 100,242 tons, valued at $195,216, compared with a production in 1911 of 60,526 tons, valued at $83,865. There were imported during 1912, 629 tons of silex or crystallized quartz, valued at $10,680, and 2,802 tons flint, valued at $39,891; and in 1911, 394 tons of silex, valued at $7,518, and 3,766 tons flint, valued at $49,106.

Salt.—The total sales of salt in 1912 were 95,053 tons, valued at $459,582 (exclusive of packages). The value of the packages used was $224,696. In 1911 the sales were 91,582 tons, valued at $443,004, and value of packages used $198,789.

Exports of salt in 1912 were 289,150 pounds, valued at $3,723, and in 1911, 454,600 pounds, valued at $5,055. The total imports of salt in 1912 were valued at $485,950, and included: 30,067 tons, valued at $133,869, subject to duty; and 109,639 tons, valued at $352,081, duty free. The 1911 imports were valued at

$436,118, and included: 23,176 tons, valued at $109,793, subject to duty; and 101,174 tons, valued at $326,325, duty free.

Among the imports of soda products in 1912 are included: soda ash or barilla, 52,167,811 pounds, valued at $421,959; soda bichromate, 584,424 pounds, valued at $33,744; caustic soda in packages of 25 pounds or more, 14,544,545 pounds, valued at $278,579; sal soda 9,996,562 pounds, valued at $64,020; nitrate of, 83,989,303 pounds, valued at $1,537,379, and sulphate of soda, 19,243,823 pounds, valued at $97,768.

Talc.—The production of talc in 1912 was 8,270 tons, valued at $23,132, as against 7,300 tons, valued at $22,100. Imports of talc for the calendar year 1912 were 195 tons, valued at $4,414.

Tripolite.—Thirty-eight tons of tripolite, valued at $230, were shipped in 1912, and 20 tons, valued at $122, in 1911.

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

Cement.—The total sales of cement in 1912 were 7,132,732 barrels, valued at $9,106,556, as against 5,692,915 barrels, valued at $7,644,537, sold in 1911, showing an increase of 1,439,817 barrels. The exports of cement in 1912 were valued at $2,436, as compared with exports valued at $4,067 in 1911.

The imports of cement in 1912 included: manufactures of cement valued at $9,698; and Portland cement 5,020,446 hundredweight (1,434,413 barrels), valued at $1,969,529. The imports in 1911 were: manufactures of cement, valued at $7,430; hydraulic cement 26,655 hundredweight, valued at $6,107; and Portland cement 2,316,707 hundredweight (661,916 barrels), valued at $834,879. The consumption of Portland cement in Canada in 1912 was approximately 8,567,145 barrels, as compared with 6,354,831 barrels in 1911.

Clay Products.—The total value of the production of clay products in Canada in 1912 was $10,575,709, as compared with a total value of $8,359,933 in 1911. Brick and tile products alone were valued in 1912 at $9,072,675, as against $6,946,009 in 1911. The value of sewerpipe production in 1912 was $884,641, as compared with $812,716 in 1911. The only clay products exported in 1912 were 694,000 building brick, valued at $8,493, and manufactures of clay valued at $256; against 394,000 building brick, valued at $3,977, and manufactures of clay valued at $2,071. The total imports of clay products in 1912 were valued at $6,592,540, and included: brick and tile valued at $3,209,190; earthenware and chinaware $3,094,956, and clays valued at $288,394. The total imports in 1911 were valued at $5,156,544, and included: brick and tile valued at $2,369,761; earthenware and chinaware $2,516,536, and clays valued at $270,247.

Kaolin.—In 1912 a shipment of 20 tons valued at $160 was reported.

Lime.—The total production of lime in 1912 was 8,475,839 bushels, valued at $1,844,849, as compared with 7,533,525 bushels, valued at $1,517,756, in 1911. The exports of lime in 1912 were valued at $35,097, as against exports valued at $39,536 in 1911. The imports of lime in 1912 were 329,925 barrels, valued at $207,481, and in 1911, 228,538 barrels, valued at $161,985.

Sand-Lime Brick.—The total sales of sand-lime brick in 1912 by 20 firms reporting were 96,448,402, valued at $1,020,386, an average value of $10.58 per thousand. The sales in 1911 by 16 firms reporting were 51,535,243 brick, valued at $442,427, an average value of $8.58 per thousand.

Slate.—The production of slate in 1912 was 1,894 squares, valued at $8,939, and 1,833 squares, valued at $8,248, in 1911.

The imports of slate in 1912 were valued at $200,643, and included: roofing slate valued at $88,911; school writing slate, $39,858; slate pencils, $6,978, and manufactures of slate, $65,896. The imports in 1911 were valued at $169,685, and included: roofing slate valued at $83,075; school writing slate, $35,049; slate pencils, $6,036, and manufactures of slate, $45,525.

Stone.—The total value of the production of stone of all kinds in 1912 was $4,726,171, as compared with a value of $4,328,757 in 1911. The value of stone exports in 1912 was $33,242, as against $28,335 in 1911; and the total value of stone imported in 1912 was $1,467,143, as against imports valued at $1,140,846 in 1911.

The production in 1912 included: granite, valued at $1,373,119; limestone, $2,762,936; marble, $260,764, and sandstone, $329,352. In 1911 the production of granite was valued at $1,119,865, limestone, $2,594,926; marble, $162,783, and sandstone, $451,183.

PRODUCTION BY PROVINCES.

A summary of the mineral production by provinces in 1911 and 1912 is shown in the accompanying tables, in the first of which the total production in the several provinces, and the percentage of each, are given for the past three years. This record shows some slight changes in the relative importance of the production of each. The only change in the order of magnitude of output is that Alberta, the production of which had exceeded that of Quebec in 1910, but fallen below in 1911, on account of its restricted coal output, again takes premier place in 1912. Ontario is still the largest contributor to the total, being credited with 38·5 per cent, or $51,985,876; British Columbia comes second with 22 per cent, or $30,076,635; Nova Scotia third with $18,922,236, or 14 per cent; Alberta fourth with $12,073,589, or nearly 9 per cent; and Quebec fifth with $11,656,998, or 8·6 per cent. Manitoba, Saskatchewan, and New Brunswick, follow in the order named.

It should be remembered in dealing with these comparisons that Nova Scotia in the above record is given no credit on account of the large iron smelting and

steel making industries at Sydney, New Glasgow, etc. The pig iron made here is entirely from imported ore and naturally is not credited as a Canadian mine output. The same remark applies to a large percentage of the pig iron production in Ontario, as well as to the production of aluminium in Quebec.

There was an increased output in each of the provinces in 1913, the largest gains being in Alberta and British Columbia.

In Nova Scotia both coal and gypsum mining were particularly active, though a reduced production of gold is reported. Copper and asbestos mining in Quebec contribute chiefly to the increase in that Province. Ontario had important increases in nickel and copper, but more especially in gold from the Porcupine district. This Province has a large output of non-metallic products, including cement, clays, etc. In Alberta coal mining has had a record year, exceeding in tonnage the British Columbia production. In the latter Province the principal increase was in copper, with gold, silver, lead, zinc, coal, and structural or building materials as important contributors.

The last table shows the total mineral production of Canada by provinces for the years 1889 to 1912 inclusive.

Mineral Production by Provinces, 1910, 1911, and 1912.

Province.	1910.		1911.		1912.	
	Value of production.	Per cent of total.	Value of production.	Per cent of total.	Value of production.	Per cent of total.
	$	%	$	%	$	%
*Nova Scotia	14,195,730	13·29	15,409,397	14·93	18,922,236	14·01
New Brunswick	581,942	0·54	612,830	0·59	771,004	0·57
Quebec	8,270,136	7·74	9,304,717	9·01	11,656,998	8·63
Ontario	43,538,078	40·76	42,796,162	41·46	51,985,876	38·50
Manitoba	1,500,359	1·40	1,791,772	1·74	2,463,074	1·83
Saskatchewan	498,122	0·47	636,706	0·62	1,165,642	0·86
Alberta	8,996,210	8·42	6,662,673	6·46	12,073,589	8·94
British Columbia	24,478,572	22·92	21,299,305	20·63	30,076,635	22·27
Yukon	4,764,474	4·46	4,707,432	4·56	5,933,242	4·39
Dominion	106,823,623	100·00	103,220,994	100·00	135,048,296	100 00

*Includes a small production of lime from Prince Edward Island

Mineral Production of Nova Scotia, 1911 and 1912.

Product.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Gold	Ozs.	7,781	160,854	4,385	90,638
Iron ore sold for export	Tons.	22	50	30,857	168,877
Barytes	"	50	400	464	5,104
Coal	"	7,004,420	14,071,379	7,783,888	17,374,750
Grindstones	"	380	3,382	374	3,760
Gypsum	"	353,999	406,457	376,082	481,493
Manganese	"	5½	300	75	1,875
Tripolite	"	20	122	38	230
Clay products		.....	274,249	.....	272,053
Lime	Bus.	639,200	130,555	709,596	145,121
Stone		.....	292,914	.....	324,630
Other products		.....	68,735	.....	53,705
Total		.....	15,409,397	.....	18,922,236

* The total production of pig iron in Nova Scotia in 1912 was 424,994 tons valued at $6,374,910, and in 1911, 390,242 tons valued at $4,682,904, all produced from imported ore.

Mineral Production of New Brunswick, 1911 and 1912.

Product.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Iron ore sold for export	Tons.	31,120	69,464	71,520	127,716
Coal	"	55,781	111,562	44,780	89,560
Grindstones	"	4,186	49,560	4,038	48,330
Gypsum	"	93,205	115,044	82,757	185,821
Mineral water		.....	19,843	.....	.....
Natural gas	M cub. ft.	.....	.....	173,903	36,549
Petroleum	Bls.	2,461	3,019	2,679	3,799
Clay products		.....	38,000	.....	54,910
Lime	Bus.	613,728	132,897	616,835	133,742
Stone		.....	73,441	.....	90,577
Total		.....	612,830	.....	771,004

Mineral Production of Quebec, 1911 and 1912.

Product.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper	Lbs.	2,436,190	301,503	3,282,210	536,346
Gold	Ozs.	613	12,672	642	13,270
Iron ore sold for export	Tons.	3,616	6,479	1,185	4,232
Iron, pig from Canadian ore (a)	"	379	9,949	.....	.....
Silver	Ozs.	18,435	9,827	9,465	5,758
Asbestos and asbestic	Tons.	127,414	2,943,108	136,301	3,137,279
Chromite	"	157	2,587	.....	.....
Feldspar	"	17	255	100	2,000
Graphite	"	374	33,084	604	50,680
Magnesite	"	991	5,531	1,714	9,645
Mica	"	.....	69,465	.....	81,044
Mineral water	Gals.	.....	63,637	92,873	36,736
Ochres, iron oxides	Tons.	3,612	28,173	7,654	32,410
Peat	"	200	800	500	2,000
Phosphate	"	586	4,909	164	1,640
Pyrites	"	39,122	247,555	60,849	243,396
Quartz	"	548	684	556	1,240
Cement	Bls.	1,614,730	1,963,439	2,714,685	3,134,499
Clay products		.....	1,341,467	.....	1,680,300
Kaolin	Tons.	.....	.....	20	160
Lime	Bus.	1,428,392	356,453	1,729,614	474,595
Slate	Squares.	1,833	8,248	1,894	8,939
Stone		.....	1,894,892	.....	1,957,703
Other products		.....	.....	.....	243,126
Total		.....	9,304,717	.....	11,656,998

(a) The total production of pig iron in Quebec in 1911 was 658 tons valued at $17,282, while there was none whatever in 1912.

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

Mineral Production of Ontario, 1911 and 1912.

Products.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Cobalt oxide and nickel oxide	Lbs.	154,174	221,690	349,054	156,256
Cobalt mineral and mixed cobalt and nickel oxide	"	1,260,832		1,285,280	163,988
Copper	"	17,932,263	2,219,297	22,250,601	3,635,971
Gold	Ozs.	2,062	42,625	86,523	1,788,596
Iron ore, sold for export	Tons.	5,379	12,577	14,567	28,125
Iron pig from Canadian ore *(a)*	"	41,807	603,455	36,355	450,886
Nickel	Lbs.	34,098,744	10,229,623	44,841,542	13,452,463
Silver	Ozs.	30,540,754	16,279,443	29,214,025	17,772,352
Zinc ore	Tons.	.....	.....	10	3,750
Actinolite	"	67	736	92	1,000
Arsenious oxide	"	2,097	76,237	2,045	89,262
Corundum	"	1,472	161,873	1,960	239,091
Feldspar	"	17,706	51,684	13,633	28,916
Fluorspar	"	34	238	40	240
Graphite	"	895	36,492	1,456	66,442
Gypsum	"	27,399	98,018	53,119	176,056
Mica	.....	.....	59,212	.....	62,932
Mineral water	.....	.....	136,778	.....	131,529
Natural gas	M cub. ft.	10,863,871	1,807,513	12,529,463	2,036,245
Ochres	Tons.	10	160	.....	.....
Peat	"	1,263	3,017	200	900
Petroleum	Bls.	288,631	354,054	240,657	341,251
Phosphate	Tons.	35	297	.....	.....
Pyrites	"	43,544	118,265	20,677	70,689
Quartz	"	59,978	83,181	99,636	193,976
Salt	"	91,582	443,004	95,053	459,582
Talc	"	7,300	22,100	8,270	23,132
Cement	Bls.	3,090,786	3,741,039	3,044,713	3,372,897
Clay products	.....	.....	3,916,575	.....	4,864,700
Lime	Bus.	3,360,265	538,902	3,376,193	573,269
Sand-lime brick	No.	29,502,186	237,662	36,371,002	328,548
Stone	.....	.....	892,305	.....	1,109,164
Other products	.....	.....	408,110	.....	363,668
Total	.....	.....	42,796,162	.....	51,985,876

(a) The total production of pig iron in Ontario in 1912 was 589,593 tons, valued at $8,176,089; in 1911, 526,635 tons, valued at $7,606,939.

Mineral Production of Manitoba, 1911 and 1912.

Product.	1911.		1912.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Calcined gypsum ..... Tons.	43,000	372,000	66,500	481,250
Clay products	.....	834,428	.....	1,018,051
Lime ..... Bus.	706,888	140,629	818,237	168,257
Cement ..... Bls.	21,350	28,289	12,127	16,068
Sand-lime brick ..... No.	9,679,985	98,376	27,594,874	294,700
Stone	.....	318,050	.....	383,095
Other products	.....	.....	.....	101,653
Total	.....	1,791,772	.....	2,463,074

Mineral Production of Saskatchewan, 1911 and 1912.

Prod ct.	1911.		1912.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Coal ..... Tons.	206,779	347,248	225,342	368,135
Brick, common and pressed ..... No.	21,071,660	224,758	30,538,771	332,943
Lime ..... Bus.	.....	.....	4,000	1,440
Sand-lime brick ..... No.	(a)	.....	16,292,114	207,671
Other products	.....	64,700	.....	255,453
Total	.....	636,706	.....	1,165,642

(a) In 1911, included in "Other products."

Mineral Production of Alberta, 1911 and 1912.

Product.	1911.		1912.	
	Quantity.	Value.	Quantity.	Value.
		$		$
Gold ..... Ozs.	10	207	73	1,509
Coal ..... Tons.	1,511,036	3,979,264	3,240,577	8,113,525
Natural gas ..... M ft.	780,286	110,165	2,583,437	289,906
Cement ..... Bls.	512,176	1,241,535	821,165	1,775,898
Clay products	.....	1,052,751	.....	1,356,184
Lime ..... Bus.	434,038	100,407	704,035	166,520
Sand-lime brick ..... No.	3,500,000	20,000	10,732,000	139,952
Sandstone	.....	158,344	.....	81,391
Other products	.....	.....	.....	148,704
Total	.....	6,662,673	.....	12,073,589

Mineral Production of British Columbia, 1911 and 1912.

Product.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper *(a)*	Lbs.	35,279,558	4,366,198	50,526,656	8,256,561
Gold	Ozs.	238,496	4,930,145	251,815	5,205,485
Lead	Lbs.	23,784,969	827,717	37,763,476	1,597,554
Silver	Ozs.	1,887,147	1,005,924	2,651,002	1,612,737
Zinc ore		2,590	101,072	6,405	211,399
Coal	Tons.	2,542,532	7,945,413	3,208,997	10,028,116
Gypsum	"	780	1,875	.....	.....
Mineral water		.....	3,500	.....	4,200
Cement	Bls.	401,000	601,500	511,539	767,038
Clay products		.....	675,505	.....	996,568
Lime	Bus.	351,014	117,756	517,329	181,905
Sand-lime brick	No.	2,953,072	23,889	5,458,412	49,515
Stone		.....	698,811	.....	779,611
Other products		.....	.....	.....	385,946
Total		.....	21,299,305	.....	30,076,635

(a) Smelter recoveries of copper.

Mineral Production of Yukon, 1911 and 1912.

Product.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Copper	Lbs.	.....	.....	1,772,660	289,670
Gold	Ozs.	224,197	4,634,574	268,447	5,549,296
Silver	"	112,708	60,078	81,058	49,318
Coal	Tons.	2,840	12,780	9,245	44,958
Total		.....	4,707,432	.....	5,933,242

Mineral Production by Provinces, 1899-1912.

Calendar Year.	Nova Scotia.*	New Brunswick.	Quebec.	Ontario.	Manitoba.	Alberta.	Saskatchewan.	Yukon.	British Columbia.	Total.
	$	$	$	$	$	$	$	$	$	$
1899	6,817,274	420,227	2,585,635	9,819,557	17,108,707				12,482,605	49,234,005
1900	9,298,479	439,060	3,292,383	11,258,099	23,452,330				16,680,526	64,420,877
1901	7,770,159	467,985	3,759,984	13,970,010	19,297,940				20,531,833	65,797,911
1902	10,686,549	607,129	3,743,636	14,619,091	16,127,400				17,448,031	63,231,836
1903	11,431,914	580,495	3,585,938	14,160,033	14,082,986				17,899,147	61,740,513
1904	11,212,746	559,913	3,688,482	12,582,843	12,713,613				19,325,174	60,082,771
1905	11,507,047	558,035	4,405,975	18,833,292	11,387,642				22,386,008	69,078,999
1906	12,894,303	646,328	5,242,058	25,111,682	10,092,726				25,299,600	79,286,697
1907	14,532,040	664,647	6,205,553	30,381,638	898,775	4,657,524	533,251	3,335,898	25,656,056	86,865,202
1908	14,487,108	579,816	6,372,949	30,623,812	584,374	5,122,505	413,212	3,669,290	23,704,035	85,557,101
1909	12,504,810	657,035	7,086,265	37,374,577	1,193,377	6,047,447	456,246	4,032,673	22,479,006	91,831,441
1910	14,195,730	581,942	8,270,136	43,538,078	1,500,359	8,996,210	498,122	4,764,474	24,478,572	106,823,623
1911	15,409,397	612,830	9,304,717	42,796,162	1,791,772	6,662,673	636,706	4,707,432	21,299,305	103,220,994
1912	18,922,236	771,004	11,656,998	51,985,876	2,463,074	12,073,589	1,165,642	5,933,242	30,076,635	135,048,296

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

MINE PRODUCTION.

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

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

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

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

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

The metalliferous ores mined in Canada at present fall naturally into a number of more or less broad groups as follows:—

(1) Iron ores.
(2) Milling gold ores, including certain dry ores shipped to smelters.
(3) Silver and silver cobalt nickel ores of Ontario.
(4) Nickel copper ores of Ontario.
(5) Silver lead and zinc ores.
(6) Copper-gold-silver ores (chiefly of British Columbia).

Statistics covering the years 1910, 1911, and 1912 are shown in tabular form herewith. Excluding placer and hydraulic gold workings the number of metalliferous mines shipping in 1912 was 163, as compared with 160 reported in 1911; the number of men employed in 1912 was 10,612 as against 9,622; wages paid $10,113,578 compared with $7,857,580 in 1911; tons of ore mined 4,194,517 in 1912 as against 3,195,330 tons the previous year; tons of ore, concentrates, or metal shipped, 3,360,432 in 1912 and 2,431,188 in 1911; total net value of shipments including placer gold $46,018,233 in 1912 and $34,760,513 in 1911.

In non-metalliferous mining, exclusive of stone quarries and clay pits, there were employed in 1912 an average of 33,954 men earning in wages $23,877,781.

The tonnage mined, chiefly coal, was 17,165,628 and tons shipped 15,548,981 having a net value of $45,080,674. There were employed in this class of mining in 1911 an average of 32,126 men, earning in wages $18,469,420; the number of tons mined was 13,890,468; tons shipped 12,247,348, having a net value of $34,405,960. The manufacture of cement, clay products, and lime, and the quarrying of stone, etc., employed in 1912 an average of 22,168 men, to whom were paid in wages $11,511,120, and the net value of products shipped was $28,794,869. These operations in 1911 engaged an average of 19,004 men, earning $8,827,508 in wages, and the value of products shipped was $22,709,611. Excluding the labour employed in placer gold mining and in the production of petroleum for which, as already explained, no record has been obtained, the total number of men engaged in the mining industry in 1912 was about 66,734 and wages paid $45,502,479. In 1911 the number of men was 60,752 and wages $35,154,508. It should be remembered that this is a record only of shipping mines and does not include the labour employed in prospecting or in developing new properties, neither does it include any record of labour employed in the smelting and refining of ores, or in blast furnace operations.

The total net value of mine shipments and the products of cement, clay, and lime plants on the basis shown in these tables was $119,893,776 in 1912, as compared with $91,876,084 in 1911.

This value it will be observed is considerably less than that shown in the Table of Mineral Production given on page 6, the difference being due entirely to the fact that values accrued through metallurgical reduction and refining are not included in these tables, they being intended to present, as indicated in the title, mine products. The values given in these tables are in general those furnished by the operators. In certain cases where mining, smelting, and refining operations are carried on by the same operator, it becomes a matter of no small difficulty to satisfactorily subdivide profits among the various operations, particularly when there is no general market for the class of ores treated. The nickel copper ores of the Sudbury district may be cited as a typical example. The value of $4 a ton placed upon this ore very probably does not include a sufficient proportion of the profits obtained in the ultimate refining.

Mine Production 1910.

—	No. of mines or works.	Men employed.		Wages Paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
		Underground.	Surface.				
METALLIFEROUS ORES.	No.	No.		$	Tons.	Tons.	$
Iron ores	8	971		443,998	335,768	259,418	574,362
Milling gold ores—							
Bullion shipped							659,987
Concentrate	47	969		725,989	138,021	8,997	565,340
Silver-cobalt ores—							
Mine bullion shipped						35	542,034
Ore and concentrate	38	1,632	1,322	2,642,133	274,780	35,627	15,344,470
Nickel-copper ores	7	660	286	719,237	652,392	652,392	2,609,568
Copper ores	3	118	97	105,366	54,220	36,714	172,162
Silver-lead and zinc ores	48	592	282	850,416	180,070	58,418	1,668,415
Copper-gold-silver ores	19	1,432	487	1,872,242	1,958,591	1,924,405	7,888,306
Shipping mines not reporting:							
Silver-lead	12				1,994	1,994	
Copper-gold	9						
Placer mining—							
Yukon							4,550,000
British Columbia							540,000
Other provinces							1,850
Total metallic	191	8,839		7,359,381	3,595,836	2,978,000	35,116,494
Total non-metallic		36,210		22,698,000	16,148,993	13,800,989	37,757,158
Total structural material		17,259		7,547,000			19,627,592
Total		62,308		37,604,381			92,501,244

Mine Production 1911.

—	No. of mines or works.	Men employed. Underground.	Men employed. Surface.	Wages Paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals shipped.	Net value of shipments.
METALLIFEROUS ORES.	No.	No.		$	Tons.	Tons.	$
Iron ores	8	943		449,468	421,113	210,344	522,319
Milling gold ores—							
Bullion shipped							513,991
Concentrates	45	1,085		954,659	118,758	8,026	663,213
Silver-cobalt ores—							
Mine bullion shipped						130	2,007,440
Ore and concentrate	36	1,794	1,448	2,722,228	254,290	25,539	14,400,245
Nickel-copper ores	7	858	425	889,894	612,511	612,511	2,450,044
Copper ores	2	119	67	98,084	66,088	39,047	247,555
Silver-lead and zinc ores	40	528	297	809,862	120,323	48,660	1,186,996
Gold-copper-silver ores	22	1,495	563	1,933,385	1,602,247	1,486,931	7,727,696
Placer mining—							
Yukon							4,606,812
British Columbia							426,000
Other provinces							8,202
Total metalliferous	160	9,622		7,857,580	3,195,330	2,431,188	34,760,513
" non-metalliferous		32,126		18,469,420	13,890,468	12,247,348	34,405,960
" structural materials		19,004		8,827,508			22,709,611
		60,752		35,154,508			91,876,084

Mine Production 1912.

—	No. of mines or works.	Men employed. Underground.	Men employed. Surface.	Wages paid.	Ores or minerals mined.	Metals, ores, concentrates or minerals, shipped.	Net value of shipments.
METALLIFEROUS ORES.	No.	No.		$	Tons.	Tons	$
Iron ores	8	524		371,938	171,792	215,883	523,315
Milling gold ore—							
Bullion shipped	43						
Concentrates		1,671		1,551,006	290,297	6,114	669,727
Silver-cobalt ores—							
Mine bullion shipped	31					164	2,899,360
Ore and concentrate		1,685	1,448	3,107,286	319,348	29,106	14,592,559
Nickel-copper ores	8	970	830	1,404,652	737,726	737,726	2,953,306
Copper ores	3	154	95	160,765	64,952	60,869	508,993
Silver-lead and zinc ores	50	597	331	1,002,203	202,343	66,377	2,767,741
Gold-copper-silver ores	20	1,434	873	2,515,728	2,408,059	2,244,193	13,113,144
Placer mining—							
Yukon							5,540,000
British Columbia							555,500
Other provinces							11,379
Total metalliferous	163	10,612		10,113,578	4,194,517	3,360,432	46,018,239
" non-metalliferous	443	33,954		23,877,781	7,165,628	15,548,981	45,080,674
" structural materials	831	22,168		11,511,120			28,794,869
	1,437	66,734		45,502,479			119,893,776

Labour and Wages Statistics Covering Non-Metalliferous Mines During 1911 and 1912.

—	1911.			1912.		
	No. active mines or works.	No. employed.	Wages paid.	No. active mines or works.	No. employed.	Wages paid.
NON-METALLIC.			$			$
Asbestos and asbestic	12	2,707	1,231,896	10	2,955	1,401,653
Coal	195	26,141	15,695,735	244	27,581	20,784,843
Feldspar	6	78	29,918	4	80	31,487
Graphite	7	302	106,000	7	221	86,831
Grindstones, pulpstones, scythe-stones	6	134	29,300	6	149	35,057
Gypsum	19	1,233	517,800	19	1,381	579,952
Mica and phosphates	30	231	73,870	26	241	95,415
Mineral pigments, barytes, and ochres	5	82	25,568	4	65	21,270
Mineral water	17	102	37,963	14	90	34,550
Natural gas	40	276	263,098	76	433	302,012
Peat	3	16	2,800	3	27	4,450
Pyrites	6	162	112,294	4	115	110,888
Quartz	8	145	52,543	7	128	80,340
Salt	12	225	123,040	12	231	155,648
Others ‡	9	292	167,595	8	292	168,641
Total non-metallic	375	32,126	18,469,420	443	33,954	23,877,781
STRUCTURAL.						
Cement	24	3,010	3,103,838	26	3,461	2,623,902
Clay products	419	9,131	3,524,658	460	10,460	4,504,213
Lime	75	1,056	523,518	78	1,103	576,217
Sand-lime brick	16	337	166,902	20	544	349,192
Sand and gravel *(a)*	.....	No record	.....	54	875	527,425
Slate	1	33	9,187	1	25	12,055
Stone	191	5,437	2,500,005	192	5,710	2,918,116
Total structural	726	19,004	8,827,508	831	22,168	11,511,120
" non-metalliferous	1,101	51,130	27,296,928	1,274	56,122	35,388,901

‡Includes: actinolite, chromite, corundum, fluorspar, magnesite, manganese, talc, and tripolite.
(a) No record in 1911. Partial record only in 1912.

SMELTER PRODUCTION.

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

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

The aggregate quantities of ores and concentrates treated in these works during 1912 were 3,005,410 tons, as compared with 2,193,553 tons in 1911, an increase of about 37 per cent. The largest proportion of the total tonnage (over 70 per cent) consists of the copper-gold-silver ores of British Columbia, chiefly from the Boundary (Phoenix and Greenwood), Rossland, and Coast (Britannia and Texada island) districts. The nickel-copper ores of the Sudbury district, Ontario, contributed about 24 per cent of the tonnage, the balance being lead ores of British Columbia and silver cobalt ores of Ontario.

The quantities of these several classes of ores smelted during the past five years have been as follows:—

Year.	Nickel-copper ores.	Silver-cobalt ores.	Lead ores.	Copper-gold-silver ores.	Totals.
1908.....	360,180	7,182	53,455	1,797,488	2,218,395
1909.....	462,336	8,384	54,539	1,850,889	2,376,148
1910.....	628,947	9,466	57,549	1,987,752	2,683,714
1911.....	610,834	9,330	55,408	1,517,981	2,193,553
1912.....	725,065	8,097	59,932	2,212,316	3,005,410

The products obtained in Canada from the treatment of these ores include: pig lead produced at Kingston, Ont., refined pig lead and lead pipe produced at Trail, B.C.; and fine gold, fine silver, copper sulphate, and antimony produced

[1] Not in operation during 1912.

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

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

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

Smelter and Refinery Production in Canada.

Matte, blister copper, and other smelter products obtained and exported for refining.	1908.	1909.	1910.	1911.	1912.
	Tons	Tons.	Tons.	Tons.	Tons.
(1) Blister copper	15,418	14,239	13,918	10,710	17,063
(2) Copper matte	7,649	11,597	11,519	11,320	6,727
(3) Nickel-copper matte	21,210	25,845	33,033	32,607	41,925
(4) Lead bullion	.....	2,010	.....	.....	.....
(5) Cobalt material	.....	.....	54	630	642

Refined products produced and metals contained in unrefined smelter products exported.	1910.		1911.		1912.	
	Refined products.	Metals contained in matte, blister, base bullion, and speiss.	Refined products.	Metals contained in matte, blister, and base bullion.	Refined products.	Metals contained in matte, blister, and base bullion.
Antimony.....Lbs.	.....	.....	.....	.....	.....	.....
Gold.....Ozs.	13,298	197,181	15,270	175,189	12,118	184,815
Silver ..... "	16,373,799	2,136,414	19,078,768	585,896	17,572,217	686,171
Lead..... Lbs.	32,987,508	.....	23,525,050	.....	35,893,190	.....
Copper ..... "	.....	56,149,299	.....	29,855,868	.....	58,405,910
Copper sulphate.... "	163,228	.....	197,187	.....	87,110	.....
Nickel..... "	.....	37,587,676	.....	34,098,744	.....	44,841,542
Cobalt oxide and nickel oxide..... "	13,508	.....	154,174	.....	349,054	.....
White arsenic..... "	3,003,467	.....	4,194,209	.....	4,090,768	.....
Arsenic..... "	.....	.....	.....	.....	.....	.....

(1) Blister copper carrying gold and silver values.
(2) Copper matte " " "
(3) Bessemer nickel-copper carrying small gold and silver values as well as metals, of the platinum group.
(4) Unrefined lead bullion carrying silver values.
(5) Cobalt material carrying nickel and silver values.

Nickel-Copper Ores.—These ores in the Sudbury district, together with a small tonnage from the Alexo mine in the district of Nipissing, Ontario, are treated in the smelters of the Canadian Copper Co., at Copper Cliff, and The Mond Nickel Company at Victoria Mines. The new smelter being constructed by the latter Company at Coniston was not in commission during 1912. A large portion of the ore is roasted in open heaps, before smelting.

The total quantity of ore mined during 1912 was 737,726 tons, and the quantity smelted was 725,065 tons. There was produced 41,925 tons of Bessemer matte containing 11,116 tons of copper and 22,421 tons of nickel. This is the largest production since the beginning of operations in 1886. In 1911 there was smelted 610,834 tons of ore, from which was produced 32,607 tons of Bessemer matte, containing 8,966 tons of copper and 17,049 tons of nickel.

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

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

Calendar Year.	Ore mined.	Ore smelted.	Matte shipped.	Value matte.	Nickel content of matte.	Copper content of matte.
	Tons.	Tons.	Tons.	$	Tons.	Tons.
1886	3,307					
1887	567	30,000	.....	.....	900	1,500
1888	.....					
1889	44,990	40,146	3,274	.....	432	733
1890	.....	.....	.....	.....	718	651
1891	83,300	72,558	10,336	.....	2,018	2,064
1892	74,381	57,022	.....	.....	1,207	1,102
1893	.....	.....	9,425	.....	1,991	1,821
1894	103,223	96,038	11,681	766,422	2,454	2,604
1895	74,135	68,618	10,188	890,834	1,944	2,288
1896	94,966	71,027	10,759	416,594	1,699	1,584
1897	93,154	96,370	13,968	.....	1,999	2,750
1898	123,820	121,924	.....	.....	2,759	4,187
1899	159,957	172,761	.....	702,341	2,872	2,834
1900	196,420	.....	23,336	1,076,306	3,540	3,364
1901	315,692	255,958	.....	1,661,839	4,594	4,318
1902	269,538	211,847	25,311	1,327,448	5,347	3,553
1903	136,033	207,030	13,332	2,686,469	6,253	3,576
1904	203,388	118,470	10,154	2,193,198	5,274	2,455
1905	277,766	251,421	17,405	4,019,814	9,438	4,386
1906	343,814	340,059	20,310	4,628,011	10,745	5,264
1907	351,916	359,076	22,025	3,289,382	10,595	6,996
1908	409,551	360,180	21,210	2,930,989	9,572	7,503
1909	451,892	462,336	25,845	1,913,012	13,141	7,873
1910	652,392	628,947	35,033	5,380,064	18,636	9,630
1911	612,511	610,834	32,607	4,945,593	17,049	8,966
1912	737,726	725,065	41,925	6,303,102	22,421	11,116

Silver-Copper-Nickel-Arsenic Ores.—The first shipments of silver ores were made from the Cobalt district in 1904, and in 1906 the first works for the treatment of these ores in Canada were established by the Canadian Copper Co., at Copper Cliff, Ont. Subsequently plants were erected by the Coniagas Reduction Company at Thorold, the Deloro Mining and Reduction Co. at Deloro, and the

Canada Refining and Smelting Company at Orillia, at each of which nickel and cobalt oxides are recovered in addition to silver bullion and white arsenic. Other small plants have more recently been established at Kingston, North Bay, and Trout Lake.

A large proportion of the ore tonnage shipped from this district is still sent to smelters in the United States, although during the past two years there has been a growing tendency toward the treatment of these ores by cyanidation and the recovery of silver at the mine in the form of bullion. Thus we find a falling off, during 1912, in the production of silver at Canadian smelters and an increased amount of bullion produced at the mines.

The treatment of these ores in Ontario during the past four years has given the following results:—

—		1909.	1910.	1911.	1912.
Ore treated	Tons.	8,384	9,466	9,330	8,097
Products recovered—					
Silver produced†	Ozs.	12,239,542	14,574,839	17,753,167	15,675,218
White arsenic	Lbs.	2,258,087	3,003,467	4,194,209	4,090,768
Speiss or residues	Tons.	2,660	3,074	.....	.....
Cobalt oxide and nickel oxide	Lbs.	.....	13,508	154,174	349,054
Mixed cobalt and nickel oxides and cobalt material	"	.....	108,178	1,260,832	1,285,280

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

Lead Ores.—There were two lead smelting plants in operation in Canada in 1912, a small plant having been constructed at Kingston, Ontario, for the smelting of ores of the Frontenac and other lead mines in Ontario. During 1912 this furnace was blown in on British Columbian and imported ores and lead waste. The smelter at Trail, B.C., treated practically all of the lead ore mined in southern British Columbia, with the exception of a small tonnage that went to Kingston.

In the lead refinery at Trail, the bullion from the smelter is cast into anodes and re-deposited electrolytically upon cathode sheets of refined lead. The refined lead is cast into pigs or manufactured into lead pipe. The slimes from the tank room carry gold, silver, antimony, arsenic, and copper. The first two are recovered as fine metals, and the copper as copper sulphate. Antimony is also recovered, though not regularly, and bearing metal is manufactured.

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

Calendar Year.	Refined lead	Fine gold.	Fine silver.	Copper sulphate.
	Lbs.	Ozs.	Ozs.	Lbs.
1904	7,519,440	4,336	551,450	56,000
1905	15,804,509	8,602	1,088,328	77,175
1906	20,471,314	9,993	1,263,809	143,135
1907	26,607,461	10,395	1,631,422	97,751
1908	36,549,274	15,346	1,956,039	203,379
1909	41,883,614	18,241	2,003,003	51,405
1910	32,987,508	13,298	1,798,960	163,228
1911	23,525,050	15,270	1,325,601	197,187
1912	35,254,790	12,118	1,896,999	87,110

Gold-Silver-Copper Ores of British Columbia.—Of the four copper smelters in British Columbia, three were active during 1912. These were the Trail copper furnace of the Consolidated Mining and Smelting Company, treating the ores of the Rossland camp and other ores of the district; the Grand Forks plant of the Granby Consolidated Mining, Smelting, and Power Co., and the Greenwood plant of the British Columbia Copper Company, treating chiefly the low grade ores of the Boundary district.

On the coast the Tyee Copper Company's furnace at Ladysmith was idle throughout the year. A new smelter is being constructed at Anyox, Observatory inlet, Portland canal, by the Granby Company, to treat the ores of the Hidden Creek mines. It is expected that this smelter will be completed and in operation during 1913.

The aggregate production of British Columbia copper smelters during the past four years, including the foreign ores treated, was as follows:—

——		1909.	1910.	1911.	1912.
Ore smelted	Tons.	1,850,889	1,987,752	1,517,981	2,212,316
Smelter products—					
Matte	"	11,597	11,519	11,320	6,727
Blister	"	14,239	13,918	10,710	17,069
Metallic content of matte and blister—					
Gold	Ozs.	198,898	197,181	175,189	184,815
Silver	"	612,164	636,140	585,896	686.171
Copper	Lbs.	37,581,884	36,890,283	29,855,868	36,174,185

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

Production of Trail Smelter.

Year ending June 30.	Ore smelted.	Metals contained in matte and bullion produced.			
		Gold.	Silver.	Lead.	Copper.
	Tons.	Ozs.	Ozs.	Lbs.	Lbs.
1906 (6 months only)	157,640	64,590	1,074,255	15,133,683	2,399,161
1907	222,573	69,168	1,100,271	20,283,083	3,443,310
1908	305,956	121,380	2,224,888	32,157,139	4,004,468
1909	347,417	114,920	2,443,475	43,675,077	4,637,631
1910	487,125	137,614	2,162,406	42,368,816	5,974,959
1911	388,785	119,067	1,458,758	24,026,015	4,421,988
1912	296,458	129,789	1,765,992	26,072,074	2,914,141
Production from 1894 to June, 1912	3,143,927	1,146,912	20,224,623	250,970,644	50,789,983

Granby Smelter.—The Granby Smelter is situated at Grand Forks in the Boundary district and is operated by the Granby Consolidated Mining, Smelting, and Power Co. The ores treated are those of the Company's mines at Phoenix, together with a small tonnage of custom ore.

The Phœnix ores are of particular interest because of the low tenor of their metal values, their self-fluxing character, and the large tonnage treated. The recovery of metals during the year ending June 30, 1912, as stated in the Company's annual report, was: copper 1·25 per cent; silver 0·29 ounces, and gold 0·043 ounces.

The first furnace of 300 tons capacity was completed in 1900, and since that date the capacity of the plant has been increased from time to time until at present there are eight furnaces with a total capacity of about 4,500 tons per day. The converter plant was first installed in 1902, and enlarged in 1909.

The quantities of ores smelted and the total production of metals, shown in the next table, are as published in the annual report of the Company.

The smelter was shut down between August 11 and December 20, 1911, owing to the coal strike in the Crowsnest Pass District mines and the resultant coke shortage, which accounts for the falling off in production during the Company's year ending June 30, 1912. Throughout the calendar year 1912, however, the plant was continuously operated and a larger tonnage treated than in any previous year.

Ores Smelted and Metals Recovered at Granby Smelter.

Year ending June 30.	All material smelted.				Metals produced.		
	Granby ore.	Foreign.		Total.	Gold.	Silver.	Copper.
		Ore.	Matte.				
	Tons.	Tons.	Tons.	Tons.	Ozs.	Ozs.	Lbs.
1901	169,087	7,832	.....	176,919	8,871	34,990	5,435,955
1902	293,645	4,454	3,001	301,100	30,786	274,511	10,836,851
1903	289,583	7,691	6,223	303,497	35,121	277,574	12,551,758
1904	516,059	36,182	4,290	556,531	54,493	275,935	16,020,986
1905	550,738	39,382	.....	590,120	42,980	215,449	14,224,692
1906	796,188	36,158	.....	832,346	50,020	316,947	19,939,004
1907	649,022	16,893	.....	665,915	32,738	201,337	16,410,576
1908	858,432	24,179	.....	882,611	40,068	300,204	21,092,288
1909	964,789	19,944	.....	984,733	45,760	335,520	21,901,528
1910	1,175,548	21,829	.....	1,197,377	48,752	356,746	22,754,899
1911	959,563	24,783	.....	984,346	41,707	343,178	17,858,860
1912	721,719	17,800	.....	739,519	33,932	225,305	13,231,121
1913	.....	.....	.....	.....	.....	.....	.....
Total	7,944,373	257,127	13,514	8,215,014	465,228	3,157,696	192,358,518

Greenwood Smelter.—The plant of the British Columbia Copper Company at Greenwood, B.C., includes three large furnaces, having a total daily capacity of from 2,400 to 2,500 tons.

The last annual report of the Company covers the fiscal period from December 1, 1911, to December 31, 1912. Frederick Keffer, Acting General Manager, reports that "The smelter ran steadily throughout the year, handling a larger tonnage than for any equal period in its history. During the first two and a half months, until a sufficient supply of coke was secured for the entire plant, only two furnaces were operated. The total tons smelted for the thirteen months of the fiscal year were 740,589, as compared with a total tonnage of 608,945 for the twelve months of the fiscal year of 1911. The sources of the ore smelted were:—

B. C. Copper Co.'s ores	443,022	tons.
Custom ores	284,575	"
Converter slags	12,992	"
Total	740,589	tons.

The coke consumed was 103,154 tons.

The converter slags included:—

B. C. Copper Co.'s ores	914	tons.
Custom ores	4,104	"
Clay	1,205	"
	6,223	tons.

There were produced 11,259,140 pounds of blister copper, containing:—

25,862·681 ounces of gold.
142,025·06 " " silver.
11,146,811 pounds of fine copper.

No material additions were made to the plant during the year, the machinery as a whole being maintained in its normal condition.

It is planned to use basic instead of acid linings for the converters should this be found practicable without material additions to the plant. Through decreased costs for clay, and elimination of labour in relining converters, it is probable that a decided reduction in the cost of converting can be effected."

The Ladysmith Smelter.—This smelter, owned by the Tyee Copper Company, was not operated during 1912.

Anyox Smelter.—At Anyox on Observatory inlet, Portland canal, the Granby Consolidated Mining, Smelting, and Power Co. is constructing a smelter to treat the ores from their Hidden Creek property. It is expected that this smelter will be ready for operation during 1913.

COPPER.

The total production of copper in Canada in 1912, estimated on a basis of smelter recovery from ores treated, was 77,832,127 pounds, which, at the average price of copper for the year in New York, 16·341 cents per pound, would be worth $12,718,548.

Compiled on a similar basis, the copper production of 1911 was estimated at 55,648,011 pounds, showing a large increase in production in 1912. The average New York price for copper in 1911 was 12·376 cents, the increase in price being 3·965 cents, or 32·0 per cent.

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

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

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

[1] The present method of compilation of statistics of copper production by the Provincial Bureau of Mines in British Columbia provides for a deduction of five pounds of copper per ton of ore shipped on account of smelter losses, a method which gives a result closely approximating that obtained by this Branch.

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COPPER.—TABLE 1.

Production by Provinces 1910, 1911, and 1912.

Provinces.	1910.		1911.		1912.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
		$		$		$
Quebec	877,347	111,757	2,436,190	301,503	3,282,210	526,346
Ontario	19,259,016	2,453,213	17,932,263	2,219,297	22,250,601	3,635,971
British Columbia	35,270,006	4,492,693	35,279,558	4,366,198	50,526,656	8,256,561
Other districts*	286,000	36,431	‡	.....	1,772,660	289,670
Total	55,692,369	7,094,094	55,648,011	6,886,998	77,832,127	12,718,548

*Includes Nova Scotia and Yukon. ‡A shipment is reported from New Brunswick

With the exception of a small output of copper sulphate at Trail, B.C., the copper production of Canada is practically all exported for refining. The exports of copper in ore, matte, regulus, etc., from Canada during the calendar year 1912 are reported by the Customs Department as 78,488,564 pounds, of which 73,176,744 pounds were exported to the United States, and 5,275,820 pounds to Great Britain.

The exports in 1911 were recorded as 55,287,710 pounds. These figures agree fairly closely with the statistics of smelter recovery.

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

Monthly Average Prices of Electrolytic Copper in New York.

Months.	1908.	1909.	1910.	1911.	1912.
	Cts.	Cts.	Cts.	Cts.	Cts.
January	13·726	13·893	13·620	12·295	14·094
February	12·905	12·949	13·332	12·256	14·084
March	12·704	12·387	13·255	12·139	14·698
April	12·743	12·563	12·733	12·019	15·741
May	12·598	12·893	12·550	11·989	16·031
June	12·675	13·214	12·404	12·385	17·234
July	12·702	12·880	12·215	12·463	17·190
August	13·462	13·007	12·490	12·405	17·498
September	13·388	12·870	12·379	12·201	17·508
October	13·354	12·700	12·553	12·189	17·314
November	14·130	13·125	12·742	12·616	17·326
December	14·111	13·298	12·581	13·552	17·376
Yearly average	13·208	12·982	12·738	12·376	16·341

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

Monthly Average Prices of Standard Copper in London.

Months.	1908.	1909.	1910.	1911.	1912.
	£	£	£	£	£
January	62·386	57·688	60·923	55·604	62·760
February	58·786	61·197	59·388	54·970	62·893
March	58·761	56·231	59·214	54·704	65·884
April	58·331	57·363	57·238	54·035	70·294
May	57·387	59·338	56·313	54·313	72·352
June	57·842	59·627	55·310	56·368	78·259
July	57·989	58·556	54·194	56·670	76·636
August	60·500	59·393	55·733	56·264	78·670
September	60·338	59·021	55·207	55·253	78·762
October	60·139	57·551	56·722	55·176	76·389
November	63·417	58·917	57·634	57·253	76·890
December	62·943	59·906	56·069	62·063	75·516
Yearly average	59·902	58·732	57·054	55·973	72·942

The price of copper in New York varied between 13·75 cents per pound in February and a maximum of 17·60 cents per pound in August.

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

COPPER.—TABLE 2.

Annual Production.

Calendar Year.	Lbs.	Increase or decrease.		Value.	Increase or decrease.		Average price per pound.
		Lbs.	%		$	%	
				$			Cts.
1886	3,505,000	.....	.....	385,550	.....	.....	11·00
1887	3,260,424	(d) 244,576	6·99	366,798	(d) 18,752	4·86	11·25
1888	5,562,864	2,302,440	70·60	927,107	560,309	152·70	16·66
1889	6,809,752	1,246,888	22·40	936,341	9,234	0·99	13·75
1890	6,013,671	(d) 796,081	11·69	947,153	10,812	1·15	15·75
1891	9,529,401	3,515,730	58·46	1,226,703	279,550	29·51	12·87
1892	7,087,275	2,442,126	25·63	818,580	(d) 408,123	33·27	11·55
1893	8,109,856	1,022,381	14·40	871,809	53,229	6·50	10·75
1894	7,708,789	(d) 401,067	4·94	736,960	(d) 134,849	15·46	9·56
1895	7,771,639	62,850	0·81	836,228	99,268	13·47	10·76
1896	9,393,012	1,621,373	20·86	1,021,960	185,732	22·21	10·88
1897	13,300,802	3,907,790	41·60	1,501,660	479,700	46·94	11·29
1898	17,747,136	4,446,334	33·43	2,134,980	633,320	42·17	12·03
1899	15,078,475	(d) 2,668,661	15·04	2,655,319	520,339	24·37	17·61
1900	18,937,138	3,858,663	25·59	3,065,922	410,603	15·46	16·19
1901	37,827,019	18,889,881	99·75	6,096,581	3,030,659	98·84	16·117
1902	38,804,259	977,240	2·58	4,511,383	(d) 1,585,198	26·00	11·626
1903	42,684,454	3,880,195	10·00	5,649,487	1,138,104	25·23	13·235
1904	41,383,722	(d) 1,300,732	3·05	5,306,635	(d) 342,852	6·07	12·823
1905	48,092,753	6,709,031	16·21	7,497,660	2,191,025	41·29	15·590
1906	55,609,888	7,517,135	15·63	10,720,474	3,222,814	42·98	19·278
1907	56,979,205	1,369,317	2·46	11,398,120	677,654	6·32	20·004
1908	63,702,873	6,723,668	11·80	8,413,876	2,984,244	26·18	13·208
1909*	52,493,863	.....	.....	6,814,754	.....	.....	12·982
1910	55,692,369	3,198,506	6·09	7,094,094	279,340	4·10	12·738
1911	55,648,011	(d) 44,358	0·79	6,886,998	(d) 207,096	2·92	12·376
1912	77,832,127	22,184,116	28·50	12,718,548	5,831,550	45·85	16·341

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

Statistics of the exports of copper, as collected by the Customs Department, are shown in Table 3, and statistics of imports in Tables 4 and 5. The total imports of copper, in so far as weights are given, amounted, during the fiscal year ending March, 1912, to 36,656,429 pounds. During the calendar year 1912 the total imports were valued at $7,047,356, and included crude and manufactured copper to the extent of 42,832,747 pounds, valued at $6,741,895, together with other copper manufactures valued at $305,461, of which the quantity is not stated. In detail, these imports comprise: copper (pigs, ingots, scrap, blocks, etc.), 7,634,539 pounds, valued at $823,374; copper in bars, rods, coils, etc., 29,520,400 pounds, valued at $4,665,791; copper in strips, sheets, or plates, 4,462,400 pounds, valued at $841,207; copper tubing, etc., 770,576 pounds, valued at $167,257; and copper wire, 444,832 pounds, valued at $101,748.

COPPER.—TABLE 3.

Exports of Copper in Ore, Matte, etc.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		$			$
1885	.....	262,600	1899	11,371,766	1,199,908
1886	.....	249,259	1900	23,631,523	1,741,885
1887	.....	137,966	1901	32,488,872	3,404,908
1888	.....	257,260	1902	26,094,498	2,476,516
1889	.....	168,457	1903	38,364,676	3,873,827
1890	.....	398,497	1904	38,553,282	4,216,214
1891	.....	348,104	1905	40,740,861	5,443,873
1892	.....	277,632	1906	42,398,538	7,303,366
1893	4,792,201	269,160	1907	54,688,450	8,749,609
1894	1,625,389	91,917	1908	51,136,371	5,934,559
1895	3,742,352	236,965	1909	54,447,750	5,832,246
1896	5,462,052	281,070	1910	56,964,127	5,840,553
1897	14,022,610	850,336	1911	55,287,710	5,467,725
1898	11,572,381	840,243	1912	78,488,564	9,036,479

COPPER.—TABLE 4.

Imports of Pigs, Old, Scrap, etc.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$
1880	31,900	2,130	1897	49,000	5,449
1881	9,800	1,157	1898	1,050,000	80,000
1882	20,200	1,984	1899	1,655,000	246,740
1883	124,500	20,273	1900	1,144,000	180,990
1884	40,200	3,180	1901	951,500	152,274
1885	28,600	2,016	1902	1,767,200	325,832
1886	82,000	6,969	1903	2,038,400	252,594
1887	40,100	2,507	1904	2,115,300	270,315
1888	32,300	2,322	1905	1,944,400	266,548
1889	32,300	3,288	1906	2,627,700	441,854
1890	112,200	11,521	1907. (9 mos.)	2,616,600	520,971
1891	107,800	10,452	1908	3,612,400	650,597
1892	343,600	14,894	1909	2,732,300	383,441
1893	168,300	16,331	1910	4,690,700	617,630
1894	101,200	7,397	1911	5,023,700	641,749
1895	72,062	6,770	1912	5,542,000	699,442
1896	86,905	9,226			
1912 { Copper, old and scrap or in blocks		Duty free.		192,300	21,926
1912 { Copper in pigs or ingots		Duty free.		5,349,700	677,516
Total				5,542,000	699,442

COPPER.—TABLE 5.

Imports of Manufactures.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1880	123,061	1891	563,522	1902	1,281,522
1881	159,163	1892	422,870	1903	1,291,635
1882	220,235	1893	458,715	1904	1,191,610
1883	247,141	1894	175,404	1905	1,775,881
1884	134,534	1895	251,615	1906	2,660,303
1885	181,469	1896	285,220	1907 (9 mos)	2,545,600
1886	219,420	1897	264,587	1908	2,713,060
1887	325,365	1898	786,529	1909	2,086,205
1888	303,459	1899	551,586	1910	2,870,630
1889	402,216	1900	1,090,280	1911	3,742,940
1890	472,668	1901	951,045	1912	4,494,723

		Duty.	Lbs.	Value.
				$
1912	Copper in bars and rods, in coils, or otherwise, in lengths not less than 6 feet, unmanufactured	Free.	26,925,300	3,558,502
	Copper, in strips, sheets or plates, not planished or coated, etc.	"	3,220,500	505,769
	Copper tubing in lengths not less than 6 feet, and not polished, bent or otherwise manufactured	"	573,328	115,323
	Copper rollers, for use in calico printing	"		14,233
	Copper and manufactures of :—			
	Nails, tacks, rivets and burrs or washers	30 %		2,294
	Wire, plain, tinned or plated	15 "	395,301	76,635
	Wire cloth, etc	25 "		10,960
	All other manufactures of, N.O.P.	30 "		211,007
	Total			4,494,723

Nova Scotia.

A certain amount of prospecting was carried on during the year, but no mining of copper ores is reported.

New Brunswick.

No shipments were made from this Province in 1912.

Quebec.

In the Province of Quebec there was greatly increased activity during the year, the producing mines of the Eastern Townships shipping an increased tonnage of pyritic ores. The copper production for 1912 was 3,282,210 pounds, valued at $536,346, representing the estimated recovery from 60,849 tons of ore and concentrates.

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

COPPER.—TABLE 6.

Quebec:—Production.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		$			$
1886	3,340,000	367,400	1900	2,220,000	359,418
1887	2,937,900	330,514	1901	1,527,442	246,178
1888	5,562,864	927,107	1902	1,640,000	190,666
1889	5,315,000	730,813	1903	1,152,000	152,467
1890	4,710,606	741,920	1904	1,760,000	97,455
1891	5,401,704	695,469	1905	621,243	252,752
1892	4,883,480	564,042	1906	1,981,169	381,930
1893	4,468,352	480,348	1907	1,517,990	303,659
1894	2,176,430	208,067	1908	1,282,024	169,330
1895	2,242,462	241,288	1909	1,088,212	141,272
1896	2,407,200	261,903	1910	877,347	111,757
1897	2,474,970	279,424	1911	2,436,190	301,503
1898	2,100,235	252,658	1912	3,282,210	536,346
1899	1,632,560	287,494			

Ontario.

The copper production of Ontario comes almost entirely from the nickel-copper ores of the Sudbury district, and the copper may be regarded as a by-product of these ores.

The chief producing companies in 1912 were the Canadian Copper Company, at the Creighton and Crean Hill mines, and the Mond Nickel Company, at the Victoria and Garson mines. During the year the Alexo mine near Kelso Mines, Ontario, shipped a good tonnage of nickel-copper ore to the Mond Nickel Company's smelter at Victoria Mines, and a few small shipments

of copper ore were made from Dane, on the Timiskaming and Northern Ontario railway, to United States smelters.

The total tonnage of nickel-copper ores smelted in 1912 was 725,065 tons. There were produced during the year 41,925 tons of Bessemer matte, containing 11,116 tons of copper and 22,421 tons of nickel, the shipping value of the matte being approximately $6,303,102. Details of the production of these ores are given more completely and in tabular form in the article on nickel, and also under smelter production.

It is of interest to note that a small amount of copper was paid for by American smelters in a few shipments of Cobalt ores.

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

Statistics of the copper production of Ontario since 1886 are given in the table following:—

COPPER.—TABLE 7.

Ontario:—Production.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		$			$
1886	165,000	18,150	1900	6,740,058	1,091,215
1887	322,524	36,284	1901	8,695,331	1,401,507
1888	Nil	Nil.	1902	7,408,202	861,278
1889	1,466,752	201,678	1903	7,172,533	949,285
1890	1,303,065	205,233	1904	4,913,594	630,070
1891	4,127,697	531,234	1905	8,779,259	1,368,686
1892	2,203,795	254,538	1906	10,638,231	2,050,838
1893	3,641,504	391,461	1907	14,104,337	2,821,432
1894	5,207,679	497,854	1908	15,005,171	1,981,883
1895	4,576,337	492,414	1909	15,746,699	2,044,237
1896	3,167,256	344,598	1910	19,259,016	2,453,213
1897	5,500,652	621,023	1911	17,932,263	2,219,297
1898	8,375,223	1,007,539	1912	22,250,601	3,635,971
1899	5,723,324	1,007,877			

British Columbia.

According to returns received from the smelters, the total quantity of copper contained in matte, blister, and copper-sulphate produced in British Columbia smelters during 1912, and including an estimate of smelter recovery for the copper ores exported, was 50,526,656 pounds, after deducting the amount of copper produced from foreign ores. The production in 1911, on a similar basis, was 35,279,558 pounds, and in 1910, 35,270,006 pounds. Returns of smelter production in this Province were not collected by this Department previous to 1908, and a complete record of statistics of production on this basis is not available.

The production of copper in this Province, according to statistics collected and published by the provincial Department of Mines, reached a total of 51,456,537 pounds in 1912, as compared with 36,927,656 pounds in 1911. Statistics of the annual production since 1894, as ascertained by the provincial Department of Mines, are shown in Table 8, and by districts since 1907, in Table 9.

According to direct returns in 1912, the ores of the Boundary district produced about 65·8 per cent of the total, the Rossland mines about 4·1 per cent, and the Coast district 30·1 per cent.

COPPER.—TABLE 8.

British Columbia:—Copper Content of Ores Shipped.†

Calendar Year.	Copper contained in ores, shipped.	Increase.		Value.
	Lbs.	Lbs.	%	
				$
1894	324,680			31,039
1895	952,840	628,160	193·00	102,526
1896	3,818,556	2,865,716	301·00	415,459
1897	5,325,180	1,506,624	39·00	601,213
1898	7,271,678	1,946,498	36·00	874,783
1899	7,722,591	450,913	6·00	1,359,948
1900	9,977,080	2,254,489	29·00	1,615,289
1901	27,603,746	17,626,666	177·00	4,448,896
1902	29,636,057	2,032,311	7·00	3,445,488
1903	34,359,921	4,723,864	16·00	4,547,735
1904	35,710,128	1,350,207	3·7	4,579,110
1905	37,692,251	1,982,123	5·6	5,876,222
1906	42,990,488	5,298,237	14·1	8,287,706
1907	40,832,720	*2,157,768	*5·02	8,168,177
1908	47,274,614	6,441,894	15·8	6,244,031
1909	45,597,245	*1,677,369	*3·6	5,918,522
1910‡	38,243,934			4,871,512
1911‡	36,927,656	*1,316,278	*3·4	4,571,644
1912‡	51,546,537	14,618,881	39·6	8,408,513

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

COPPER.—TABLE 9.

British Columbia:—Production* by Districts.

——	1907.	1908.	1909.	1910.†	1911.†	1912.†
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Cassiar	674,887	490,873	137,651	.....	19,151	88,403
West Kootenay—						
Nelson	434,222	53,243	186,572	231,936	.....	26,257
Trail creek	5:080,275	5,042,244	3,509,909	3,577,745	3,429,702	2,539,900
Yale—						
Boundary	31,521,550	40,178,521	40,603,042	31,354,985	22,327,359	33,372,199
Ashcroft } Kamloops }	38,706	3,269	....	1,178	152,723	.....
Coast districts	3,083,080	1,506,464	1,160,071	3,078,090	10,998,721	15,429,778
Total	40,832,720	47,274,614	45,597,245	38,243,934	36,927,656	51,456,537

* Copper content of ores shipped. † After deducting five pounds of copper per ton of ore for slag losses.

In the Boundary district practically all the production is from the mines of three of the large smelting companies: the Granby Consolidated Mining, Smelting, and Power Company, Limited; the British Columbia Copper Company, Limited; and the New Dominion Copper Company, Limited. The last named is controlled by the British Columbia Copper Company. The two companies first named operated their own smelters, converting their matte into blister copper. The Consolidated Mining and Smelting Company of Canada, Limited, did not ship from any of their properties in this district during the year. The low grade ores of this district are self-fluxing and remarkably uniform in character, ranging from 1 to 2 per cent in copper, and from $1 to $2 in gold and silver.

The approximate ore shipments during 1912, and the total shipments of the chief producers from mines in this district to the end of 1912, were as follows:—

——	1912.	Total.
	Tons.	Tons.
Granby Consolidated Mining, Smelting, and Power Co., Ltd.	1,250,590	8,666,570
British Columbia Copper Co., Ltd	400,990	3,152,475
New Dominion Copper Co., Ltd	262,000	1,093,697
Consolidated Mining and Smelting Co., of Canada, Ltd	....	613,000

The chief producing mines of the district were the Granby mines; the Mother Lode, Emma, Wellington, and Jack Pot Fraction, of the British Columbia Copper Company; and the Rawhide and Athelstan, of the New Dominion Copper Company.

Next in importance in point of production came the Coast district, with heavy shipments from the Britannia mines on Howe sound and the Marble Bay mines on Texada island. Several smaller properties also shipped.

The Rossland district is also an important source of the copper production of the Province, though its ores are chiefly valuable for their gold content.

Interest in development work was directed to several points during the year: the acquirement of the Eureka and Queen Victoria groups in the Nelson district by the British Columbia Copper Company, and of the Silver King by the Consolidated Mining and Smelting Company; the developments being carried on in the Similkameen by the Granby and British Columbia companies, and the development of the Hidden Creek Copper mines and erection of a smelter at Anyox by the Granby Consolidated Mining, Smelting, and Power Company. The copper properties at Rocher de Boule mountain, near Hazelton, in northern British Columbia, indicate a probable source of further supplies of the metal with the development of transportation facilities.

Yukon.

In the Yukon district heavy shipments of copper ore were made during 1912 from Whitehorse. The Whitehorse copper belt was discovered in 1897, and the first claim was staked the following year. Shipments were made at different times from the various properties. The cost of transportation retarded development, so that the lowering of freight rates in the earlier part of 1912 by the White Pass and Yukon railway has been an important factor in this year's production. The chief shipper is the Pueblo mine, operated by the Atlas Mining Company, of Whitehorse.

GOLD.

Refined Metal.—The Dominion Assay Office in Vancouver, operated in connexion with this Department, receives, assays, and purchases crude gold bullion, amalgam, nuggets, and dust, the resultant bullion being resold. The total quantity of bullion thus received during the twelve months ending December 31, 1912, was 57,951·98 ounces, being the weight after melting, valued at $974,077.14, after deducting office charges.

The assay charge was removed January, 1913, leaving the melting charge, equivalent to one-eighth of one per cent of the value of the bullion, thus placing the charges on a par with those of American offices.

A refinery has been erected at the Royal Mint, at Ottawa, and shipments of gold have been received from different provinces.

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

Production of Refined Gold at Trail, B.C.

Year.	Ozs.
1904	4,336
1905	8,602
1906	9,993
1907	10,395
1908	15,346
1909	18,241
1910	13,298
1911	15,270
1912	12,118

Mine Production.—The production of gold in Canada—made up of gold derived from alluvial workings, gold obtained from the crushing of free-milling quartz ores, and the gold obtained from ores and concentrates sent to copper and lead smelters, etc.—reached a total, in 1912, of 611,885 fine ounces, valued at $12,648,794, as compared with 473,159 fine ounces, valued at $9,781,077, in 1911, an increase of 138,726 ounces in quantity and $2,867,717 in value, or 29·32 per cent.

The production, by provinces, in 1910, 1911, and 1912 is shown in Table 1, as follows:—

GOLD.—TABLE 1.

Production by Provinces, 1910, 1911, and 1912.

	1910.		1911.		1912.	
	Ozs.(fine)	Value.	Ozs.(fine ‡)	Value.	Ozs. (fine ‡)	Value.
		$		$		$
Nova Scotia	7,928	163,891	7,781	160,854	4,385	90,638
Quebec	124	2,565	613	12,672	642	13,270
Ontario	3,089	63,849	2,062	42,625	86,523	1,788,596
Alberta	89	1,850	10	207	73	1,509
British Columbia	261,386	5,403,318	238,496	4,930,145	251,815	5,205,485
Yukon	221,091	4,570,362	224,197	4,634,574	268,447	5,549,296
Totals	493,707	10,205,835	473,159	9,781,077	611,885	12,648,794

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

	1910.	1911.	1912.
	$	$	$
(a) As follows: Gold from placer mining	540,000	426,000	555,500
Gold from vein mining	4,863,318	4,504,145	4,649,985
	5,403,318	4,930,145	5,205,485

The exact value of fine gold is $\frac{8000}{387}$ dollars per ounce equivalent to $20.671834. (United States Standard.)

In most cases, statistics of gold production are stated as crude bullion with value thereof. The fine ounces given in the tables in this report are calculated from the values by multiplying these by $\frac{387}{8000}$ or 0·048375.

Of the total production in 1912, about $6,106,677, or 48·3 per cent, is to be attributed to alluvial workings, $2,270,331, or 17·9 per cent, was derived from stamp milling, and $4,271,786, or 33·8 per cent, obtained from ores sent to the smelters.

There was a general increase in all the provinces except Nova Scotia, the increase from Ontario being most noticeable, due to the mines of Porcupine reaching a producing stage.

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

GOLD.—TABLE 2.

Annual Production in Canada, 1858-1912.

Calendar Year.	Ozs. (fine †)	Value.	Calendar Year.	Ozs. (fine †)	Value.
		$			$
1858	34,104	705,000	1886	70,782	1,463,196
1859	78,129	1,615,072	1887	57,460	1,187,804
1860	107,806	2,228,543	1888	53,145	1,098,610
1861	128,973	2,666,118	1889	62,653	1,295,159
1862	135,391	2,798,774	1890	55,620	1,149,776
1863	202,498	4,186,011	1891	45,018	930,614
1864	199,605	4,126,199	1892	43,905	907,601
1865	192,898	3,987,562	1893	47,243	976,603
1866	152,555	3,153,597	1894	54,600	1,128,688
1867	145,775	3,013,431	1895	100,798	2,083,674
1868	134,169	2,773,527	1896	133,262	2,754,774
1869	102,720	2,123,405	1897	291,557	6,027,016
1870	83,415	1,724,348	1898	666,386	13,775,420
1871	105,187	2,174,412	1899	1,028,529	21,261,584
1872	90,283	1,866,321	1900	1,350,057	27,908,153
1873	74,346	1,536,871	1901	1,167,216	24,128,503
1874	97,856	2,022,862	1902	1,032,161	21,336,667
1875	130,300	2,693,533	1903	911,559	18,843,590
1876	97,729	2,020,233	1904	796,374	16,462,517
1877	94,304	1,949,444	1905	684,951	14,159,195
1878	74,420	1,538,394	1906	556,415	11,502,120
1879	76,547	1,582,358	1907	405,517	8,382,780
1880	63,121	1,304,824	1908	476,112	9,842,105
1881	63,524	1,313,163	1909	453,865	9,382,230
1882	60,288	1,246,268	1910	493,707	10,205,835
1883	53,853	1,113,246	1911	473,159	9,781,077
1884	51,202	1,058,439	1912	611,885	12,648,794
1885	55,575	1,148,829			
				15,010,509	310,294,859

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

Gold was discovered in various provinces of Canada about 1858, and it will be observed that the production gradually increased to a maximum in 1863, and then more or less regularly decreased to a minimum in 1892, then, increasing with further discoveries, it received the impetus of the discovery of the Yukon in 1896 and rose to over twenty-seven million dollars in 1900, and again fell with the exhaustion of the smaller placer holdings; 1909 saw another low point, but the increasing production from Porcupine district, Ontario, and from other provinces also, promises well for the future.

Nova Scotia.

The gold production of Nova Scotia, which is derived almost entirely from quartz ores, was 4,385 fine ounces, valued at $90,638. The Deputy Inspector of Mines for the Province, states in his report for the fiscal year 1912: 'The gold production is the lowest since gold mining was established as an industry in the Province and, it is almost needless to say, is disappointing. It is, however, but justice to the industry to say that it does not fairly represent the operations carried on, as at several of the districts the principal efforts of the operators

were directed to mine development and prospecting rather than to the immediate recovery of gold.'

The principal operators in 1912 were:—

Byron Bower, Carleton.
M. J. O'Brien and tributors, Caribou.
Stillwater Mining Co., Moose River.
Switzer Mining Co., Fifteenmile brook.
Uniac Mines and Power Co., Gold River.
W. A. Brennan and tributors, Oldham.
M. J. O'Brien, *et al.*, Renfrew.
New England Mining Co., Stormont.
Sydney Gold Mining Co., Stormont.
Seal Harbour Mining Co., Stormont.
Boston and Goldenville Mining Co., Shiers point.
Goldenville Mining Co., Sherbrooke.
Dominion Leasing Co., Tangier.
Gladwin Gold Mining Co., Beaver Dam.
S. R. Giffin & Sons, Stormont.
Petpeswick Mining Co., Lake Catcha.

Statistics of the annual production since 1862 are shown in Table 3, and the production of gold by districts during the twelve months ending September 30, 1912, as collected and published by the provincial Mines Department, in Table 4, while the total production from 1862 to 1911, by districts, according to the same authority, is shown in Table 5.

GOLD.—TABLE 3.

Nova Scotia:—Annual Production.

Cal. Year.	Tons. treated.	Ozs. (fine).	Value.	Yield of gold per ton.	Cal. Year.	Tons. treated.	Ozs. (fine).	Value.	Yield of gold per ton.
			$	$				$	$
1862..	6,473	6,863	141,871	21·91	1888..	36,178	21,137	436,939	12·08
1863..	17,000	13,180	272,448	16·02	1889..	39,160	24,673	510,029	13·02
1864..	21,431	18,883	390,349	18·21	1890..	42,749	22,978	474,990	11·11
1865..	24,421	24,011	496,357	20·32	1891..	36,351	21,841	451,503	12·42
1866..	32,157	23,776	491,491	15·28	1892..	32,552	18,865	389,965	11·98
1867..	31,384	25,763	532,563	16·96	1893..	42,354	18,436	381,095	8·99
1868..	32,259	19,377	400,555	12·41	1894..	55,357	18,834	389,338	7·04
1869..	35,144	16,855	348,427	19·91	1895..	60,600	21,919	453,119	7·47
1870..	30,824	18,740	387,392	12·56	1896..	69,169	23,876	493,568	7·13
1871..	30,787	18,139	374,972	12·17	1897..	73,192	27,195	562,165	7·68
1872..	17,089	12,352	255,349	14·94	1898..	82,747	26,054	538,590	6·50
1873..	17,708	11,180	231,122	13·05	1899..	112,226	29,876	617,604	5·50
1874..	13,844	8,623	178,244	12·87	1900..	87,390	28,955	598,553	6·85
1875..	14,810	10,576	218,629	14·76	1901..	91,948	26,459	546,963	5·32
1876..	15,490	11,300	233,585	15·08	1902..	93,042	30,348	627,357	6·68
1877..	17,369	15,925	329,205	18·95	1903..	103,856	25,533	527,806	5·08
1878..	17,989	11,864	245,253	13·63	1904..	45,436	10,362	214,209	4·71
1879..	15,936	12,980	268,328	16·83	1905..	57,774	13,707	283,353	4·90
1880..	13,997	12,472	257,823	18·42	1906..	66,059	12,223	252,676	3·82
1881..	16,556	10,147	209,755	12·66	1907..	58,550	13,675	282,686	4·82
1882 .	21,081	13,307	275,090	13·04	1908..	61,536	11,842	244,799	3·97
1883..	25,954	14,571	301,207	11·60	1909..	56,790	10,193	210,711	3·71
1884..	25,186	15,168	313,554	12·44	1910..	43,006	7,928	163,891	3·81
1885..	28,890	20,945	432,971	14·98	1911..	18,328	7,781	160,854	8·78
1886.	29,010	22,038	455,564	15·70	1912..	14,360	4,385	90,638	6·31
1887..	32,280	20,009	413,631	12.81					

Total fine ounces gold. 888,122
Total value. $18,359,136

GOLD.—TABLE 4.

Nova Scotia:—District Details, Year Ending September 30, 1912.

District.	Tons crushed.	Total yield of gold.			Average yield of gold per ton.		
		oz.	dwt.	grs.	oz.	dwt.	grs.
Beaver Dam	99	59	10	0	.....	12	0
Carleton.....	10	1	0	0	.....	2	0
Caribou	1,367	984	14	0	.....	14	10
Caribou (Moose River)	1,013	330	5	13	.....	6	12
Fifteenmile brook.....	225	21	1	5	.....	1	21
Gold River.....	36	27	3	0	.....	15	2
Harrigan Cove.....	Mortared	2	10	0	.....	.....	
Lake Catcha....	1,572	161	19	2	.....	2	1
Lawrencetown.....	Mortared	1	17	0	.....	.....	
Oldham.....	314	127	5	0	... .	8	3
Pleasant River Barrens.. ...	30	12	0	0	.....	8	0
Renfrew..... ..	2,908	1,182	11	0	.....	8	3
Shier point.....	171	69	10	0	.....	8	3
Stormont.....	4,263	806	3	0	.....	3	19
Tangier.....	3,850	1,161	9	0	.....	6	1
Uniacke.....	10	.....	2	0	.....	....	5
Totals.....	15,868	4,948	19	20	.....	6	5

GOLD.—TABLE 5.

Nova Scotia:—Production of Gold from 1862 to 1912.

District.	Tons crushed.	Total yield of gold.			Average yield of gold per ton.			Value at $19 per oz.
		oz.	dwt.	grs.	oz.	dwt.	grs.	
*Caribou and Moose River.	220,027	60,196	2	19	.....	5	11	1,143,727
Montagu	29,523	42,173	3	6	1	8	14	801,290
Oldham	58,735	67,343	2	22	1	2	22	1,279,520
Renfrew	61,319	48,508	8	19	.....	15	20	921,669
Sherbrooke	300,213	153,090	1	4	.....	10	5	2,908,711
Stormont	525,237	120,549	18	13	.....	4	14	2,290,448
Tangier	64,112	28,230	15	19	.....	8	20	536,385
†Uniacke	63,351	43,983	1	17	.....	13	21	835,679
Waverley	156,520	69,980	10	16	.....	9	0	1,329,630
‖Brookfield	93,527	38,709	2	2	.....	8	7	735,473
‡Salmon River	118,819	41,852	5	20	.....	7	1	795,193
††Whiteburn	6,907	9,800	0	2	1	8	12	186,200
Lake Catcha	29,637	27,468	10	9	.....	18	13	521,902
¶Rawdon	12,189	9,606	5	10	.....	15	18	182,519
Wine Harbour	77,396	34,992	15	11	.....	9	1	664,863
**Fifteenmile Stream	36,878	17,363	0	5	.....	9	10	329,897
Malaga Barrens	22,926	20,305	12	6	.....	17	17	385,807
§West Gore (from Stibnite ore)	3,240	4,512	15	10	1	7	20	85,743
Other districts	143,558	74,959	8	19	.....	10	11	1,424,229
	2,023,114	913,625	1	13	.....	8	19	$17,358,876

* From 1869, † from 1868, ‡ from 1883, ‖ from 1887, †† from 1882, ¶ from 1887, ** from 1883, § from 1905.

Quebec.

The gold of this Province is derived from two sources, the pyritic ores of the Eastern Townships, and the alluvial deposits in Beauce. The pyritic ores are treated primarily for their sulphur and copper contents but carry also small values in gold and silver. The mines at Eustis and Weedon were very active during the year.

GOLD.—TABLE 6.

Quebec:—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		$			$
1877	583	12,057	1896	145	3,000
1878	868	17,937	1897	44	900
1879	1,160	23,972	1898	295	6,089
1880	1,605	33,174	1899	238	4,916
1881	2,741	56,661	1900	Nil.	Nil.
1882	827	17,093	1901	145	3,000
1883	860	17,787	1902	391	8,073
1884	422	8,720	1903	180	3,712
1885	103	2,120	1904	140	2,900
1886	193	3,981	1905	191	3,940
1887	78	1,604	1906	165	3,412
1888	181	3,740	1907	Nil.	Nil.
1889	58	1,207	1908	Nil.	Nil.
1890	65	1,350	1909	193	3,990
1891	87	1,800	1910	124	2,565
1892	628	12,987	1911	613	12,672
1893	759	15,696	1912	642	13,270
1894	1,412	29,106			
1895	62	1,281		16,198	335,432

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

Ontario.

The feature of the year from the standpoint of gold production was the commencement of steady milling operations by the mines of Porcupine district, resulting in an increase of nearly one and three-quarter millions of dollars in the provincial production. There was also an increased production from the older gold districts of the Province.

Among the producing mines of the Province in 1912 were:—

Cordova Mines, Ltd., Cordova mine, Peterborough county.

The Dome Mines Co., Ltd., Dome mine, Tisdale township, Nipissing district.

The Hollinger Gold Mines, Ltd., Hollinger mine, Tisdale township, Nipissing district.

The McIntyre Porcupine Mines, Ltd., McIntyre mine, Tisdale township, Nipissing district.

Vipond Porcupine Mines Co., Ltd., Vipond mine, Tisdale township, Nipissing district.

Detroit New Ontario Mines, Ltd., Detroit mine, Munro township.

Clement A. Foster, Tough-Oakes mine, Kirkland lake.

Sturgeon Lake Development Co., St. Anthony mine, Sturgeon lake, Thunder bay.

Elizabeth Gold Mines, Ltd., Elizabeth mine, Steeprock lake, Rainy River district.

Great Golconda Mines, Ltd., Golconda (Laurentian) mine, Gold Rock, Rainy River district.

Olympia Gold Mining Co., Olympia mine, Shoal lake.

Redeemer Mining Co., Redeemer mine, Dryden.

Statistics of the production of gold in Ontario since 1887 are shown in Table 7 following:—

GOLD.—TABLE 7.

Ontario:—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		$			$
1887	327	6,760	1901	11,844	244,837
1888	Nil.	Nil.	1902	11,118	229,828
1889	Nil.	Nil.	1903	9,076	188,036
1890	Nil.	Nil.	1904	1,935	40,000
1891	97	2,000	1905	4,402	91,000
1892	344	7,118	1906	3,202	66,193
1893	708	14,637	1907	3,212	66,399
1894	1,917	39,624	1908	3,212	66,389
1895	3,015	62,320	1909	1,569	32,425
1896	5,563	115,000	1910	3,089	63,849
1897	9,157	189,294	1911	2,062	42,625
1898	12,863	265,889	1912	86,523	1,788,596
1899	20,394	421,591			
1900	14,391	297,495		210,040	4,341,905

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

Manitoba.

While there was no production in 1912 from this Province, considerable interest has developed in recent discoveries in the eastern part, and several companies have commenced work, and some are expected to reach the producing stage during 1913.

Alberta.

There has been, as in past years, a small production from the placer deposits of the Saskatchewan river.

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

GOLD.—TABLE 8.

Alberta:—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		$			$
1887	102	2,100	1901	726	15,000
1888	58	1,200	1902	484	10,000
1889	967	20,000	1903	48	1,000
1890	193	4,000	1904	24	500
1891	266	5,500	1905	121	2,500
1892	508	10,506	1906	39	800
1893	466	9,640	1907	33	675
1894	726	15,300	1908	50	1,037
1895	2,419	50,000	1909	25	525
1896	2,661	55,000	1910	89	1,850
1897	2,419	50,000	1911	10	207
1898	1,209	25,000	1912	73	1,509
1899	726	15,000			
1900	242	5,000		14,684	303,549

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

British Columbia.

The gold production of British Columbia in 1912, as reported to the Department, amounted to $5,205,485, comprising: placer gold, $555,500; bullion from milling ores, $391,572; and smelter recoveries, $4,258,413. The statistics for lode gold represent, as closely as can be ascertained, the actual gold recovery based on smelter recoveries and bullion shipments.

In alluvial gold recovery a general increase was shown. Of the 1912 production, about 11 per cent was from alluvial workings, 7 per cent from free milling ores, and 82 per cent from ores sent to the smelters.

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

GOLD.—TABLE 9.

British Columbia:—Production by Districts,* 1912.

Districts.	Gold placer.		Gold lode.	
	Ozs.	Value.	Ozs.	Value.
		$		$
Cariboo :—				
Cariboo	9,000	180,000	.....	.....
Quesnel	2,500	50,000	.....	.....
Omineca	400	8,000	.....	.....
Cassiar :—				
Atlin	14,500	290,000	.....	.....
All other	450	9,000	197	4,072
East Kootenay:—				
Fort Steele	100	2,000	.....	.....
West Kootenay :—				
Ainsworth	.....	.....	80	1,653
Nelson	50	1,000	17,513	361,994
Slocan	.....	.....	198	4,092
Trail creek	.....	.....	132,073	2,729,949
Others	225	4,500	89	1,840
Lillooet	250	5,000	.....	.....
Yale :—				
Grand Forks	50	1,000	104,849	2,167,229
Similkameen	100	2,000	.....	.....
Yale	100	2,000	.....	.....
Coast and all others	50	1,000	2,497	51,613
	27,775	555,500	257,496	5,322,442

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

GOLD.—TABLE 10.

British Columbia.—Annual Production.

Calendar Year.	Ozs. (fine‡).	Value.	Calendar Year.	Ozs. (fine‡).	Value.
		$			$
1858	34,104	705,000	1887	33,558	693,709
1859	78,129	1,615,072	1888	29,834	616,731
1860	107,806	2,228,543	1889	28,489	588,923
1861	128,973	2,666,118	1890	23,918	494,436
1862	128,528	2,656,903	1891	20,792	429,811
1863	189,318	3,913 563	1892	19,327	399,525
1864	180,722	3,735,850	1893	18,360	379,535
1865	168,887	3,491,205	1894	25,664	530,530
1866	128,779	2,662,106	1895	61,289	1,266,954
1867	120,012	2,480,868	1896	86,504	1,788,206
1868	114,792	2,372,972	1897	131,805	2,724,657
1869	85,865	1,774,978	1898	142,215	2,939,852
1870	64,675	1,336,956	1899	203,295	4,202,473
1871	87,048	1,799,440	1900	228,916	4,732,105
1872	77,931	1,610,972	1901	257,292	5,318,703
1873	63,166	1,305,749	1902	288,383	5,961,409
1874	89,233	1,844,618	1903	284,108	5,873,036
1875	119,724	2,474,904	1904	275,975	5,704,908
1876	86,429	1,786,648	1905	285,529	5,902,402
1877	77,796	1,608,182	1906	269,886	5,579,039
1878	61,688	1,275,204	1907	236,216	4,883,020
1879	62,407	1,290,058	1908	286,858	5,929,880
1880	49,044	1,013,827	1909	250,320	5,174,579
1881	50,636	1,046,737	1910	261,386	5,403,318
1882	46,154	954,085	1911	238,496	4,930,145
1883	38,422	794,252	1912	251,815	5,205,485
1884	35,612	736,165			
1885	34,527	713,738		6,794,315	140,451,735
1886	43,714	903,651			

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

The placer and hydraulic mining situation was favourable, and there was an increase in production in spite of a temporary shortage of water.

Among the camps of the Province, Rossland ranks first as a producer of gold from lode mines.

The chief companies now operating are:—

The Consolidated Mining and Smelting Co. of Canada, Ltd., owning the Centre Star, War Eagle, and Le Roi groups, shipped over 207,500 tons from these properties during the year.

The Le Roi No. Two Mining Co., Ltd, which is working the Le Roi Two, or Josie mine, shipped over 20,500 tons.

Some of the smaller properties of the camp also operated during the year.

The Boundary district comes next in gold production. The output is largely due to the large tonnage of copper ores mined in this district. These ores will average only 0·04 to 0·05 ounces of gold per ton. In addition, the Osoyoos Mining Division, which is included in this district, contains the Nickel Plate mine at Hedley, the premier gold mine of the Province. In the report for 1912 of the Hedley Gold Mining Co., the following details are given: tons milled, 70,455; assay value, $11.19; gold recovered, $748,133.14, or 95 per cent; reserve

tonnage of broken ore, 10,000; development during the year, 1,340 feet; diamond drilling, 6,380 feet.

Several mills were in operation in the Nelson and Trail Creek districts.

The copper ores of the Coast district in many cases do not carry gold values, so that in spite of the increase in shipments there was a falling off in the gold recovery from these ores.

Yukon.

The production of the Yukon in 1912 was $5,549,296, as compared with $4,634,574 in 1911, an increase of $914,722, or 19·7 per cent. In this is included the production from the lode mines.

The statistics of production of gold in the Yukon district during the years between 1898 and 1906, as given in Table 11, are based primarily on the receipts of gold at the United States mints and receiving offices, and credited to the Canadian Yukon. Although a royalty was exacted on the gold output, it seems certain that considerable amounts of gold were produced which escaped royalty payment, particularly during the years of high production.

Since 1906, however, the gold production of the Yukon, as ascertained by the Interior Department, and on which royalty of 2½ per cent is imposed, has agreed fairly closely with the quantities reported at the United States receiving offices as having been derived from the Canadian Yukon. For the purpose of collecting the royalty, a fixed value of $15 per ounce is placed on the crude gold. The actual value of the gold will average somewhat higher than this, however. The average value of the deposits for a number of years, as shown by the experience of the United States assay office, has been about $16.50 per ounce. At the Canadian assay office at Vancouver, B.C., there were deposited during the twelve months ending December 31, 1912, 2,211·88 ounces from the Yukon, valued, after all charges had been deducted, at $36,480.66, showing an average value of about $16.41 per ounce.

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

Production of Crude Gold in the Yukon District.

Month.	1907.	1908.	1909.	1910.	1911.	1912.
	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.
January	7,308·95	2,464·00	69·50	16·68	.. ..	5·25
February	213·00	47·30	115·33	749·28	435·66	525·29
March	66·80	16·65	848·39	193·81	13·30	0·50
April	202·80	947·00	3·75	0·50	....	.....
May	35,736·62	6,851·96	117·33	43·83	16,719·16	26,158·66
June	31,402·14	51,530·90	62,254·92	54,301·17	38,499·39	54,243·03
July	26,793·50	35,291·11	52,126·43	37,942·31	42,783·38	58,283·29
August	22,392·10	37,930·99	47,440·83	47,673·06	47,677·49	56,975·55
September	33,119·51	39,654·27	44,466·20	57,695·65	48,383·63	53,225·29
October	35,589·70	37,028·98	26,572·23	51,888·18	58,690·82	66,518·01
November	200·30	1,989·39	4,858·69	21,404·29	11,097·51	11,648·08
December	52·80	5,491·76	892·75	3,563·75	13,130·63	7,432·72
	193,078·22	219,244·31	239,766·35	275,472·51	277,430·97	335,015·67

In 1912 the placer production is estimated at $5,539,808 in gold, representing 267,988 fine ounces of metal, and 60,302 fine ounces of silver, valued at $36,685, being at the average price of fine silver for the year, making a total valuation of the Yukon placer output of $5,576,493. In 1911 the placer production was estimated at $4,580,000, representing 221,557 fine ounces of gold and 50,300 fine ounces of silver, valued at $26,812, making a total valuation of $4,606,812.

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

GOLD.—TABLE 11.

Annual Production in Yukon.

Calendar Year.	Ozs. (fine‡).	Value.	Calendar Year.	Ozs. (fine‡).	Value.
		$			$
1885 } 1886 }	4,387	100,000	1899	774,000	16,000,000
1887	3,386	70,000	1900	1,077,553	22,275,000
1888	1,935	40,000	1901	870,750	18,000,000
1889	8,466	175,000	1902	701,437	14,500,000
1890	8,466	175,000	1903	592,594	12,250,000
1891	1,935	40,000	1904	407,938	10,500,000
1892	4,233	87,500	1905	381,001	7,876,000
1893	8,514	176,000	1906	270,900	5,600,000
1894	6,047	125,000	1907	152,381	3,150,000
1895	12,094	250,000	1908	174,150	3,600,000
1896	14,513	300,000	1909	191,565	3,960,000
1897	120,937	2,500,000	1910*	221,091	4,570,362
1898	483,750	10,000,000	1911*	224,197	4,634,574
			1912*	268,447	5,549,296
				7,087,117	146,503,732

‡ Calculated from the value: one dollar=0·048375 oz.
* Including a small production from lode mines.

Since 1898 a royalty to the extent of $3,990,513 has been collected on the gold production of this district. The yearly amounts collected, as well as the annual production of gold, as ascertained by the Interior Department, are shown in the accompanying table. The difference between these figures and those shown in Table 11, which are based on the mine receipts of Yukon gold, has already been mentioned, and is probably due to two main factors: (1) the fixing of the value of the gold for royalty purposes at $15 per ounce, a figure from $1 to $2 less than the actual value of the gold, and (2) the probability that in the earlier years of royalty collection, considerable quantities of gold dust left the camps unrecorded and escaped royalty payment.

Gold Production in the Yukon, and Royalty Collected.‡

Fiscal Year.	Total gold production.	Total exemption.	Royalty collected on.	Royalty paid.
	$	$	$	$
1898	3,072,773	339,845	2,732,928	273,292
1899	7,582,283	1,699,657	5,882,626	588,262
1900	9,809,464	2,501,744	7,307,720	730,771
1901	9,162,082	1,927,666	7,236,522	592,660
1902	9,566,340	1,199,114	8,367,225	331,436
1903	12,113,015		12,113,015	302,893
1904	10,790,663		10,790,663	272,217
1905	8,222,054		8,222,054	206,760
1906	6,540,007		6,540,007	163,963
1907 (9 months)	3,304,791		3,304,791	82,622
1908	2,820,162		2,820,162	70,505
1909	3,260,282		3,260,282	81,507
1910	3,594,251		3,594,251	89,844
1911	4,126,728		4,126,728	103,168
1912	4,024,237		4,024,237	100,606

‡ From the Report of the Yukon and Mining Lands Branch of the Department of the Interior.

During the calendar year 1912 there were imported: gold bullion, valued at $1,360,735; gold coins, $7,496,492; and manufactures of gold and silver, valued at $1,157,622.

The exports of gold, in dust, nuggets, ore, etc., in the same period were valued at $10,014,654.

IRON AND STEEL.

INTRODUCTORY.

A review of the statistics of iron and steel production in 1912 embraces a recital of conditions similar to those which have affected this industry for a number of years past. Notwithstanding the rapid increase in production by Canadian manufacturers of iron and steel goods, the Canadian consumption continues to increase at an even more rapid rate than the domestic production. At the present time less than 30 per cent of the quantity of iron and steel consumed in Canada is supplied from Canadian plants; the Canadian producers are, therefore, compelled to meet conditions in so far as market and prices are concerned which result from the condition of the industry in those countries from which our chief supplies are obtained, viz., the United States and Great Britain. Throughout the greater part of 1911 and a portion of 1912, low prices were quoted on iron and steel imported from the United States, and Canadian producers claimed that it was impossible to carry on business except at a very low margin of profit. Price conditions, however, have improved considerably during 1912. Despite the adverse conditions of trade the production of pig iron and steel has continued to increase, and manufacturers are almost without exception continuing to extend their facilities to supply a larger market in the future.

The production of iron ore from Canadian mines must be considered apart from the blast furnaces and steel industries. Canadian iron ore resources have not been developed sufficiently to supply home demands—in fact since 1896 Canadian blast furnaces and steel plants have become more and more dependent upon supplies of imported ores. The total shipments of iron ores in 1912 from mines in Canada were 215,883 tons, whereas blast furnaces consumed 2,090,753 tons, and steel furnaces 43,006 tons. Although the shipments from iron ore mines were slightly higher than in 1911, they are, with the exception of the previous year, the lowest that have been recorded in thirteen years, and amount to less than 10 per cent of the years' requirements of blast and steel furnaces. Considerable progress, however, is being made in the development of large low grade iron ore bodies, and if the successful concentration of these is achieved, a growing production may be anticipated in the immediate future. The production of pig iron in 1912 was 1,014,587 short tons, and steel ingots and castings, 957,681 short tons. While the rate of production of iron ore has shown practically no increase during the past thirteen years, the production of pig iron is now over ten times that of 1900.

A considerable portion of the production of iron ore is exported, and of the total amount of iron ore used in Canadian blast furnaces in 1912, only about 3 per cent is of domestic origin. Of the total amount of coke used 52 per cent was

either imported or made from imported coal, and 27 per cent of the limestone flux used was from sources outside of Canada. In each instance the proportion of imported raw material used was either equal to or higher than the proportion used in 1911. During 1912 the total tonnage of imported ores used in Canadian furnaces was 2,019,165 tons, being derived chiefly from Newfoundland and from the south shore of Lake Superior.

The assistance granted by the Federal Government to the iron and steel industries in the form of bounties ceased in the year 1910, with the exception of the bounty on steel rods which was continued until June 30, 1911, and the bounty on pig iron and steel made in electric furnaces which was available to December 31, 1912. No bounties on iron and steel were claimed during the calendar year 1912.

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

Summary of Iron and Steel Statistics, 1909-12.

—	1909.	1910.	1911.	1912.
	Tons.	Tons.	Tons.	Tons.
Iron ore shipped	268,043	259,418	210,344	215,883
Canadian iron ore charged to blast furnaces	231,994	149,505	67,434	71,588
Imported iron ore charged to blast furnaces	1,235,000	1,377,035	1,628,368	2,019,165
Iron ore charged to steel furnaces	(a)	39,332	42,892	43,006
Pig iron made	757,162	800,797	917,535	1,014,587
Pig iron exported	5,063	9,763	5,870	6,976
Pig iron imported	148,338	243,859	208,487	272,565
Pig iron consumption (calculated)	900,437	1,034,893	1,120,152	1,280,176
Pig iron used in steel furnaces	(a)	690,913	700,679	706,895
Steel ingots and castings made	754,719	822,284	882,396	957,681
Steel rails made	377,642	399,762	399,760	471,422
Canadian coke used in iron blast furnaces	412,016	491,281	543,933	609,183
Imported coke used in iron blast furnaces	507,255	476,838	577,388	656,815
Iron and steel imported (b)	565,734	915,425	1,172,388	1,323,348
Number of completed blast furnaces No.	16	17	18	19
Number of men employed in blast furnaces "	1,486	1,403	1,778	1,358
Wages paid in blast furnaces $	879,429	1,006,727	1,097,354	993,941
Value of pig iron produced $	9,581,864	11,245,622	12,307,225	14,550,999
Value of iron and steel goods exported. (c) $	7,172,413	7,895,489	9,907,281	10,682,484
Value of iron and steel goods imported. (d) $	40,393,431	59,952,197	85,319,541	102,568,832

(a) Not collected.
(b) Figures cover the fiscal year ending March 31 and include all iron and steel goods for which weights are given. For details see Table 20.
(c) Figures cover the calendar year. For details see Table 19.
(d) Figures cover the fiscal year ending March 31. For details see Tables 21 and 22.

IRON ORE.

The total shipments of iron ore in Canada in 1912 were 215,883 tons, valued at $523,315 at the shipping point, as compared with 210,344 tons, valued at $522,319, in 1911, and 259,418 tons valued at $574,362, in 1910. Of the 1912 production, 86,971 tons were classed as hematite and 128,912 tons as magnetite. The production in 1911 included 137,399 tons of hematite and 72,945 tons of mag-

netite. Although there was but little active mining operations in the Maritime Provinces during 1912, considerable shipments of iron ore were made from stock in hand.

The Torbrook mines in Annapolis county, N.S., owned by the Canada Iron Corporation, were not operated during the year, but shipments of 30,857 net tons were made from stock piles. Preparations were being made to re-open the mine. Some prospecting is reported to have been carried on near Glencoe, Inverness county, on a promising body of iron ore.

In New Brunswick, the Canada Iron Corporation operated its mines near Austin Brook, Bathurst, the work being chiefly of the nature of development. Shipments, however were made from stock of 71,520 tons as against 31,120 tons shipped in 1911.

The total shipments from both these Provinces in 1912 were made either to Europe or to the United States.

In the Province of Quebec some titaniferous ore was mined at St. Urbain, but was held for shipment in 1913. The Manitou Mining Co. opened up a mine on lots 37 and 38, range V, of the township of Beresford, Terrebonne county, and 1,185 tons of titaniferous ore were shipped from Ivry station to the United States.

The total shipments from Ontario mines in 1912 were 112,321 tons, as compared with 175,586 tons in 1911. The largest producers were the Helen mine at Michipicoten, and the Moose Mountain mine at Sellwood, north of Sudbury. Several other iron ore properties were being developed. The Canada Iron Mines, Ltd., has opened up the Bessemer mine and Childs mine in Hastings county, and has built a concentrating plant in Trenton, Ontario. A considerable tonnage of ore was shipped to the concentrator during the year, but a trial shipment only of concentrates was made. The Tivani Electric Steel Co., Ltd., Belleville, was engaged in developing the Orton mine, the ore from which it proposes to use in its new electric steel furnace. The Belmont iron mine was being developed by the Buffalo Union Furnace Company. The ore will be used in the new furnace being constructed by this Company at Port Colborne, Ontario. The mines at Atikokan were not worked for output as the furnaces at Port Arthur were closed down throughout the year, but operations were carried on chiefly for development. The Helen mine at Michipicoten was operated throughout the year and a considerable tonnage of ore stocked in addition to the shipments made to the furnaces at Sault Ste. Marie. Shipments were made from Moose Mountain mine to various furnaces in Ontario and the United States, and a beginning has been made in the concentration of these ores.

No production is reported from the Province of British Columbia.

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

IRON.—TABLE 1.

Production of Iron Ore by Provinces, 1910-11-12.

Provinces.	1910.		1911.		1912.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$
New Brunswick.....	5,336	11,910	31,120	69,464	71,520	127,716
Nova Scotia.....	18,134	40,478	22	50	30,857	168,877
Quebec.....	4,503	8,252	3,616	6,479	1,185	4,232
Ontario.....	231,445	513,722	175,586	446,326	112,321	222,490
	259,418	574,362	210,344	522,319	215,883	523,315

The production during 1911 and 1912 classed as magnetite (including titaniferous iron ores and some ores with an admixture of hematite) and hematite, was as follows:—

IRON.—TABLE 2.

Classified Production of Iron Ore, 1911-12.

Character of ore.	1911.			1912.		
	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.
		$	$ cts.		$	$ cts.
Magnetite.....	72,945	154,295	2 12	128,912	216,368	1 68
Hematite.....	137,399	368,024	2 68	86,971	306,947	3 53
	210,344	522,319	2 48	215,883	523,315	2 42

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

IRON.—TABLE 3.

Production of Iron Ore, by Provinces, 1886-1912.

Calendar Year.	New Brunswick.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1886	.....	44,388	.....	16,032	3,941	64,361
1887	.....	43,532	13,404	16,598	2,796	76,330
1888	.....	42,611	10,710	16,894	8,372	78,587
1889	.....	54,161	14,533	.....	15,487	84,181
1890	.....	49,206	22,305	.....	.....	76,511
1891	.....	53,649	14,380	.....	950	68,979
1892	.....	78,258	22,690	.....	2,300	103,248
1893	.....	102,201	22,076	.....	1,325	125,602
1894	.....	89,379	19,492	.....	1,120	109,991
1895	.....	83,792	17,783	.....	1,222	102,797
1896	.....	58,810	17,630	15,270	196	91,906
1897	.....	23,400	22,436	2,770	2,099	50,705
1898	.....	19,079	17,873	21,111	280	58,343
1899	.....	28,000	19,420	25,126	2,071	74,617
1900	.....	18,940	19,000	82,950	1,110	122,000
1901	.....	18,619	15,489	272,538	7,000	313,646
1902	.....	16,172	18,524	359,288	10,019	404,003
1903	.....	40,335	12,035	209,634	2,290	264,294
1904	.....	61,293	16,152	141,601	.....	219,046
1905	.....	84,952	12,681	193,464	.....	291,097
1906	.....	97,820	9,933	141,078	.....	248,831
1907	.....	89,839	12,748	207,769	2,500	312,856
1908	.....	11,802	10,103	216,177	.....	238,082
1909	.....	.....	4,150	263,893	.....	268,043
1910	5,336	18,134	4,503	231,445	.....	259,418
1911	31,120	22	3,616	175,586	.....	210,344
1912	71,520	30,857	1,185	112,321	.....	215,883

IRON.—TABLE 4.

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

Calendar Year.	Tons.	Calendar Year.	Tons.
1876	15,274	1881	39,843
1877	16,879	1882	42,135
1878	36,600	1883	52,410
1879	29,889	1884	54,885
1880	51,193	1885	48,129

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

Canada Iron Corporation, Limited, Mark Fisher Bldg., Montreal, Que.
*E. H. Duval, Lévis, Que., (Guay P.O.).
*H. C. Bosse, 92 St. Peter St., Quebec, Que.
*Joseph Bouchard, Baie St. Paul, Que.
Manitou Iron Mining Co., Montreal, Que.
*Loughborough Mining Co., Schenectady, N.Y.
*The Canadian Iron Ore Co., 1231 St. Valier St., Quebec, Que.
The Algoma Steel Corporation, Sault Ste. Marie, Ont.
Canada Iron Mines, Ltd., Toronto, Ont.
*Atikokan Iron Company, Ltd., Port Arthur, Ont.
Moose Mountain, Limited, Sellwood, Ont.
*Dominion Bessemer Ore Co., Ltd., 472 Bullitt Bldg., Philadelphia, Pa.
*Tivani Electric Steel Co., Belleville, Ont.
*Buffalo Union Furnace Co., Buffalo, N.Y.

*No shipment reported during 1912.

EXPORTS AND IMPORTS OF IRON ORE.

Previous to April 1, 1912, a separate record of the imports of iron ore into Canada was not published by the Department of Customs. During the nine months ending December 31, 1912, the imports of iron ore were recorded by that department as 2,047,509 tons, valued at $3,932,074. Since practically all of the imported ores are used in Canadian blast furnaces, the statistics of consumption of imported ores in these furnaces would furnish a fairly close estimate of the quantities imported.

There were used in Canadian iron furnaces during 1912, 2,019,165 tons of imported iron ores, as compared with 1,628,368 tons in 1911. Increasing amounts of iron ores have been imported since 1896, the total quantity imported during the 17 years being 12,545,654 tons.

According to the United States reports of Commerce and Navigation, there were exported to Canada during the twelve months ending June 30, 1912, 931,647 tons (2,000 lb.) of iron ore valued at $2,806,238, and during the previous year 826,071 tons (2,000 lb.) valued at $2,496,246.

The shipments of iron ore from Newfoundland to Sydney, during the calendar year 1912, were 956,459 tons, as compared with 737,261 tons in 1911, and 808,762 tons in 1910.

The exports of iron ore from Canada during 1912 were 118,129 tons valued at $382,005, as compared with exports of 37,686 tons valued at $133,411 in 1911.

The ores exported in 1912 were chiefly those from Torbrook, N.S., Bathurst, N.B., Moose Mountain, Ont., and a small tonnage of titaniferous iron ores from Quebec.

IRON.—TABLE 5.

Exports of Iron Ore, Calendar Years 1893-1912.

Calendar Year.	Tons.	Value.	Average value.	Calendar Year.	Tons.	Value.	Average value.
		$	$			$	$
1893	2,419	7,590	3 14	1903*	368,233	922,571	2 51
1894	.....	21,294	.....	1904*	168,828	401,738	2 38
1895	1,571	3,909	2 49	1905*	168,289	407,881	2 42
1896	1,033	1,911	1 85	1906	74,778	149,177	2 01
1897	403	811	2 01	1907	25,901	45,907	1 77
1898	182	278	1 54	1908	(a)	.....	.....
1899	4,145	9,538	2 30	1909	21,956	61,954	2 82
1900	5,527	13,511	2 44	1910	114,499	324,186	2 83
1901*	306,199	762,283	2 49	1911	37,686	133,411	3 54
1902*	428,901	1,065,019	2 48	1912	118,129	382,005	3 23

*The export figures for the five years indicated are incorrect owing to a duplication of entries.
(a) The figures of the Trade Report for this year include ferro-products and are, therefore, omitted.

IRON.—TABLE 6.

Exports of Iron Ore, Fiscal Years, 1879-1912.

Fiscal Year.	Tons.	Value.	Average value.	Fiscal Year.	Tons.	Value.	Average. value.
		$	$			$	$
1879	3,562	7,530	2 11	1896	14	35	2 50
1880	30,524	76,474	2 51	1897	1,320	2,492	1 89
1881	44,677	114,850	2 57	1898	360	402	1 16
1882	43,835	135,463	3 09	1899	1,849	4,968	2 69
1883	44,914	138,775	3 09	1900	4,327	7,689	1 78
1884	25,308	66,549	2 63	1901*	58,401	150,657	2 58
1885	54,367	132,074	2 43	1902*	525,983	1,303,901	2 48
1886	7,542	23,039	3 05	1903*	293,510	733,230	2 50
1887	23,345	71,934	3 08	1904*	233,850	579,883	2 48
1888	13,544	39,945	2 95	1905*	224,908	540,909	2 41
1889	24,752	60,289	2 44	1906*	148,040	345,540	2 33
1890	13,811	31,376	2 27	1907†	34,191	65,367	1 91
1891	14,648	32,582	2 22	1908	26,310	46,686	1 77
1892	7,707	36,935	4 79	1909	3,933	71,663	1 82
1893	7,811	26,114	3 34	1910	31,535	80,540	2 55
1894	1,859	9,026	4 86	1911	104,807	304,718	2 91
1895	2,315	5,743	2 48	1912	37,657	133,561	3 54

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

IRON.—TABLE 7.

Imports of Iron Ore into the United States from Canada, 1893-1912.

Year ending June 30.	Short tons.	Value.	Average value.	Year ending June 30.	Short tons.	Value.	Average. value.
		$	$			$	$
1893.....	7,706	17,186	2 23	1903....	144,725	320,263	2 21
1894.....	301	756	2 51	1904....	126,995	283,765	2 23
1895.....	2,681	10,114	3 77	1905....	120,241	245,623	2 04
1896.....	39	142	3 64	1906....	113,809	220,112	1 93
1897.....	2,535	5,243	2 07	1907....	34,731	52,765	1 52
1898.....	1,313	2,904	2 21	1908....	32,124	55,617	1 73
1899.....	2,585	5,120	1 98	1909....	3,490	12,660	3 63
1900.....	4,477	5,550	1 24	1910....	36,070	97,984	2 72
1901.....	34,453	76,159	2 21	1911....	117,393	264,452	2 25
1902.....	309,527	685,540	2 21	1912....	45,089	89,336	1 98

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

PIG IRON AND STEEL.

An increase of 10·5 per cent is shown in the production of pig iron in Canada in 1912 over the production of 1911, as compared with an increase of 14·6 per cent for 1911 over that of 1910.

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

The total production of pig iron in 1912 was 1,014,587 short tons (905,881 long tons), valued at approximately $14,550,999, as compared with 917,535 short tons (819,228 long tons), valued at $12,307,125, in 1911, and 800,797 short tons (714,998 long tons) valued at $11,245,622, in 1910. The Londonderry furnace has not been in operation during four years past, and the furnaces of the Canada Iron Corporation, in Quebec, and that of the Atikokan Iron Company at Port Arthur, were idle throughout 1912. The figures of production given above do not include the output of ferro-products from electric furnaces which are situated at Welland and Sault Ste. Marie, Ontario, and Buckingham, Quebec. Ferro-silicon was made both at Welland and Sault Ste. Marie, ferro-titanium at Welland, and ferro-phosphorus at Buckingham.

Of the total output of pig iron in 1912, 21,701 tons, valued at $435,960, or $20.10 per short ton, were made with charcoal as fuel, and 992,886 tons, valued at $14,110,030, or $14.21 per ton, with coke. The amount of charcoal iron made in 1911 was 20,759 tons, and in 1910, 17,164 tons; while the quantity made with coke in 1911 was 896,776 tons, and in 1910, 783,633 tons.

The classification of the coke iron production in 1912, according to the purpose for which it was intended, was as follows: Bessemer, 256,191 tons; basic, 544,534 tons; foundry (including miscellaneous) 192,161 tons.

The classification of the production in 1911: Bessemer, 208,626 tons; basic 464,221 tons; foundry, 192,161 tons.

The total production of pig iron in 1911 and 1912 is shown by provinces in the following table, the average value per ton being also indicated. In the case of Nova Scotia a large proportion of the pig iron is directly converted into steel and as a very small portion of the metal is sold as pig iron, it is somewhat difficult to place a satisfactory valuation upon the output. In 1910 and 1911 a nominal value of $12 per short ton was used for statistical purposes. This, in 1912, was increased to $15 per ton, which was thought possibly to be a fairer valuation on the output. It must not be inferred, therefore, that the difference represents an increase in the value of pig iron at Sydney.

There was no production of pig iron in the Province of Quebec during 1912. In past years this Province has had a continuous though small production of charcoal iron, which for many years commanded a high price.

IRON.—TABLE 8.

Production of Pig Iron by Provinces, 1911-12.

Provinces.	1911.			1912.			Percentage increase or decrease in quantity.
	Tons.	Value.	Value per ton.	Tons.	Value.	Value per ton.	
		$	$ cts		$	$ cts	%
Nova Scotia...	390,242	4,682,904	12 00	424,994	6,374,910	15 00	+8·9
Quebec.....	658	17,282	26 24	nil.	.....	.....	−100·0
Ontario.....	526,635	7,606,939	14 44	589,593	8,176,089	13 87	+11·9
Total.....	917,535	12,307,125	13 41	1,014,587	14,550,999	14 34	+10·6

A record of the production by provinces since 1887 is shown in Table 9.

It will be observed that while the production of Nova Scotia has increased by about 30 per cent since 1906, the Ontario production has increased by over 60 per cent during that period. The proportions of the whole contributed by the several provinces were, in 1912: Nova Scotia, 41·9 per cent; and Ontario, 58·1 per cent. In 1911 the proportions were: Nova Scotia, 42·5 per cent; Ontario, 57·4 per cent; and Quebec less than one-tenth of one per cent.

IRON.—TABLE 9.

Annual Production of Pig Iron by Provinces, 1887-1912.

Year.	Nova Scotia.		Ontario.		Quebec.		Total.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
1887	19,320	250,000	.....	.....	5,507	116,192	24,927	366,192
1888	17,556	211,403	.....	.....	4,243	101,832	21,799	313,235
1889	21,289	383,202	.....	.....	4,632	116,670	25,921	499,872
1890	18,382	262,608	.....	.....	3,390	69,080	21,772	331,688
1891	21,353	309,527	.....	.....	2,538	59,374	23,891	337,901
1892	40,049	583,556	.....	.....	2,394	53,865	42,443	673,421
1893	46,472	553,408	.....	.....	9,475	236,875	55,947	790,283
1894	41,344	449,533	.....	.....	8,623	196,914	49,967	646,447
1895	35,192	417,083	.....	.....	7,262	169,653	42,454	586,736
1896	32,351	400,329	28,302	368,942	6,615	154,358	67,268	924,129
1897	22,500	230,000	26,115	291,466	9,392	217,235	58,007	738,701
1898	21,627	221,677	48,253	530,789	7,135	159,929	77,015	912,395
1899	31,100	404,300	64,749	808,157	7,094	164,849	102,943	1,377,306
1900	28,133	421,995	62,387	938,725	6,055	140,978	96,575	1,501,698
1901	151,130	1,764,017	116,371	1,599,413	6,875	149,493	274,376	3,512,923
1902	237,244	2,477,767	112,688	1,584,273	7,970	181,501	357,902	4,243,541
1903	201,246	2,186,273	87,004	1,345,464	9,635	210,973	297,885	3,742,710
1904	164,488	1,700,130	127,845	1,746,126	11,121	241,729	303,454	3,687,985
1905	261,014	2,440,722	256,704	3,868,197	7,588	166,267	525,306	6,475,186
1906	315,008	3,439,217	275,558	4,338,275	7,845	177,644	598,411	7,955,136
1907	366,456	4,211,913	275,459	4,581,309	10,047	232,004	651,962	9,125,226
1908	352,642	3,554,540	271,484	4,385,271	6,709	171,383	630,835	8,111,194
1909	345,380	3,453,800	407,012	6,002,441	4,770	125,623	757,162	9,581,864
1910	350,287	4,203,444	447,273	6,956,923	3,237	85,255	800,797	11,245,622
1911	390,242	4,682,904	526,635	7,606,939	658	17,282	917,535	12,307,125
1912	424,994	6,374,910	589,593	8,176,089	.....	.....	1,014,587	14,550,999

Prices.—The average price of domestic pig iron at Toronto, according to trade quotations, ranged from $19 to $19.50 per gross ton during eleven months of the year. In December quotations were advanced to $22. Another authority furnishes quotations at from $18 to $18.50 in January, increasing in May to from $19.75 to $20; increasing again in September to from $20.50 to $21, in October, $21.50 to $22, and December, $22 to $23. In Montreal the price of Nova Scotia iron was quoted in January at $19.75, falling to $18.50 in April, and increasing again in August and September to $19 and $20, and in December, to $21.50.

The price of Summerlee No. 2 pig iron was quoted in Montreal at $20 during the first nine months of the year, and at $24 during the last three months.

Bessemer pig iron at Pittsburgh was quoted at from $15 to $15.20 during the first eight months of the year, advancing steadily during the next four months to an average of $18.15 per gross ton, in December. The price of the same grade of iron in Pittsburgh in 1911 varied between $15 and $16 per ton.

A record of the average monthly prices per gross ton of pig iron at Montreal and Toronto during 1911 and 1912, and of Bessemer pig iron and grey forge iron at Pittsburgh, for a period of ten years, is shown in the accompanying tables.

Average Monthly Prices of Pig Iron in Canada During 1911-12.

	(1) Foundry No. 1, N.S., at Montreal.		(2) Summerlee No. 2 at Montreal.		(3) Midland at Toronto.		
	1911.	1912.	1911.	1912.	1911.		1912.
	$ cts.				No. 1.	No. 2.	
January	21·00	19·75	20·00	20·00	19·00	18·50	18·00–18·50
February	21·00	19·00	20·00	20·00	19·00	18·50	18·50–19·00
March	21·00	19·00	20·00	20·00	19·00	18·50	18·50–19·00
April	21·00	18·50	20·00	20·00	19·00	18·50	18·50–19·00
May	19·00–19·50	18·50	20·00	20·00	19·00	18·50	19·75–20·00
June	19·00–19·50	18·50	20·00	20·00	19·00	18·50	19·75–20·00
July	19·00–19·50	18·50	20·00	20·00	19·00	18·50	19·75–20·00
August	19·00–19·50	19·00	20·00	20·00	19·00	18·50	19·75–20·00
September	19·00–19·50	20·00	20·00	20·00	19·00	18·50	20·50–21·50
October	19·00–19·50	20·50	20·00	24·00	19·00	18·50	21·50–22·00
November	19·00–19·50	20·50	20·00	24·00	19·00	18·50	21·50–22·50
December	19·00–19·50	21·50	20·00	24·00	19·00	18·50	22·00–23·00
Average	19·917	19·437	20·000	21·000	19·000	18·500	20·104

(1) Price per ton of 2,240 pounds, f.o.b. at Montreal, on the opening market day of each month; 1911 quotations from Drummond, McColl & Company; 1912 quotations supplied by the Dominion Iron and Steel Co., Ltd.

(2) Price per ton at Montreal, in the first week of each month, 1911 and 1912; quotations from Hardwell & Metal.

(3) Prices for 1911 from the *Canadian Engineer*. Price per ton, at Toronto, at the first of each month; quotations for 1912 from the *Canadian Mining Journal*.

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

——	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
January	22 15	13 91	16 85	18 35	23 15	19 00	17 34	19 90	15 90	15 05
February	21 45	13 66	16 41	18 35	22 85	17 90	16 78	19 34	15 90	14 90
March	21 85	14 25	16 35	18 28	22 85	17 86	16 25	18 60	15 90	15 09
April	21 28	14 18	16 35	18 19	23 35	17 49	15 78	18 27	15 90	15 15
May	20 01	13 60	16 16	18 10	24 01	16 93	15 84	17 52	15 90	15 13
June	19 72	12 81	16 65	18 23	24 27	16 90	16 05	16 60	15 90	15 15
July	18 89	12 40	14 85	18 41	23 55	16 83	16 46	16 40	15 90	15 20
August	18 35	12 81	15 20	19 00	22 90	16 23	17 03	16 09	15 90	15 46
September	17 22	12 63	15 91	19 54	22 90	15 90	18 05	15 90	15 90	16 15
October	16 05	13 10	16 54	20 35	22 00	15 71	19 53	15 90	15 44	17 80
November	15 18	14 85	17 85	22 85	20 65	16 59	19 90	15 82	15 00	18 02
December	14 40	16 65	18 35	23 75	19 34	17 40	19 90	15 90	15 03	18 15

*From the *Iron Age*.

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

—	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
January	20 50	12 81	16 11	17 30	22 58	17 00	15 40	17 40	14 09	13 40
February	20 50	12 75	15 99	17 29	22 20	15 99	15 09	17 02	14 27	13 40
March	20 87	13 17	16 00	16 91	21 76	15 90	14 65	16 15	14 40	13 40
April	20 45	13 09	15 77	16 66	21 72	15 45	14 40	16 09	14 40	13 65
May	19 87	12 62	15 57	16 49	22 88	14 90	14 40	15 90	14 27	13 78
June	18 87	12 27	15 18	16 35	23 15	14 90	14 77	15 20	14 00	13 90
July	17 90	11 92	14 55	16 41	22 96	14 90	14 85	14 52	13 90	13 90
August	16 04	11 89	14 36	17 75	21 90	14 71	15 21	14 30	13 90	14 15
September	15 25	11 75	14 72	18 35	21 15	14 46	16 15	14 15	13 84	14 65
October	14 20	12 30	15 66	19 47	20 40	14 40	17 02	14 15	13 65	16 18
November	13 00	14 25	16 58	22 45	19 17	14 90	17 27	14 09	13 47	16 50
December	12 80	15 85	16 97	22 85	18 40	15 25	17 40	13 90	13 40	17 15

The quantities of iron ore, coke, charcoal, limestone, etc., consumed in blast furnaces in 1911 and 1912, are shown as follows:—

IRON.—TABLE 10.

Ore, Fuel, and Flux Charged to Blast Furnaces, in Years 1911-12.

—	1911.			1912.		
	Quantity.	Value.	Canadian and imported	Quantity.	Value.	Canadian and imported
		$	%		$	%
Canadian iron ore..... Tons.	67,434	536,050	4	71,588	233,372	3·4
Imported iron ore..... "	1,628,368	3,358,413	96	2,019,165	5,173,788	96·6
Canadian coke..... "	543,933	1,767,782	48	609,183	2,284,438	48
*Imported coke..... "	577,388	2,399,820	52	656,815	2,344,822	52
Charcoal..... Bus.	1,960,459	178,274	.....	1,886,748	157,402	.....
Canadian limestone..... Tons.	492,737	303,301	78	544,890	399,708	73
Imported limestone..... "	132,479	130,221	22	160,723	132,656	23

*Including coke made from imported coal.

Previous to 1896 pig iron was made entirely from Canadian ores. Since that date, however, increasing quantities of imported ore have been used, as well as imported fuels and fluxes, and in 1912 about 97 per cent of the ore charged, 52 per cent of the coke, and 27 per cent of the limestone, were imported. This condition is attributed largely to questions of cost and transportation affecting the ore supplies available for each furnace. The Newfoundland ores can be cheaply and conveniently laid down at Sydney, N.S.—in fact the iron and steel industry here has been built up on the basis of these ores, and by the local coal

supply. In Ontario also, large quantities of imported ores are used. In 1912 the imported ores used in Ontario amounted to 1,142,593 tons, and the Canadian ores, 71,588 tons, the imported ores being derived from Michigan and Minnesota deposits. With the exception of a small quantity of charcoal used at one furnace, the fuel (coke) used in Ontario was also altogether imported, as well as a portion of the limestone flux.

IRON.—TABLE 11.

Iron Ore, Fuel, and Flux Charged to Blast Furnaces.

Calendar Year.	Iron ore charged.		Fuel charged.			Limestone.
	Canadian.	Imported.	Charcoal.	*Coke from Canadian coal.	Imported coke.	
	Tons.	Tons.	Bushels.	Tons.	Tons.	Tons.
1887	60,434	.....	940,400	33,581	.....	17,171
1888	54,956	.....	804,286	30,228	.....	16,857
1889	65,670	.....	755,800	36,333	.....	22,122
1890	57,304	.....	589,860	34,073	.....	18,478
1891	60,933	.....	441,812	32,796	.....	11,377
1892	96,948	.....	1,121,365	52,622	.....	22,967
1893	124,053	.....	1,302,720	65,332	.....	27,797
1894	108,871	.....	1,173,970	60,026	.....	35,101
1895	93,208	.....	789,561	51,629	.....	31,585
1896	96,560	46,300	756,600	50,067	33,990	37,462
1897	53,658	55,722	1,031,800	35,800	27,810	31,273
1898	57,881	77,107	836,400	31,952	50,407	33,913
1899	66,384	120,650	1,928,025	44,844	64,648	51,826
1900	71,341	112,042	1,799,737	45,021	59,345	52,966
1901	156,613	361,010	1,835,736	207,835	115,367	169,399
1902	125,664	559,381	2,146,623	362,208	112,314	293,594
1903	82,035	435,911	2,322,030	350,190	96,540	277,452
1904	180,932	454,671	3,477,470	257,182	130,210	211,278
1905	116,974	861,847	4,404,394	365,897	243,882	369,715
1906	221,733	982,740	2,168,476	462,672	304,676	456,036
1907	244,104	1,117,260	1,682,085	521,068	327,082	488,462
1908	209,266	1,051,445	1,121,990	492,076	325,670	483,065
1909	231,994	1,235,000	1,779,258	412,016	507,255	526,076
1910	149,505	1,377,035	1,615,919	491,281	476,838	569,355
1911	67,434	1,628,368	1,960,459	543,933	577,388	625,216
1912	71,588	2,019,165	1,886,748	609,183	656,815	705,613

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

IRON BLAST FURNACES IN CANADA IN 1912.

Of nineteen completed furnaces, fourteen were in blast in 1912 for varying periods of time. The operating companies with numbers and capacities of furnaces, were as follows:—

Dominion Iron and Steel Company, Sydney, C.B.—Five completed furnaces of 280 tons capacity, each, per day; four operated throughout 1912, one for 108 days; one furnace under construction.

Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N.S.—One furnace at Sydney Mines, C.B., of 200 tons capacity; operated 322 days.

Londonderry Iron & Mining Co., Ltd., Londonderry, N.S.—One furnace of 100 tons capacity, idle throughout the year.

Canada Iron Corporation, Ltd., Montreal, Que.—Two small furnaces of seven and eight tons capacity, at Drummondville, Que., idle throughout the year; one furnace of 25 tons daily capacity, at Radnor Forges, Que., idle throughout the year; two furnaces of 125 tons and 250 tons at Midland, Ont., operated for 92 and 184 days respectively.

Standard Iron Company of Canada, Ltd., Deseronto, Ont.—One furnace with a daily capacity of 65 tons, operated for 11 months during the year 1912.

The Steel Company of Canada, Ltd., Hamilton, Ont.—Two furnaces: one of 200 tons capacity operated for 314 days in 1912; a second furnace of 300 tons capacity, operated 325 days in 1912.

Algoma Steel Company, Ltd., Sault Ste. Marie, Ont.—Three furnaces at Steelton, near Sault Ste. Marie: two of 250 tons capacity each, operated for 322 and 300 days respectively; and one of 450 tons capacity, operated throughout the year.

The Atikokan Iron Company, Ltd., Port Arthur, Ont.—One furnace of 100 tons capacity; idle throughout 1912.

The total daily capacity of the nineteen furnaces is about 3730 tons. On December 31, 1912, fourteen were in blast and nine idle.

The average number of men employed in blast furnace operations in 1912 were reported as 1,358, and the total wages paid, $993,941.

In addition to the new furnace being constructed by the Dominion Iron and Steel Company at Sydney, the Buffalo Union Furnace Company has begun the construction of a modern blast furnace at Port Colborne, Ont., for the manufacture of foundry, malleable, and Bessemer pig iron. This furnace will have a capacity of 300 to 315 tons per day, and will use Lake Superior ores at the outset, although it is proposed, at a later date, to also use Canadian concentrates.

The United States Steel Corporation also proposes to establish a plant in Canada, and a site has been selected at Ojibway, Ontario, opposite the city of Detroit, Michigan. This Company's plans are outlined in the last published annual report of the corporation as follows:—

'In order to meet in a more satisfactory manner the growing demands of the Canadian trade for the products of the subsidiary companies, it has been decided to establish a manufacturing plant in Caanda at the site which the corporation secured some years ago at Ojibway, Ontario, opposite the city of Detroit, Michigan. The site consists of about 1,500 acres, with a frontage of about a mile and a half on the Detroit river. The plans for, and the scope of, the construction of the plant have not yet been fully developed, but will probably include blast furnaces, open hearth steel works, rail mill, wire mill, structural and bar mills, and perhaps some other mills. It is expected the cost of the plant will in part be financed by an issue of bonds.'

EXPORTS AND IMPORTS OF PIG IRON.

The exports of pig iron from Canada consist chiefly of high grade charcoal pig iron and of ferro products, including ferro-silicon and ferro-phosphorus.

The total exports during 1912 were 6,976 tons, valued at $310,702, or an average value per ton of $44.54, as compared with exports of 5,870 tons, valued at $271,968, or an average of $40.33 per ton, in 1911.

The exports during the past four years have not exceeded 10,000 tons in any one year, and during the previous four years, did not exceed 1,000 tons in one year.

Considerable quantities of pig iron are annually imported into Canada. During the calendar year 1912, the imports totalled 272,565 tons, valued at $3,511,599, and included 210,756 tons, valued at $2,599,117, or an average of $12.33 per ton from the United States; and 61,809 tons, valued at $912,482, or an average of $14.76 per ton, from Great Britain. The total imports in 1911 were 208,487 tons, valued at $2,610,989, or an average of $12.52 per ton; and in 1910, 243,859 tons, valued at $3,364,847. The 1912 imports included 115 tons of charcoal pig iron, valued at $1,370 or $11.91 per ton. There was no charcoal pig iron imported in 1911.

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

IRON.—TABLE 12.

Annual Imports of Pig Iron Since 1880.

Fiscal Year	Pig iron.			Charcoal pig iron.			Total.	
	Tons.	Value.	Average value.	Tons.	Value.	Average value.	Tons.	Value.
		$	$ cts.		$	$ cts.		$
1880	(a) 23,159	371,956	16 06	.....	.....	.....	23,159	371,956
1881	(a) 43,630	715,997	16 41	.....	.....	.....	43,630	715,997
1882	56,594	811,221	14 33	6,837	211,791	30 98	63,431	1,023,012
1883	75,295	1,085,755	14 42	2,198	58,994	26 84	77,493	1,144,749
1884	49,291	653,708	13 26	2,893	66,602	23 02	52,184	723,010
1885	42,279	545,426	12 90	1,119	27,333	24 43	43,398	572,759
1886	42,463	528,483	12 45	3,185	60,086	18 87	45,648	588,569
1887	46,295	554,388	11 98	3,919	77,420	19 76	50,214	631,808
1888	(b)48,973	648,012	13 23	.....	.....	.....	48,973	648,012
1889	(b)72,115	864,752	11 99	.....	.....	.....	72,115	864,752
1890	(b) 87,613	1,148,078	13 10	.....	.....	.....	87,613	1,148,078
1891	(b) 81,317	1,085,929	13 35	.....	.....	.....	81,317	1,085,929
1892	(b) 68,918	886,485	12 86	.....	.....	.....	68,918	886,485
1893	56,849	682,209	12 00	5,944	84,358	14 19	62,793	766,567
1894	42,376	483,787	11 42	2,906	34,968	12 03	45,282	518,755
1895	31,637	341,259	10 80	2,780	31,171	11 21	34,417	372,430
1896	36,131	394,591	10 92	917	11,726	12 79	37,048	406,317
1897	25,766	291,788	11 32	2,936	35,373	12 05	28,702	327,161
1898	37,186	382,103	10 28	2,250	23,533	10 46	39,436	405,636
1899	44,261	452,911	10 23	1,955	19,123	9 78	46,216	472,034
1900	49,767	811,490	16 31	1,816	38,736	21 33	51,583	850,226
1901	35,293	548,033	15 53	490	7,121	14 53	35,783	555,154
1902	39,978	585,077	14 64	38	726	19 11	40,016	585,803
1903	91,730	1,338,574	14 59	882	16,352	18 54	92,612	1,354,926
1904	62,515	894,728	14 31	.....	.....	.....	62,515	894,728
1905	71,005	857,879	12 08	.....	.....	.....	71,005	857,879
1906	96,797	1,401,047	14 47	.....	.....	.....	96,797	1,401,047
1907	150,127	2,280,860	15 19	30	675	22 33	150,157	2,281,535
1908	210,053	3,448,125	16 42	2,237	45,475	20 33	212,290	3,493,600
1909	57,669	857,357	14 87	922	16,575	17 98	58,591	873,932
1910	158,910	2,118,445	13 33	596	8,690	14 58	159,506	2,127,135
1911	254,284	3,376,843	13 28	15,818	237,088	14 99	270,102	3,613,931
1912	201,058	2,495,859	12 41	54	618	11 44	201,112	2,496,477

(a) Comprises pig iron of all kinds.
(b) These figures appear in Customs reports under heading "iron in pigs, iron kentledge, and cast iron."
(c) Year ending June 30.
(d) Nine months ending March 31.
(e) Year ending December 31.

IRON.—TABLE 13.

Annual Exports of Pig Iron, 1896-1912.

Calendar Year	Tons.	Value.	Average value.	Calendar Year.	Tons.	Value.	Average value.
		$	$ cts.			$	$ cts.
1896	2,187	55,448	25 35	1905	866	22,284	25 73
1897	3,099	81,381	26 26	1906	305	7,429	24 36
1898	1,278	32,645	25 54	1907	439	13,504	30 76
1899	6,981	149,190	21 37	1908	290	10,614	36 60
1900	3,513	88,052	25 06	1909	5,063	186,778	36 89
1901	57,650	593,739	10 30	1910	9,763	296,310	30 35
1902	75,195	778,619	10 35	1911	5,870	271,968	46 33
1903	4,400	78,382	17 81	1912	6,976	310,702	44 54
1904	21,016	200,363	9 53				

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

IRON.—TABLE 14.

Production of Pig Iron in Principal Countries of the World, from 1907 to 1912: metric tons.

——	1907.	1908.	1909.	1910.	1911.	1912.
United States	26,195,340	16,191,907	26,209,677	27,741,990	24,029,296	30,665,595
Germany	12,875,159	11,805,321	12,644,946	14,227,455	15,280,527	17,852,571
United Kingdom	10,276,689	9,202,280	9,685,045	10,380,799	9,874,693	.....
France	3,590,235	3,400,771	3,573,848	4,032,459	4,410,866	4,871,992
Russia	2,823,309	2,805,384	2,874,822	3,042,302	3,588,449	4,184,124
Austria-Hungary	1,872,684	2,041,523	2,044,573	2,006,842	(a)2,089,867	.....
Belgium	1,406,980	1,270,050	1,616,370	1,803,500	(a)2,072,843	.....
Canada	591,456	572,290	686,893	726,478	832,382	920,422
Sweden	615,778	567,821	444,764	604,300	633,300	699,816
Spain	355,240	403,554	389,000 (a)	425,000	(a) 435,000	.....
Italy	112,232	112,924	207,800 (a)	343,600	(a) 253,322	373,153
China	*36,306	66,409	74,000 (a)	120,000	94,826	.....
Japan	51,943	45,396 (a)	161,020	187,793	(a) 162,000	.....
Australasia	29,902	30,393	29,762	42,268	(a) 36,354	.....

*Exports. (a) From statistics by James Watson & Co., Glasgow, Scotland.

FERRO-PRODUCTS.

Ferro-silicon, ferro-phosphorus, and ferro-titanium, were produced in Canada in electric smelting plants, in 1912, the latter two in small quantities only. Ferro-silicon is made at Sault Ste. Marie and at Welland, Ont., ferro-phosphorus at Buckingham, Que., and ferro-titanium at Welland, Ont. The Electric Reduction Company at Buckingham, Que., in former years also manufactured other ferro products, including ferro-silicon and ferro-chrome.

The Electro Metals, Limited, at Welland, Ont., was chiefly engaged in the production of ferro-silicon. This firm has also made ferro-titanium in small quantities, as well as carried out experimental work in the production of pig iron in electric furnaces.

The Algoma Steel Corporation operated their electric furnace at Sault Ste. Marie for a very short period only during the year.

The total production in electric furnace plants during 1912 was 7,834 short tons of ferro products, valued at $465,225. In 1911 the production was 7,507 short tons, valued at $376,404.

The imports of ferro-silicon, ferro-manganese, etc., during the calendar year 1912, were 19,810 tons valued at $469,884, or an average of $23.72 per ton. The imports for the calendar year 1911 were 17,226 tons, valued at $429,465, or an average of $24.93 per ton; and in 1910, 18,900 tons, valued at $464,741, or an average of $24.59 per ton. The imports since 1887 are shown in Table 15, the figures of the table being for fiscal years.

IRON.—TABLE 15.

Imports of Ferro-Manganese, Ferro-Silicon, Etc.

Fiscal Year.	Tons.	Value.	Average value.	Fiscal Year.	Tons.	Value.	Average value.
		$	$ cts.			$	$ cts.
*1887	123	1,435	11 67	†1900	1,149	39,064	34 00
*1888	1,883	29,812	15 83	†1901	1,512	38,954	25 76
*1889	5,868	72,108	12 29	†1902	6,513	150,977	23 18
*1890	696	18,895	27 15	†1903	6,350	162,710	25 62
*1891	2,707	40,711	15 04	†1904	2,975	75,554	25 40
*1892	1,311	23,930	18 25	†1905	12,935	246,815	19 08
*1893	529	15,858	29 98	†1906	15,023	462,739	30 80
*1894	284	9,885	34 81	†1907 (9 mos.)	16,414	610,875	37 22
†1895	164	5,408	32 98	†1908	17,417	612,062	35 14
†1896	652	12,811	19 65	†1909	13,053	388,024	29 73
†1897	426	9,233	21 67	†1910	14,952	332,486	22 24
†1898	1,418	22,516	15 88	†1911	18,796	461,331	24 54
†1899	1,160	22,539	19 43	†1912	18,274	443,770	24 28

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

STEEL.

The production of steel ingots and castings in 1912 was 957,681 tons, as compared with 882,396 tons in 1911, and 822,284 tons in 1910. In 1912 the production of open-hearth ingots was reported as 692,236 tons; Bessemer ingots, 231,044 tons; direct open-hearth castings, 31,845 tons; and other steels, 2,556 tons. The total increase in production over 1911 was 75,285 tons, or a little over 8.5 per cent.

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

IRON.—TABLE 16.

Production of Steel, 1908-12.

——	1908.	1909.	1910.	1911.	1912.
	Tons.	Tons.	Tons.	Tons.	Tons.
Ingots—Open-hearth (basic).....	443,442	535,988	580,932	651,676	692,236
Bessemer (acid).....	135,557	203,715	222,668	209,817	231,044
Castings—Open-hearth.....	9,051	14,013	18,085	20,163	31,845
Other steels.....	713	1,003	599	740	2,556
Total.....	588,763	754,719	822,284	882,396	957,681

Statistics showing the principal materials used in steel furnaces were obtained for the first time in the year 1910. The total quantity of pig iron used in steel furnaces during 1912 was 735,559 tons, of which 706,895 tons were produced by firms reporting, and 28,664 tons purchased. The quantity of ferro-alloys used was 24,237 tons purchased. Scrap, etc., was used to the extent of 336,265 tons, being 223,404 tons produced by the firms reporting, and 112,861 tons purchased. Ores used included 985 tons of manganese ore and 43,006 tons of iron ore, while 148,045 tons of limestone or dolomite flux were used, and 9,709 tons of fluorspar. In Ontario a little over 423 million cubic feet of natural gas were used, while in Nova Scotia coke oven gas was used at Sydney, of which a record of quantity was not obtained.

In 1911 the total quantity of pig iron used in steel furnaces was 700,679 tons, of which 640,636 tons were produced by firms reporting, and 60,043 tons purchased. The quantity of ferro-alloys used was 21,359 tons purchased. Scrap, etc., was used to the extent of 278,797 tons, being 198,482 tons produced by the firms reporting, and 80,315 tons purchased. Ores used included 829 tons of manganese ore and 42,892 tons of iron ore, while 130,270 tons of limestone or dolomite flux were used and 8,067 tons of fluorspar. In Ontario a little over 662 million cubic feet of natural gas were used.

Statistics of the production of steel ingots and castings since 1894 are given in the following table, the figures for 1894 to 1906, inclusive, having been collected and published by the American Iron and Steel Association; those for the years 1907 to 1912 have been collected by this department.

IRON.—TABLE 17.

Annual Production of Steel Ingots and Castings, 1894-1912.

Calendar Year.	Short tons.	Calendar Year.	Short tons.	Calendar Year.	Short tons.
1894	28,767	1901	29,214	1908	588,763
1895	19,040	1902	203,881	1909	754,719
1896	17,920	1903	203,296	1910	822,284
1897	20,608	1904	166,381	1911	882,396
1898	24,125	1905	451,863	1912	957,681
1899	24,640	1906	639,396		
1900	26,406	1907	706,982		

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

Londonderry Iron and Mining Co., Ltd., Montreal, Que.
Dominion Iron and Steel Company, Sydney, N.S.
Nova Scotia Steel and Coal Company, New Glasgow, N.S.
Canadian Steel Foundries, Ltd., Montreal Que.
Beauchemin et Fils, Sorel, Que.
The Algoma Steel Company, Sault Ste. Marie, Ont.
The Steel Company of Canada, Ltd., Hamilton, Ont.
The Dominion Steel Castings Co., Ltd., Hamilton, Ont.
The Wm. Kennedy & Sons, Ltd., Owen Sound, Ont.

Rolled Products, etc.—Complete statistics of the production of rolled products and of manufactured steel have not been received; returns from seven of the largest producers, however, show a production of blooms, billets, slabs, etc., of 739,928 tons, of which 717,658 tons were used by the producer for further manufacture, and 22,270 tons sold to other rolling mills.

The production of rails was 471,422 tons; of rods, 68,174 tons; of bars, 264,226 tons; and of other rolled products, 39,012 tons. The production of steel rails in 1911 was returned as 399,760 tons, and in 1910, 399,762 tons.

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

IRON.—TABLE 18.

Annual Production of Rolled Iron and Steel, 1908-12.

Products—Gross tons.	1908.	1909.	1910.	1911.	1912.
Rails	268,692	344,830	366,465	360,547	423,885
Structural shapes and wire rods	41,520	74,136	80,993	76,617	64,082
Plates and sheets	11,656	36,241	26,642	14,833	373,257
Nail plate, merchant bars, and all other finished rolled forms	174,649	207,534	265,711	323,427	
Total	496,517	662,741	739,811	775,424	861,224

BOUNTIES.

Bounties on iron and steel made in Canada were provided for by the Dominion Government in 1897 under the authority of Chapter 6, Statutes of Canada 1897. These bounties were continued under subsequent statutes until 1911. Bounty on pig iron and steel made in electric furnaces was available until December 31, 1912, but no claims therefor were made during the year.

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

Total Bounties on Iron and Steel Paid by the Government of Canada Since 1896.

Year ended.	Pig iron.	Puddled iron bars.	Steel.	Manufactures of steel.
	$	$	$	$
June 30, 1896	104,105	5,611	59,499	.....
" 1897	66,509	3,019	17,366	.....
" 1898	165,654	7,706	67,454	.....
" 1899	187,954	17,511	74,644	.....
" 1900	238,296	10,121	64,360	.....
" 1901	351,259	16,703	100,058	.....
" 1902	693,108	20,550	77,431	.....
" 1903	666,001	6,702	729,102	.....
" 1904	533,982	11,669	347,990	15,321
" 1905	624,667	7,895	676,318	231,324
" 1906	687,632	5,875	941,000	369,832
March 31, 1907 (9 months)	385,231	312	575,259	338,999
" 1908	863,817	.....	1,092,201	347,135
" 1909	693,423	.....	838,100	333,091
" 1910	573,969	.....	695,752	538,812
" 1911	261,434	.....	350,456	526,858
" 1912	.....	.....	.....	166,750
Total	7,097,041	113,674	6,706,990	2,868,122

EXPORTS AND IMPORTS OF IRON AND STEEL GOODS.

The exports of iron and steel from Canada consist chiefly of manufactured goods such as agricultural implements, automobiles, bicycles, machinery, etc. Compared with the value of imports, the total value of the exports is small, amounting to not more than 10 per cent of the former. The total value of iron and steel exported during the calendar year 1912 was $10,682,484, as compared with a value of exports in 1911 of $9,907,281, and in 1910, $7,895,489. The exports during 1912 included pig iron and ferro products, etc., to the value of $310,702; scrap iron and steel, valued at $145,250; stoves, gas buoys, castings, machinery, hardware, etc., valued at $1,290,762; steel and manufactures of steel, $785,731; agricultural implements, $5,967,545; automobiles and bicycles, $2,182,494.

The exports during 1911 in similar grouping were: pig iron and ferro products, $271,968; scrap iron and steel, $54,618; stoves, gas buoys, castings, ma-

chinery, hardware, etc., $1,242,006; steel and manufactures of steel, $769,692; agricultural implements, $6,281,929; automobiles and bicycles, $1,287,068. The principal increase in exports is apparently in automobiles and bicycles. Particulars of these exports during the past two years are shown in further detail in the accompanying table.

IRON.—TABLE 19.

Exports of Iron and Steel Goods, the Product of Canada, during the Calendar Years 1911 and 1912.

	1911.			1912.		
	Quantity.	Value.	Average value.	Quantity.	Value.	Average value.
		$	$ cts.		$	$ cts.
Stoves..... No.	1,176	20,626	17 54	1,390	21,110	15 19
Gas buoys and parts of.... $	.....	68,485	.....	.....	83,583	.....
Castings, N.E.S..... $	.....	33,441	.....	.....	27,113	.....
Pig iron..... Tons	5,870	271,968	46 33	6,976	310,702	44 54
Machinery (linotype machines) $	.....	12,239	.....	.....	6,555	.....
Machinery, N.E.S..... $	.....	431,493	.....	.....	474,996	.....
Sewing machines..... No.	18,519	218,075	11 78	24,158	259,617	10 75
Typewriters..... "	4,771	318,935	66 85	4,025	277,583	68 96
Scrap iron and steel.....Tons.	4,208	54,618	12 99	16,632	145,250	8 73
Hardware, tools, etc..... $	.....	94,513	.....	.....	91,731	.....
Hardware, N.E.S..... "	.....	44,199	.....	.....	48,474	.....
Steel and manufactures of.. "	.....	769,692	.....	.....	785,731	.....
Agricultural implements—						
Mowing machines..... No.	22,859	778,274	34 05	16,213	562,502	34 69
Reapers..... "	9,385	574,315	61 19	3,243	195,156	60 19
Harvesters..... "	14,355	1,432,911	99 82	15,341	1,634,208	106 53
Ploughs..... "	20,437	508,095	24 86	13,580	412,460	30 37
Harrows..... "	5,412	95,904	17 72	4,734	100,579	21 25
Hay rakes..... "	11,085	317,842	28 67	6,646	199,092	29 96
Seeders..... "	174	13,795	79 28	70	7,040	100 57
Threshing machines... "	339	92,442	272 69	761	214,499	281 86
Cultivators..... "	5,923	138,377	23 36	5,059	100,043	19 78
All other..... "	.....	1,533,728	.....	.....	1,964,071	.....
Parts of..... "	.....	796,246	.....	.....	577,895	.....
Automobiles..... "	1,509	1,184,506	785 00	3,028	2,013,784	665 00
" parts of..... "	.....	45,798	.....	.....	105,330	.....
Bicycles..... "	90	5,936	65 96	101	9,058	89 68
" parts of..... "	.....	50,828	.....	.....	54,322	.....
Total.....	.....	9,907,281	.....	.....	10,682,484	.....

The total value of the imports of iron and steel goods during the calendar year 1912 was $124,376,986, as against a value of $93,171,817 imported in 1911, and $75,758,594 in 1910. While the total value of the imports during the calendar year is thus shown, it is not convenient to show the imports of detailed items for this period, since the statistics published in the annual reports of the Customs Department cover the fiscal year ending in March.

The total value of the imports for the fiscal year ending March, 1912, was $102,568,832, as compared with a value of imports during the fiscal year 1911 of $85,319,541, and $59,952,197 imported during the fiscal year 1910. The rapid

growth in imports of iron and steel is thus illustrated by the difference in figures covering the fiscal and calendar years, a nine months period. A detailed statement of the imports of iron and steel during the fiscal year is shown in Tables 21 and 22, Table 21 showing the imports subject to the duty, and Table 22 showing the imports free of duty. These imports include all classes of iron and steel goods manufactured as well as those of the cruder form. In many cases the values only of the imported goods are given, so that a total tonnage of imports cannot be estimated. In the case of most of the cruder materials, however, the quantities are given and a compilation of these showing the importation of the cruder forms of iron and steel during the fiscal year ending March, 1912, is shown in Table 20. The quantity of these imports in 1912 was 1,323,348 tons, valued at $37,709,118, or an average of $28.50 per ton, as compared with imports of 1,172,380 tons, valued at $33,838,905, or an average of $28.84 per ton in 1911. Other iron and steel goods imported during 1912, and of which the weight is not given, were valued at $64,859,714, and the value of similar imports in 1911 was $51,480,636.

The imports of the cruder forms of iron and steel included: 200,317 tons of pig iron in 1912, as against 270,102 tons in 1911; ferro products and chrome steel, 18,865 tons in 1912, as against 19,173 tons in the previous year; ingots, blooms, billets, puddled bars, etc., 88,075 tons in 1912, as compared with 48,395 tons in 1911; scrap iron and steel, 82,665 tons in 1912, and 53,824 tons in 1911; plates and sheets, 243,482 tons in 1912, as compared with 205,690 tons in the previous year; bars, rods, hoops, bands, etc., 195,145 tons in 1912, as against 183,865 tons in 1911; structural iron and steel, 268,573 tons in 1912, and 232,585 tons in 1911; steel rails and connexions 98,083 tons, as compared with 36,690 tons in 1911, pipe and fittings, 26,627 in 1912, and 28,831 tons in 1911; nails and spikes, 7,201 tons in 1912, and 3,374 tons in 1911; wire, 69,650 tons in 1912, as against 64,850 tons in 1911; forgings, castings, and manufactures, 24,665 tons in 1912, and 24,992 tons in 1911.

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

According to this authority there were exported to Canada from the United States during the twelve months ending June 30, 1912, 1,175,464 tons of iron and steel goods, valued at $36,637,305, together with other iron and steel goods of which the weight is not given, valued at $46,020,989—or a total value of imports from the United States of $82,658,924.

During the twelve months ending June 30, 1911, the corresponding exports to Canada were 821,526 tons, valued at $25,544,421, together with other iron and steel goods of which the weight is not given, valued at $38,738,575—or a total value during the year of $64,280,996.

The detailed items making up these totals are shown in Table 23.

TABLE 20.

Imports of Certain Iron and Steel Products.*

Material.	Twelve months ending March 1912.		
	Tons.	Value.	Average.
		$	$ cts.
Pig iron	200,317	2,706,848	13 51
Ferro-products and chrome steel	18,865	461,140	24 44
Ingots, blooms, billets, puddled bars, etc	88,075	1,641,919	18 64
Scrap iron and scrap steel	82,665	1,217,556	14 73
Plates and sheets	243,482	8,288,144	34 04
Bars, rods, hoops, bands, etc	195,145	6,630,802	33 98
Structural iron and steel	268,573	7,033,146	26 18
Rails and connexions	98,083	2,878,835	29 35
Pipe and fittings	26,627	1,180,149	44 32
Nails and spikes	7,201	291,236	40 44
Wire	69,650	3,841,654	55 16
Forgings, castings, and manufactures	24,665	1,537,689	62 34
Total	1,323,345	37,709,118	28 50

Material.	Twelve months ending March.			
	1908.	1909.	1910.	1911.
	Tons.	Tons.	Tons.	Tons.
Pig iron	212,290	58,591	159,506	270,102
Ferro-products and chrome steel	17,661	13,206	15,153	19,182
Ingots, blooms, billets, puddled bars, etc	21,222	8,887	36,819	48,395
Scrap iron and scrap steel	69,213	26,212	28,797	53,824
Plates and sheets	126,172	116,610	200,575	205,690
Bars, rods, hoops, bands, etc	98,631	73,261	117,159	183,865
Structural iron and steel	373,871	162,735	195,748	232,585
Rails and connexions	52,706	32,543	55,183	36,690
Pipe and fittings	25,090	18,309	16,705	28,831
Nails and spikes	2,741	1,611	3,476	3,374
Wire	57,046	39,375	68,211	64,850
Forgings, castings, and manufactures	22,357	14,394	18,093	24,523
Total	1,079,000	565,734	915,425	1,172,380

*In addition to these imports there is a large importation of manufactured iron and steel, of which the weight is not given, but the values of which are shown in Tables 21 and 22.

Imports of Iron and Steel Goods Subject to Duty.

Material.		Twelve months ending March, 1911.		Twelve months ending March, 1912.	
		Quantity.	Values.	Quantity.	Values.
			$		$
Agricultural implements, N.O.P., viz.—					
Binding attachments	$	.....	10,022	.....	26,327
Cultivators and weeders	No	6,296	59,064	6,895	67,253
Drills, seed	"	6,886	355,821	7,042	349,618
Farm, road, or field rollers	"	118	64,305	212	56,374
Forks, pronged	"	20,982	10,018	10,762	5,802
Harrows	"	15,001	229,911	11,763	143,546
Harvesters, self-binding	"	1,110	115,794	2,531	264,890
Hay loaders	"	453	25,272	796	39,643
Hay tedders	"	9	261	104	4,360
Hoes	"	4,737	1,210	8,481	2,332
Horse rakes	"	851	26,967	999	30,448
Knives, hay or straw	"	8,213	4,517	13,226	2,311
Knives edging	"	56	72	24	93
Lawn mowers	"	8,783	32,412	12,843	49,843
Manure spreaders	"	705	65,562	349	27,594
Mowing machines	"	1,367	52,999	2,116	79,539
Ploughs	"	52,972	1,993,214	42,338	1,352,214
Post hole diggers	"	4,213	4,368	3,929	4,378
Potato diggers	"	626	16,767	866	17,083
Rakes, N.O.P.	"	58,769	10,689	15,425	3,761
Reapers	"	827	60,677	1,380	75,455
Scythes	Doz.	2,286	10,559	2,977	12,308
Sickles or reaping hooks	"	529	1,163	297	843
Snaths	"	15	30	19	81
Spades and shovels of iron or steel, N.O.P.	"	9,539	45,751	10,069	31,615
Spade and shovel blanks, and iron or steel cut to shape for the same	"	3,247	5,448	3,382	5,774
Parts of agricultural implements paying 12½ per cent and 17½ per cent	$	.....	464,202	.....	425,140
Parts of agricultural implements paying 12½, 17½, and 20 per cent	"	.....	765,844	.....	1,057,680
All other agricultural implements, N.O.P	"	.....	83,226	.....	107,500

Imports of Iron and Steel Goods Subject to Duty—*Continued.*

Material.		Twelve months ending March, 1911.		Twelve months ending March, 1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Anvils and vises	$	.....	104,670	.....	78,204
Cart or wagon skeins or boxes	Tons.	114·8	9,488	265·2	20,987
Springs, N.O.P. and parts thereof, of iron or steel, for railway, tramway, or other vehicles	"	333·1	33,544	635·1	63,042
Axle and axle parts, N.O.P., and axle blanks and parts thereof, of iron or steel for railway, tramway, or other vehicles	"	2,911·7	214,261	3,616	289,800
Bar iron or steel, rolled, whether in coils, bundles, rod or bars, comprising rounds, ovals, squares, and flats, N.O.P.	"	104,895·7	3,179,921	105,225·3	2,948,456
Butts and hinges N.O.P	$	.....	94,450	.....	109,322
Canada plates, Russia iron, terne plate, and rolled sheets of iron and steel coated with zinc, spelter, or other metal, of all widths or thicknesses, N.O.P	Tons.	1,488·3	93,118	4,509·8	213,229
Castings, iron or steel, N.O.P	$	.....	826,365	.....	1,102,096
Cast iron pipe of every description	Tons.	25,046	562,008	20,822·5	490,944
Cast scrap iron	"	20,522	266,626	35,718	422,925
Chains, coil chain, chain links, and chain shackles of iron or steel of $\frac{5}{16}$" diameter, and over	"	3,053·5	191,588	3,281·7	159,288
Chains, N.O.P	$	.....	94,645	.....	113,425
Tacks, shoe	Tons.	6	1,634	16·3	2,986
Nails, brads, spikes, and tacks of all kinds, N.O.P	"	269·5	31,311	702·5	47,277
Engines, etc.:—					
Locomotives for railways	No.	98	297,512	152	495,195
Locomotive parts	$	.....	64,898	.....	69,276
Motor cars for railway and tramways	No.	8	14,119	49	101,182
Engines, fire	"	16	17,435	22	21,139
Engines, gasoline	"	9,045	1,465,035	15,439	2,207,496
Engines, steam	"	284	244,394	322	276,156
Boilers, steam	"	567	180,616	631	236,308
Boilers, N.O.P	"	1,364	138,632	3,217	247,645
Fire extinguishing machines, including sprinklers for fire protection	$	.....	77,007	.....	97,422
Fittings, iron or steel, for iron or steel pipe of every description	Tons.	3,785·4	465,954	5,804·8	689,205
Flat eye-bar blanks, not punched or drilled, for use exclusively in the manufacture of bridges or of steel structural work, or in car construction	"	137	3,800	15	649

Ferro-silicon, spiegeleisen, and ferro-manganese	Tons.	18,796	461,331	18,591	436,849
Forging of iron and steel of whatever size, shape, or in whatever stage of manufacture N.O.P., and steel shafting, turned, compressed or polished and hammered, drawn or cold rolled iron or steel bars or shapes, N.O.P	"	1,212·5	125,030	1,329·9	158,317
Hardware, viz,. builders, cabinet-makers, upholsterers, harness-makers, saddlers, and carriage hardware, including curry-combs, N.O.P	$	.....	681,050	.....	720,101
Horse, mule, and ox shoes	"	.....	18,973	.....	21,449
Iron or steel billets, weighing not less than 60 pounds per lineal yard	Tons.	44,456·5	861,036	84,738·4	1,572,614
Iron or steel ingots, cogged ingots, blooms, slabs, puddled bars and loops, or other forms, N.O.P., less finished than iron or steel bars, but more advanced than pig iron, except castings	"	3,227·8	68,616	2,608·2	52,063
Iron or steel bridges or parts thereof, iron or steel structural work, columns, shapes, or sections, drilled, punched, or in any further stage of manufacture than as rolled or cast, N.O.P	Tons.	6,264·8	328,011	13,419·8	651,244
Iron in pig	"	254,284	3,376,843	199,412	2,469,760
Iron in pig charcoal	"	15,818	237,088	905	10,768
Locks of all kinds	$	.....	459,081	.....	478,480
Machines, machinery, etc....					
Automobiles and motor vehicles of all kinds	No.	3,488	4,235,196	6,062	6,551,345
Automobiles and motor vehicles, parts of	$	.....	522,223	.....	879,471
Fanning mills	No.	2,246	29,319	3,648	52,230
Grain crushers	"	92	2,405	78	1,419
Windmills and complete parts thereof	"	1,482	51,805	1,643	47,436
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, rock drills, air compressors, cranes, derricks, and percussion coal cutters	$	.....	265,085	.....	256,589
Portable machines:—					
Fodder or feed cutters	No.	395	4,177	453	4,521
Horse powers for farm purposes	"	4	281	13	2,019
Portable engines with boilers in combination and traction engines for farm purposes	"	2,170	3,636,392	3,831	6,043,723
Portable sawmills and planing mills	"	36	17,204	3	626
Steam shovels	"	47	296,043	32	183,034
Threshing machine separators	"	1,286	741,360	2,857	1,403,713
Threshing machine separators, parts of, including wind-stackers, baggers, weighers and self-feeders for same, and finished parts thereof for repairs, when imported separately	$	.....	422,044	.....	660,206
All other portable machines, N.O.P., and parts	"	.....	43,742	.....	40,687
Sewing machines	No.	14,968	351,525	15,489	333,411
Sewing machines, parts of	$	.....	108,957	.....	128,572
Machines, typewriting	No.	11,230	686,936	16,780	974,942
Machines, type-casting and type-setting, and parts thereof, adapted for use in printing offices	"	134	226,325	.....	337,856
Machines specially designed for ruling, folding, binding, embossing, creasing, or cutting paper or cardboard, when for use exclusively by printers, bookbinders, and by manufacturers of articles made from paper or cardboard, including parts thereof, composed wholly or in part of iron, steel, brass, or wood	"	1,015	265,810	.....	309,722
Lithographic presses and type-making accessories for same	$	.....	68,631	.....	105,925
Printing presses	"	.....	392,873	.....	502,330
Machinery of a class or kind not made in Canada and parts thereof adapted for carding, spinning, weaving braiding, or knitting fibrous material, when imported by manufacturers for such purposes	"	.....	893,413	.....	813,935
All machinery composed wholly or in part of iron or steel, N.O.P., and iron or steel castings, and iron or steel integral parts of all machinery specified in tariff item 453	"	.....	12,556,876	.....	15,389,799

Imports of Iron and Steel Goods Subject to Duty—*Continued.*

Material.		Twelve months ending March, 1911.		Twelve months ending March, 1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Portable machines—*Con'inued.*					
Machines, washing	No.	5,751	36,373	7,141	56,036
Nails and spikes, composition and sheathing nails	Tons.	96·5	8,717	132·5	8,981
Nails and spikes, cut (ordinary builders)	"	234·8	9,657	484·6	16,682
Railway spikes	"	2,229·2	71,135	4,991·0	160,394
Nails, wire of all kinds, N.O.P.	"	538·7	41,599	874·7	54,916
Pumps, hand N.O.P.	No.	20,942	97,224	27,869	116,462
Iron and steel railway bars or rails of any form, punched or not, N.O.P., for railways, which term for the purposes of this item shall include all kinds of railways, streets railways and tramways, even although they are used for private purposes only, and even although they are not used or intended to be used in connexion with the business of common carrying of goods or passengers	Tons.	32,784	895,984	92,103	2,452,133
Railway fish-plates	"	1,489	60,788	3,089	131,630
Railway tie-plates	"	957	35,399	441	16,164
Rolled iron or steel angles, tees, beams, channels, girders, and other rolled shapes or sections, not punched or drilled or further manufactured than rolled, N.O.P.	"	56,516·1	1,580,387	63,539·8	1,635,857
Rolled iron or steel beams, channels, angles, and other rolled shapes of iron and steel, not punched, drilled or further manufactured than rolled, weighing not less than 35 pounds per lineal yard, not being square, flat, oval, or round shapes, and not being railway bars or rails	"	124,985·3	3,209,773	147,877·5	3,625,107
Rolled iron or steel hoop, band, scroll, or strip, 12 inches or less in width, No. 13 gauge and thicker, N.O.P	"	3,554·5	123,238	6,532·3	197,354
Rolled iron or steel hoop, band, scroll, or strip, No. 14 gauge and thinner, galvanized or coated with other metal or not, N.O.P.	"	8,142·9	386,162	14,059·9	570,032
Rolled iron or steel sheets or plates, sheared or unsheared, and skelp iron or steel, sheared or rolled grooves, N.O.P.	"	25,467·5	756,212	24,090	680,794
Rolled iron or steel plates not less than 30" in width and not less than ¼" in thickness, N.O.P.	"	44,398·4	1,223,212	37,565·4	969,881
Rolled iron or steel sheets, polished or not, No. 14 gauge and thinner, N.O.P.	"	22,083·6	1,046,128	26,903·5	1,231,336
Rolls of chilled iron or steel	"	164·6	10,526	65·9	4,394
Sad or smoothing hatters' and tailors' irons	$	.....	5,596	.....	10,650
Safes, doors for safes and vaults	"	.....	193,530	.....	208,471
Screws, iron and steel, commonly called 'wood screws,' N.O.P., including lag or coach screws, plated or not, and machine or other screws, N.O.P.	Gross	249,613	47,268	380,929	57,279

Scales, balances, weighing beams, and strength-testing machines of all kinds	$	.....	113,176	.....	154,253
Shafting, round, steel, in bars not exceeding 2½" diameter	Tons.	2,929·3	119,498	2,726·6	102,704
Sheets or plates of steel, cold rolled with sheared edges over 14 gauge, and not less than 1½" wide for the manufacture of mower bars, hinges, typewriters, and sewing machines	"	794·7	35,789	557·5	24,041
Sheets, flat, of galvanized iron or steel	"	8,462·1	509,027	12,084·6	669,498
Sheets, iron or steel, corrugated, galvanized	"	132·7	9,468	158·6	6,683
Sheets, iron or steel, corrugated, not galvanized	"	0·3	76	89·1	4,055
Skates of all kinds, roller or other, and parts thereof	Pairs.	138,766	80,255	142,791	72,575
Skelp iron or steel, sheared or rolled in grooves, imported by manufacturers of wrought iron or steel pipe, for use exclusively in the manufacture of wrought iron or steel pipe in their own factories	Tons.	59,576·5	1,598,385	87,401·7	2,056,977
Steel billets, N.O.P	"	711·3	19,940	729·1	17,242
Stoves of all kinds, for coal, wood, oil, spirits or gas	$	.....	694,389	.....	783,803
Stove urns of metal, and dovetails, chaplets, and hinge tubes of tin for use in the manufacture of stoves	"	.....	22,370	.....	21,959
Switches, frogs, crossings, and intersections for railways	Tons.	1,460·1	144,195	2,450	278,906
Iron or steel railway bars or rails, which have been in use in the tracks of railways in Canada and which have been exported from Canada, and returned thereto after having been re-rolled, and weighing not less than 56 pounds per lineal yard when re-rolled and which are to be used by the railway company importing them on their own tracks	"	.....	.....	6	2
Tubing:—					
Wrought or seamless tubing, iron or steel, plain or galvanized, threaded and coupled, or not, over 4" diameter, N.O.P	$	.....	503,206	.....	447,390
Wrought or seamless tubing, iron or steel, plain or galvanized, threaded and coupled, or not, 4" and less in diameter, N.O.P	"	.....	394,613	.....	664,857
Seamless steel tubing, valued at not less than 3½ cents per lb	Tons.	600·8	45,605	625·9	37,026
Rolled or drawn square tubing of iron or steel, adapted for use in the manufacture of agricultural implements	$	.....	1,894	.....	5,682
Iron or steel pipe or tubing, plain or galvanized, riveted, corrugated or otherwise specially manufactured, including lockjoint pipe, N.O.P	"	.....	285,190	.....	441,483
Iron or steel pipe, not butt or lap welded, and wire bound wooden pipe, not less than 30" internal diameter when for use exclusively in alluvial gold mining	"	.....	22,599	.....	310
Ware—Agate, granite, or enamelled iron or steel ware	"	.....	167,693	.....	198,708
Ware—Iron or steel hollow ware, plain black or coated, N.O.P., and nickel and aluminium kitchen or household hollow ware	"	.....	79,507	.....	129,469
Wire bale ties	Bundles of 250 ties	3,514	3,575	19,803	10,203
Wire bound wooden pipe, N.O.P	$	.....	1,143	.....	661
Wire cloth or woven wire and netting of iron and steel	Tons.	1,276·6	140,037	1,246·3	153,973
Wire, crucible cast steel, valued at not less than 6 cents per lb	"	88·1	32,166	97·7	27,981
Wire screens, doors, and windows	$	.....	20,065	.....	30,188
Wire buckthorn strip fencing, woven wire fencing, and wire fencing of iron and steel, N.O.P., not to include woven wire or netting made from wire, smaller than No. 14 gauge, not to include fencing or wire larger than No. 9 gauge	Tons.	920·3	65,448	1,016·8	72,796
Wire, single or several, covered with cotton, linen, silk, rubber, or other material, including cable so covered	"	1,788·4	495,560	2,992·2	662,931
Wire of iron and steel all kinds, N.O.P	"	4,485	271,402	5,739·9	288,197
Wire rope, stranded or twisted wire clothes lines, picture or other twisted wire, and wire cables, N.O.P	"	3,762·9	530,054	3,808·2	518,180
Iron or steel nuts, rivets, or bolts with or without threads, nut bolt, and hinge blank, and T and strap hinges of all kinds, N.O.P	"	2,346·9	192,798	3,400 8	246,531

Imports of Iron and Steel Goods Subject to Duty—*Concluded.*

Material.		Twelve months ending March, 1911.		Twelve months ending March, 1912	
		Quantity.	Value.	Quantity.	Value.
			$		$
Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings, and clippings of iron or steel plates or sheets having been in actual use: crop ends of tin plate bars, blooms, and rails, the same not having been in actual use	Tons.	30,893·8	408,075	43,543·5	547,942
Penknives, jack-knives, and pocket knives of all kinds	$	.....	100,318	.....	88,577
Knives and forks of steel, plated or not, N.O.P.	"	.....	263,804	.....	222,751
All other cutlery, N.O.P.	"	.....	677,030	.....	749,751
Guns, rifles, including air guns and air rifles (not being toys), muskets, cannons, pistols, revolvers, or other firearms	"	.....	622,037	.....	776,565
Bayonets, swords, fencing foils, and masks	"	.....	9,810	.....	18,911
Needles of any material or kind, N.O.P.	"	.....	118,783	.....	110,095
Steel, chrome steel	Tons.	385·6	30,691	274·2	24,291
Steel plate, universal mill or rolled edge plates of steel over 12" wide, imported by manufacturers of bridges or of structural work, or for use in car construction	"	24,388·2	655,047	36,886·2	918,388
Steel in bars or sheets to be used exclusively in the manufacture of shovels when imported by the manufacturers of shovels	"	1,556·1	44,546	1,539·4	38,292
Rolled iron or steel, or cast steel in bars, bands, hoops, scroll, or strip, sheet, or plate of any size, thickness, or width, galvanized or coated with any material or not, and steel blanks for the manufacture of milling cutters, when of greater value than 3½ cents per pound	"	5,333·8	621,431	4,855·6	575,386
Steel balls adapted for use in bearings of machinery and vehicles	$	.....	15,613	.....	17,087
Flat steel, cold rolled, not over ½" thick, for the manufacture of cups and cones for ball bearings	Tons.	.....	.....	33·3	1,861
Steel wool	"	22·6	2,989	29·8	3,796
Tools and implements—					
Adzes, cleavers, hatchets, wedges, sledges, hammers, crowbars, cant-dogs and track tools, picks, mattocks and eyes and poles for the same	$	.....	67,132	.....	76,275
Axes	Doz.	7,993	45,361	11,197	60,158
Saws	$	.....	113,401	.....	102,376
Files and rasps, N.O.P.	"	.....	121,165	.....	112,441
Tools, hand or machine, of all kinds, N.O.P.	"	.....	767,628	.....	768,685
Knife blades or blanks, and table forks of iron and steel, in the rough, not handled, filed, ground, or otherwise manufactured	"	.....	388	.....	154
Manufactures, articles or wares of iron and steel, or of which iron and steel (or either) are the component materials of chief value, N.O.P.	"	.....	7,122,976	.....	9,189,525
Total			73,871,113		91,079,769

IRON.—TABLE 22.

Imports of Iron and Steel Goods Free of Duty.

Material.		Twelve months ending March, 1911.		Twelve months ending March, 1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Anchors for vessels	Tons.	305·9	25,362	268·5	21,597
Chain, malleable sprocket or link belting	$	.....	240,704	.....	232,391
Cream separators, and steel bowls for	"	.....	387,340	.....	361,896
Cream separators—materials which enter into the construction and form part of when imported by manufacturers of cream separators to be used in the manufacture thereof	"	.....	396,501	.....	304,255
Gas buoys—The following articles and materials, when imported by manufacturers of automatic gas buoys and automatic gas beacons, for use in the manufacture of such buoys and beacons for the Government of Canada or for export, viz., iron or steel tubes over 16" in diameter; flanged and dished steel heads made from boiler plate, over 5 feet in diameter; hardened steel balls, not less than 3" in diameter; acetylene gas lanterns and parts thereof, and tobin bronze in bars or rods	"	.....	29,829	.....	27,933
Gun barrels, in single tubes, forged, rough bored	"	.....	1,372	.....	1,350
Iron or steel rods over $\frac{5}{16}$" in diameter for manufacturing of chain	Tons.	1,385·4	35,461	1,091·1	29,100
Iron or steel, rolled round wire rods, in the coil, not over $\frac{3}{8}$" in diameter, when imported by wire manufacturers for use in making wire in the coil in their own factories	"	36,032·1	965,912	43,397·3	1,033,397
Boiler plate of iron or steel not less than 30" in width, and not less than $\frac{1}{4}$" in thickness, for use exclusively in the manufacture of boilers	"	15,994·8	492,247	17,683·4	516,947
Flat galvanized iron or steel sheets	"	19,089·9	1,127,087	24,309·1	1,389,343
Rolled iron and steel, and cast steel in bars, band, hoop, scroll or strip, sheet or plate of any size, thickness, or width: galvanized or coated with any material or not, and steel blanks for the manufacture of milling cutters, when of greater value than $3\frac{1}{2}$ cts. per lb	"	4,137·3	531,804	4,117	579,320
Rolled iron or steel sheets in strips, polished or not, 14 gauge and thinner, N.O.P	"	18,169·1	800,034	12,996	587,259
Rolled iron or steel, hoop, band, scroll, or strip, No. 14 gauge or thinner, galvanized or coated with other metal or not, N.O.P	"	1,194·1	41,143	1,151·4	41,517
Iron tubing for manufacture of extension rods for windows	$	.....	8,642	.....	7,071
Iron or steel, beams, sheets or plates, ankles, knees, masts or parts thereof and cable chains for wooden, iron, steel or composite ships or vessels	Tons.	14,166	417,981	6,849·2	202,550
Locomotive and car wheel tires of steel in the rough	"	9,605·5	451,253	8,354·2	405,993
Scrap iron and scrap steel, old, and fit only to be remanufactured, being part of or recovered from any vessel wrecked in waters subject to the jurisdiction of Canada	"	61·5	730	3	158

Imports of Iron and Steel Goods Free of Duty—*Concluded.*

Material.		Twelve months ending March, 1911.		Twelve months ending March, 1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Machinery:—					
Articles of metals as follows when for use exclusively in mining or metallurgical operations, viz: coal cutting machines, except percussion coal cutters; coal heading machines; coal augers; rotary coal drills; core drills; miners safety lamps and parts thereof, also accessories for cleaning, filling, and testing such lamps; electric or magnetic machines for separating or concentrating iron ores; furnaces for the smelting of copper, zinc, and nickel ores; converting apparatus for metallurgical processes in metals; copper plates, plated or not, machinery for extraction of precious metals by the chlorination or cyanide process; amalgam safes; automatic ore samplers; automatic feeders; retorts, mercury pumps; pyrometers; bullion furnaces; amalgam cleaners; blast furnace blowing engines; wrought iron tubing, butt or lap welded; threaded, or coupled or not, over 4″ in diameter; and integral parts of all machinery mentioned in this item; blowers of iron or steel for use in the smelting of ores, or in the reduction, separation, or refining of metals, rotary kilns, revolving roasters, and furnaces of metal designed for roasting ore, mineral rock or clay; furnace slag trucks, and slag pots of a class or kind not made in Canada, buddles, vanners, and slime tables adapted for use in gold mining	$	.....	704,878	.....	822,061
Appliances of iron and steel, of a class or kind not made in Canada, and elevators and machinery of floating dredges, when for use exclusively in alluvial gold mining	"	.....	251,041	.....	292,178
Well-drilling, and apparatus of a class or kind not made in Canada for drilling for water, natural gas or oil, and for prospecting for minerals, not to include motive power	"	.....	209,717	.....	195,767
Briquette making machines	"	.....	27,582	.....	7,971
Newspaper printing presses, of not less value by retail than $1,500 each, of a class or kind not made in Canada	No.	114	504,556	141	599,626
Machinery or tools not manufactured in Canada up to the required standard necessary for any factory to be established in Canada for the manufacture of rifles for the Government of Canada	$	.....	6,166	.....	33,204
All materials, or parts in the rough, unfinished, and screws, nuts, bands, and springs to be used in rifles to be manufactured at any such factory for the Government of Canada	"	.....	50,067	.....	37,047
Machinery of every kind, and structural iron and steel for use in the construction and equipment of factories for the manufacture of sugar from beet root	"	.....	29,903	.....	89,717
Machinery of a class or kind not made in Canada and parts thereof, for the manufacture of twine cordage, or linen, or for the preparation of flax fibre	"	.....	43,129	.....	35,760
Mould boards or shares, or plough plates, land sides, or other plates for agricultural implements, when cut to shape from rolled plates of steel, but not moulded, punched, polished, or otherwise manufactured	Tons.	8,202·6	512,857	8,041·3	520,395

Steel balls adapted for use on bearings on machinery and vehicles	$	.....	3,206	.....	4,820
Steel, rolled, for saws and straw cutters, not tempered, or ground, nor further manufactured than cut to shape without indented edges	Tons.	1,144·8	181,866	1,079·2	161,955
Steel strips, and flat steel wire when imported into Canada by manufacturers of buckthorn and plain strip fencing for use exclusively in their own factories in the manufacture thereof	"	0·4	32	18·2	660
Steel wire, Bessemer soft drawn spring of Nos. 10, 12, and 13 gauge, respectively, and homo steel spring wire of Nos. 11 and 12 gauge, respectively, when imported by manufacturers of wire mattresses, to be used exclusively in their own factories in the manufacture of such articles	"	458·7	22,831	532·7	25,771
Steel, crucible sheet, 11 to 16 gauge, 2½" to 18" wide for the manufacture of mower and reaper knives when imported by manufacturers thereof for use exclusively in the manufacture of such articles in their own factories	"	705·9	57,518	724·5	55,957
Steel No. 20 gauge and thinner, but not thinner than 30 gauge, for the manufacture of corset steels, clock springs, and shoe shanks, imported by manufacturers of such articles for exclusive use in the manufacture of such articles in their own factories	"	55·9	2,771	36·6	2,444
Steel wire, flat, of 16 gauge or thinner, imported by the manufacturers of crinoline, and corset wires and dress stays, for use exclusively in the manufacture of such articles in their own factories	"	314·3	40,240	389·6	48,449
Steel, No. 12 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of buckle clasps, bed fasts, furniture casters, and ice-creepers, imported by the manufacturers of such articles, for use exclusively in the manufacture of such articles in their own factories	"	235·2	14,268	179·9	8,427
Steel No. 24 and 17 gauge, in the sheets 63" long and from 18" to 32" wide, when imported by the manufacturers of tubular bow sockets for use exclusively in the manufacture of such articles in their own factories	"	72	3,132	89·5	3,635
Steel springs for the manufacture of surgical trusses, when imported by manufacturers of surgical trusses for use exclusively in the manufacture thereof in their own factories	"	0·6	438	0·5	431
Swedish rolled iron, and Swedish rolled steel nail rods, under half an inch in diameter, for the manufacture of horseshoe nails	"	1,021	47,039	1,719·7	68,951
Steel seamless tubing valued at not less than 3½ cents per pound	"	137·6	20,015	134·2	17,688
Steel rolled or drawn square tubing adapted for use in the manufacture of agricultural implements	$	.....	.....	.....	.....
Steel or iron tubes, rolled, not joined or welded, not more than 1½" diameter, N.O.P.	"	.....	17,777	.....	24,529
Seamless steel, or wrought iron boiler tubes, including flues and corrugated tubes for marine boilers	"	.....	573,579	.....	658,229
Steel imported by manufacturers of rifles for use in manufacturing rough parts of rifles, when such parts are to be used in rifles for the government of Canada	$	.....	.....	.....	.....
Barbed fencing wire of iron or steel	Tons.	17,255·4	743,527	18,831·3	766,255
Wire crucible cast steel, valued at not less than 6 cents per pound	"	8·5	2,479	6·5	1,826
Wire, curved or not, galvanized iron or steel, Nos. 9, 12, and 13 gauge	"	31,869·7	1,243,580	34,691	1,255,932
Wire, steel, valued at not less than 2¾ cents per pound when imported by manufacturers of rope for use exclusively in the manufacture of rope	"	2,315·6	180,832	28·6	7,301
Total		.....	11,448,428		11,489,063

IRON.—TABLE 23.

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

Material		Twelve months ending June, 1911.		Twelve months ending June, 1912.	
		Quantity.	Value.	Quantity.	Value.
			$		
Pig iron	Short tons	145,867·7	2,090,722	157,480·9	1,979,355
Scrap and old, fit only for remanufacture	"	48,349·3	609,191	64,365·3	737,167
Bar iron	"	11,157·7	363,283	9,591·9	308,745
Bars or rods of steel—					
Wire rods	"	19,825·9	527,306	53,582·9	1,412,910
All other	"	92,268·0	2,822,424	95,215·9	2,859,441
Billets, ingots, and blooms of steel	"	56,433·4	1,113,957	60,008·5	1,200,710
Hoop, band, and scroll	"	‡	‡	7,206·2	281,946
Steel rails for railways	"	43,752·8	1,168,101	132,973·1	3,369,894
Sheets and plates (iron)	"	23,894·2	1,139,918	43,790·6	2,030,648
Sheets and plates (steel)	"	174,055·9	6,437,314	209,207·2	7,457,232
Sheets and plates (tin plates, terne plates, and taggers tin)	"	23,008·8	1,607,458	42,336·8	2,985,065
Structural iron and steel	"	89,201·3	3,496,033	144,721·9	5,150,353
Wire (barbed)	"	16,182	707,893	21,497·9	895,725
Wire (all other)	"	35,097·6	1,483,075	43,638·2	1,750,586
Nails and spikes—					
Cut	"	1,854·9	56,034	5,419·6	159,215
Wire	"	376	22,968	1,245·9	52,498
All other, including tacks	"	845·9	56,163	3,113·1	176,371
Pipes and fittings	"	36,264·4	1,640,592	76,248·5	3,578,892
Radiators and cast iron house heating boilers	"	3,090·6	201,989	3,819·9	250,552
		821,526·4	25,544,421	1,175,464·3	36,637,805

*Compiled from 'Commerce and Navigation of the United States, 1911,' Washington, D.C.
‡Included in "All other manufactures of" in 1911.

IRON.—TABLE 23—*Continued.*

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

Material.		1911.		1912.	
		Quantity.	Value.	Quantity.	Value.
			$		$
Builders' hardware and tools:—					
Locks, hinges, and other builders' hardware		.....	1,560,793	.....	1,762,066
Saws		.....	283,785	.....	267,810
Tools not elsewhere specified		.....	1,417,144	.....	1,686,924
Car wheels	No.	5,976	71,588	3,749	36,021
Castings, not elsewhere specified		.....	1,437,080	.....	1,312,729
Cutlery:—			†		
Table	$	.....	.....	.....	27,841
All other	"	.....	123,231	.....	175,666
Firearms	"	.....	416,129	.....	503,710
Machinery, machines and parts of					
Adding machines	"	.....	320,326	.....	288,617
Brewers' machinery	"	.....	112,405	.....	112,627
Cash registers	No.	2,268	197,597	1,026	81,234
Electrical machinery	$	.....	1,664,668	.....	1,869,761
Laundry machinery	"	.....	139,008	.....	167,735
Metal working machinery (including metal working machine tools)	$	.....	766,127	.....	1,362,326
Mining machinery	"	.....	912,270	.....	1,224,011
Printing presses and parts of	"	.....	1,057,876	.....	1,265,657
Pumps, and pumping machinery	"	.....	634,343	.....	701,144
Refrigerating machinery, ice-making machinery, etc	$	.....	73,193	.....	170,564
Sawmill machinery	"	.....	‡	.....	382,752
Sewing machines and parts of	"	.....	436,059	.....	484,687
Shoe machinery	"	.....	266,998	.....	274,388
Steam and other power engines and parts of:					
Electric-locomotives	No.			8	46,745
Gas—stationary	"			766	130,713
Gasoline—automobile	"			6,844	769,195
" —marine	"			1,842	305,842
" —stationary	"			5,096	754,570
" —traction	"	(a)	3,941,450	1,710	3,166,507
Steam—locomotives	"			107	472,046
" —marine	"			3	18,000
" —stationary	"			245	247,729
" —traction	"			259	478,526
All other engines and parts of	$	.....	1,586,231	.....	1,910,440
Sugar-mill machinery	"	.....	4,883	.....	24,431
Typewriting machines and parts of	"	.....	647,152	.....	944,600
Windmills and parts of	"	.....	78,692	.....	71,044
Woodworking machinery all other	"	.....	454,596	.....	375,446
All other	"	.....	10,383,946	.....	10,627,184
Safes	No.	3,967	209,092	4,320	217,860
Scales and balances	$	.....	138,674	.....	159,851
Stoves, ranges, and parts of	"	.....	832,447	.....	1,041,935
All other manufactures of	"	.....	8,569,792	.....	10,100,055
		.....	38,736,575	.....	46,020,989
Total value		.....	64,280,996	.....	82,658,294

†In 1911, included in 'All other cutlery.'
‡In 1911, included in 'All other wood-working' machinery.
(a) Includes 'Steam and other power engines and parts of', as follows:—
Locomotives, 69 valued at $345,618; stationary engines, 4016 valued at $852,685; traction engines, 1590 valued at $2,743,147.

LEAD.

The following statistics of the production of lead in Canada in 1912 are based on direct smelter returns, and represent mainly the amount of lead refined in Canada, and shipped as pig lead, or manufactured products.

The 1912 output was almost entirely from the mines of British Columbia, and a considerable increase is shown, not only over 1911, but also over 1910, the production being 35,763,476 pounds in 1912, as against 23,784,969 pounds in 1911, and 32,987,508 pounds in 1910. A small shipment was made from Ontario mines, but in regard to this, figures are not available.

In valuing the lead production for 1912, the average price per pound at Montreal has been used. The New York market is practically closed to Canadian lead by the high tariff, and to the London market price must be added the freight, etc., to reach the Canadian market. The price at Montreal, the main Canadian market for lead, is lower than that at New York, and higher than that at London, and is probably a more equitable valuation to place upon Canadian production.

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

LEAD.—TABLE 1.

Annual Production.

Calendar Year.	Lbs.	Price per lb.	Value.	Calendar Year.	Lbs.	Price per lb.	Value.
		Cts.	$			Cts.	$
1887.....	204,800	5·400	9,216	1900.....	63,169,821	4·370	2,760,521
1888.....	674,500	4·420	29,812	1901.....	51,900,958	4·334	2,249,387
1889.....	165,100	3·930	6,488	1902.....	22,956,381	4·069	934,095
1890.....	105,000	4·480	4,704	1903.....	18,139,283	4·237	768,562
1891.....	88,665	4·350	3,857	1904.....	37,531,244	4·309	1,617,221
1892.....	808,420	4·090	33,064	1905.....	56,864,915	4·707	2,676,632
1893.....	2,135,023	3·730	79,636	1906.....	54,608,217	5·657	3,089,187
1894.....	5,703,222	3·290	187,636	1907.....	47,738,703	5 325	2,542,086
1895.....	16,461,794	3·230	531,716	1908.....	43,195,733	4·200	1,814,221
1896.....	24,199,977	2·980	721,159	1909.....	45,857,424	*3·690	1,692,139
1897.....	39,018,219	3·580	1,396,853	1910.....	32,987,508	3·687	1,216,249
1898.....	31,915,319	3·780	1,206,399	1911.....	23,784,969	†3·480	827,717
1899.....	21,862,436	4·470	977,250	1912.....	35,763,476	†4 467	1,597,554

* In 1909 and 1910, average prices at Toronto as quoted by *Hardware and Metal*; in previous years average prices at New York, as quoted by *Engineering and Mining Journal*.
† Average price at Montreal. Quotations furnished by Messrs. Thos. Robertson & Co., Montreal, Que.

Previous to 1904 lead ores mined in Canada were either exported as ore or smelted in Canadian furnaces and exported in the form of base bullion to be refined abroad. A lead refinery employing the Betts Electrolytic Process is

in operation at Trail, B.C., in connexion with the smelter there, and has witnessed frequent enlargements until it is now treating the base bullion produced from all the lead ores smelted at the Trail smelter.

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

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

Year.	Refined lead produced.	Year.	Refined lead produced.
1904	7,519,440	1909	41,883,614
1905	15,804,509	1910	32,987,508
1906	20,471,314	1911	23,784,969
1907	26,607,461	1912	35,715,268
1908	36,549,274		

The North American Smelting Company has erected a plant at Kingston, Ontario. This was operated during the latter part of 1912, treating ores from the United States and British Columbia.

Some British Columbian ores were also treated at the Tacoma Smelting Works, Tacoma, Washington, U.S.A.

The price of lead in London averages ½ to 2 cents per pound lower than in New York.

The average price for soft lead in 1912 on the London market was £17 15s. 11d. per long ton (equivalent to 3·921 cents per pound), as compared with £13 19s. 3d. (2·992 cents per pound) in 1911, and £12 19s. (2·775 cents per pound) in 1910.

The price of lead on the Canadian market at Montreal is intermediate between the New York and London values. Montreal is the main Canadian market. The Toronto price in winter is about the same as that at Montreal, but the latter falls, during the period of summer freight rates, about 10 cents per 100 pounds below the former. The average price of lead in Montreal in 1912 was 4·467 cents per pound, against 3·921 in London, and 4·471 cents in New York.

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

Price of Pig Lead at Montreal.*

Month.	1908.	1909.	1910.	1911.	1912.
January	3·67	3·35	3·48	3·31	3·93
February	3·60	3·38	3·40	3·32	3·97
March	3·54	3·42	3·34	3·34	4·03
April	3·44	3·35	3·21	3·26	4·10
May	3·21	3·26	3·13	3·20	4·08
June	3·11	3·23	3·15	3·27	4·34
July	3·17	3·12	3·13	3·33	4·57
August	3·31	3·08	3·11	3·45	4·84
September	3·24	3·14	3·11	3·63	5·47
October	3·29	3·26	3·23	3·77	5·07
November	3·42	3·28	3·31	3·93	4·53
December	3·37	3·34	3·35	3·95	4·55
Average	3·364	3·268	3·246	3·480	4·467

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

The average prices of lead in New York, as quoted by the *Engineering and Mining Journal*, are shown in the following table:—

Monthly Average Prices of Lead in New York, in Cents per Pound.

Month.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January	4·000	4·075	4·347	4·552	5·600	6·000	3·691	4·175	4·700	4·483	4·435
February	4·075	4·075	4·375	4·450	5·464	6·000	3·725	4·018	4·613	4·440	4·026
March	4·075	4·442	4·475	4·470	5·350	6·000	3·838	3·936	4·459	4·394	4·073
April	4·075	4·567	4·475	4·500	5·404	6·000	3·993	4·168	4·376	4·412	4·200
May	4·075	4·325	4·423	4·500	5·685	6·000	4·253	4·287	4·315	4·373	4·194
June	4·075	4·210	4·196	4·500	5·750	5·760	4·466	4·350	4·343	4·435	4·392
July	4·075	4·075	4·192	4·524	5·750	5·288	4·447	4·321	4·404	4·499	4·720
August	4·075	4·075	4·111	4·665	5·750	5·250	4·580	4·363	4·400	4·500	4·569
September	4·075	4·243	4·200	4·850	5·750	4·813	4·515	4·342	4·400	4·485	5·048
October	4·075	4·375	4·200	4·850	5·750	4·750	4·351	4·341	4·400	4·265	5·071
November	4·075	4·218	4·200	5·200	5·750	4·376	4·330	4·370	4·442	4·298	4·615
December	4·075	4·162	4·600	5·422	5·900	3·658	4·213	4·560	4·500	4·450	4·303
Average	4·069	4·237	4·309	4·707	5·657	5·325	4·200	4·273	4·446	4·420	4·471

The average monthly prices of soft lead in London, England, as published by Julius Matton, of London, and 'Metallgesellschaft,' of Frankfort-on-the-Main, were, from 1902 to 1912, as follows:—

Average Monthly Prices of Lead in London, £ per Long Ton.

Month.	1903.			1904.			1905.			1906.			1907.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	11	6	1	11	11	2	12	17	6	16	17	6	19	16	
February	11	14	2	11	11	10	12	9	3	16	0	4	19	11	8
March	13	4	6	12	..	9	12	5	11	15	17	9	19	14	6
April	12	8	1	12	5	1	12	13	2	15	16	6	19	16	7
May	11	16	..	11	15	11	12	15	3	16	13	6	19	17	74
June	11	8	9	11	10	5	13	..	..	16	15	6	20	6	..
July	11	7	8	11	13	4	13	12	2	16	11	7	20	8	2
August	11	2	11	11	14	9	13	19	2	17	1	3	19		3
September	11	3	4	11	15	9	13	19	..	18	4	4	19	17	6
October	11	2	2	12	3	9	14	13	7	19	7	9	18	13	..
November	11	2	2	12	17	10	15	6	9	19	5	6	17	4	11
December	11	3	7	12	15	6	17	1	..	19	12	6	14	9	4
Yearly average	11	11	7	11	19	8	13	14	5	17	7	..	19	1	10

Month.	1908.			1909.			1910.			1911.			1912.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	14	10	6	13	3	6	13	3	11	13	..	8	15	11	3
February	14	5	6	13	5	5	13	7	3	13	1	11	15	13	9
March	14	1	4	13	8	8½	13	2	9	13	2	11	15	19	8
April	13	13	10	13	7	..	12	13	9	12	18	5	16	6	6
May	13	2	7	13	5	3	12	11	8	12	19	2	16	10	2
June	12	15	7	13	2	4	12	13	9	13	5	5	17	11	8
July	12	19	6	12	13	3	12	11	8	13	10	11	18	8	9
August	13	9	10½	12	10	6	12	10	10	14	1	4	19	5	8
September	13	3	6	12	15	3	12	12	6	14	15	1	21	9	0
October	13	7	3	13	4	4	13	2	..	15	6	1	20	8	0
November	13	12	2	13	1	4½	13	4	6	15	15	5	18	4	7
December	13	3	6	13	2	11½	13	3	9	15	13	4	18	1	6
Yearly average	13	10	5	13	1	8	12	19	..	13	19	3	17	15	11

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

The Act of 1903 provided that payment of bounty should cease on June 30, 1908, and as only a portion of the funds provided had been used, a new Act was passed in the latter year providing for further bounty payments at the rate of 75 cents per hundred pounds, or approximately £3 10s. per ton of 2,240

pounds, subject to the restriction that when the price of lead in London exceeds £14 10s. the bounty shall be reduced by such excess.

The Act of 1908 expired in 1913, and a new Act was passed extending the bounty for a further period of five years, with the same provisions. The text of this Act follows:—

3-4 GEORGE V, CHAPTER 29.

An Act Respecting the Payment of Bounties on Lead Contained in Lead-bearing Ores Mined in Canada.

[*Assented to June 6, 1913.*]

Whereas, under the provisions of chapter 31 of the statutes of 1903 and of chapter 43 of the statutes of 1908, as amended by chapter 37 of the statutes of 1910, the amount of bounty payable on lead contained in lead-bearing ores mined in Canada was not to exceed two million four hundred and fifty thousand dollars; and whereas the time within which the said amount is payable for the purpose aforesaid expires, under the provisions of the said chapter 43, on the thirtieth day of June, nineteen hundred and thirteen, and there will then remain unexpended of the said sum approximately six hundred thousand dollars: Therefore His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. This Act may be cited as *The Lead Bounties Act, 1913.*

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

2. The total amount of bounty payable under the provisions of chapter 31 of the statutes of 1903, chapter 43 of the statutes of 1908 (as amended by chapter 37 of the statutes of 1910), and of this Act, shall not exceed two million four hundred and fifty thousand dollars.

3. Payment of the said bounty may be made from time to time to the extent of sixty per cent upon smelter returns showing that the ore has been delivered for smelting at a smelter in Canada. The remaining forty per cent may be paid at the close of the fiscal year, upon evidence that all such ore has been smelted in Canada.

2. If at the close of any year it appears that during the year the quantity of lead produced on which the bounty is authorized, exceeds sixteen thousand six hundred and sixty-seven tons of two thousand pounds, the rate of bounty shall be reduced to such sum as will bring the payments for the year within the limit mentioned in section 2 of this Act.

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

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

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

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

The regulations under which the Act is administered are as follows:—

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

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

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

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

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

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

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

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

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

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

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

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

Statement of Bounties Paid on Lead during the Fiscal Years 1899 to 1913.

Year ending.	Bounty paid.	Year ending.	Bounty paid.
	$		$
June 30, 1899	76,665	March 31, 1907 (9 mos.)	1,995
" 30, 1900	43,335	" 31, 1908	51,001
" 30, 1901	30,000	" 31, 1909	307,433
" 30, 1902		" 31, 1910	340,542
" 30, 1903	4,380	" 31, 1911	248,534
" 30, 1904	195,627	" 31, 1912	179,288
" 30, 1905	330,645	" 31, 1913	68,065
" 30, 1906	90,196		
		Total	1,967,708

Exports and Imports.—According to Trade and Navigation reports, the total quantity of lead contained in ore and concentrates exported during the

calendar year 1912 was 299,240 pounds, valued at $8,193. During 1911 the total export, including also pig lead, was 137,061 pounds, valued at $4,632.

Details of exports 1908 to 1912 are as follows:—

Exports of Lead, 1908 to 1912.

	Lead in ore, concentrates, etc.		Pig lead.	
	Lbs.	Value.	Lbs.	Value.
		$		$
1908.				
To United States	719,086	20,514	168,866	5,329
To other countries	3,792,845	132,880	13,773,797	463,731
Total	4,511,931	153,394	13,942,663	469,060
1909.				
To United States	6,096,852	126,478	280	8
To other countries	129,216	6,100	11,301,680	361,056
Total	6,226,068	132,578	11,301,960	361,064
1910.				
To United States	46,800	1,308	59,605	2,295
To other countries	.....	.....	7,652,648	245,879
Total	46,800	1,308	7,712,253	248,174
1911.				
To United States	65,100	1,826	71,961	2,806
To other countries	.....	.....	.....	.....
Total	65,100	1,826	71,961	2,806
1912.				
To United States	299,240	8,193	.....	.....
To other countries	.....	.....	.....	.....
Total	299,240	8,193	.....	.....

The exports of lead since 1873 are shown in Table 2.

LEAD.—TABLE 2.

Exports of Lead.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		$			$
1873		1,993	1893	.....	3,099
1874		127	1894	5,792,700	144,509
1875		7,510	1895	23,075,892	435,071
1876		66	1896	26,480,320	462,095
1877		720	1897	43,802,697	925,144
1878			1898	37,375,678	885,485
1879		230	1899	15,799,518	466,950
1880			1900	57,642,029	1,917,690
1881			1901	45,590,995	1,804,687
1882		32	1902	17,761,484	457,170
1883		5	1903	18,624,303	426,466
1884		36	1904	25,868,823	559,461
1885			1905	41,657,403	1,046,541
1886			1906	21,436,022	736,007
1887		724	1907	25,591,883	1,029,898
1888		18	1908	18,454,594	622,454
1889		18	1909	17,528,028	493,642
1890			1910	7,759,053	249,482
1891		5,000	1911	137,061	4,632
1892		2,509	1912	299,240	8,193

The principal imports of lead during the calendar years 1910, 1911, and 1912 were as follows:—

	Cal. year 1910.		Cal. year 1911.		Cal. year 1912.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$
Old, scrap, pig, and block	6,030	346,516	9,989	495,923	14,089	940,583
Bars and sheets	885	45,674	1,542	55,458	961	93,702
Pipe	202	15,365	256	19,426	344	32,423
Shot and bullets	3	311	4	1,053	239	23,163
Manufactures of lead	.....	107,698	.....	108,012	.....	144,571
Tea lead	1,186	117,399	1,344	134,160	1,606	167,716
Litharge	777	56,049	899	65,743	1,296	113,941
Total	9,083	689,002	14,034	879,775	18,535	1,516,099
Metallic lead contained in imported lead pigments	1,461	.....	1,597	169,501	2,345	290,122
	10,544	.....	15,631	1,049,276	20,880	1,806,221

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

LEAD.—TABLE 3.

Imports of Lead.

Fiscal Year.	Old, scrap, and pig.		Average price.	Bars, blocks, sheets.		Average price.	Total.	
	Cwt.	Value.		Cwt.	Value.		Cwt.	Value.
		$	$		$	$		$
1880.	.....	.....	.....	.....	.....	.....	30,298	124,117
1881.	16,236	56,919	3 51	18,222	70,744	3 88	34,458	127,663
1882.	36,655	120,870	3 30	10,540	35,728	3 39	47,195	156,598
1883.	48 630	148,759	3 06	8,591	28,785	3 35	57,371	177,544
1884.	39,409	103,413	2 62	9,704	28,458	2 93	49,113	131,871
1885.	36,106	87,038	2 41	9,362	24,396	2 61	45,468	111,434
1886	39,945	110,947	2 78	9,793	28,948	2 96	49,738	139,895
1887.	61,160	173,477	2 84	14,153	41,746	2 95	75,313	215,223
1888.	68,678	196,845	2 87	14,957	45,900	3 06	83,635	242,745
1889	74,223	213,132	2 87	14.173	43,482	3 07	88,396	256,614
1890.	101,197	283,096	2 80	19,083	59,484	3 12	120,280	342,580
1891.	86,382	243,033	2 81	15,646	48,220	3 08	102,028	291,253
1892.	97,375	254,384	2 61	11,299	32,368	2 86	108,674	286,752
1893.	94,485	215,521	2 28	12,403	32,286	2 60	106,888	247,807
1894.	70,223	149,440	2 13	8,486	20,451	2 41	78,709	169,891
1895.	67,261	139,290	2 07	6,739	16,315	2 42	74,000	155,605
1896.	72,433	173,162	2 39	8,575	23,169	2 70	81,008	196,331
1897.	65,279	158,381	2 43	10,516	29,175	2 77	75,795	187,556
	Old, scrap, pig, and block.*			Bars and sheets †			Total.	
1898.	88,420	260,779	2 95	22,214	39,041	1 76	110,634	299,820
1899.	114,659	283,432	2 47	44,796	39,833	89	159,455	323,265
1900.	62,361	207,819	3 33	15,493	53,506	3 45	77,854	251,325
1901.	(a) 85,321	97,011	1 14	16,295	78,316	4 81	101,616	175,327
1902.	(a)122,279	104,672	86	13,596	49,261	2 65	140,875	153,933
1903.	(a) 98,530	67,821	69	11,535	35,398	3 07	110,065	103,219
1904.	(a) 94,602	121,165	1 28	14,102	39,644	2 81	108,704	160,809
1905.	(a) 57,074	133,775	2 34	17,792	51,972	2 92	74,866	185,747
1906.	82,729	271,105	3 28	16,106	57,185	3 55	98,835	328,290
1907.	79,575	277,470	3 49	13,710	56,630	4 13	93,285	334,100
1908	63,921	284,604	4 45	17,253	75,186	4 36	81,174	359.790
1909	50,110	151,173	3 02	13,754	46,093	3 35	63,864	197,266
1910	113,249	191,971	1 70	11,446	37,004	3 23	124,695	228,975
1911.	116,655	334,159	2 86	15,587	55,312	3 55	132,242	389,471
1912.	241,030	602,990	2 50	29,901	52,886	1 77	270,931	655,876

* Duty 15 per cent.
† Duty 25 per cent.
(a)Includes Canadian lead ore sent to the United States for refining, imported at price of refining only.

LEAD.—TABLE 4.

Imports of Lead Manufactures.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
1880	$ 15,400	1891	$ 23,898	1902	$ 120,020
1881	22,629	1892	22,636	1903	134,151
1882	17,282	1893	33,783	1904	129,093
1883	25,556	1894	29,361	1905	147,177
1884	31,361	1895	38,015	1906	163,793
1885	36,340	1896	50,722	1907	162,425
1886	33,078	1897	60,735	1908	243,926
1887	19,140	1898	63,179	1909	213,167
1888	18,816	1899	91,497	1910	234,930
1889	16,315	1900	104,736	1911	235,248
1890	25,600	1901	107,260	1912	272,625

LEAD.—TABLE 5.

Imports of Litharge.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880	3,041	$ 14,334	1891	7,979	$ 27,613	1902	13,002	$ 47,021
1881	6,126	22,129	1892	10,384	34,343	1903	13,921	47,761
1882	4,900	16,651	1893	7,685	24,401	1904	9,894	32,633
1883	1,532	6,173	1894	38,547	28,685	1905	17,865	57,736
1884	5,235	18,132	1895	11,955	32,953	1906	10,165	39,836
1885	4,990	16,156	1896	10,710	32,817	1907	11,311	49,183
1886	4,928	16,003	1897	12,028	34,538	1908	19,052	90,785
1887	6,397	21,865	1898	10,446	32,904	1909	12,117	43,597
1888	7,010	23,808	1899	9,530	32,518	1910	18,101	62,174
1889	8,089	31,082	1900	9,139	29,176	1911	16,543	59,987
1890	9,463	31,401	1901	11,132	51,944	1912	16,419	59,908

The imports of white and red lead and orange mineral in 1912 amounted to 5,753,854 pounds, valued at $290,122. In 1903 the imports were 19,208,786 pounds, the falling off being due to the establishment of corroding works in Canada.

Detailed statistics of imports of lead pigments during the calendar years 1910, 1911, and 1912 are as follows, the statistics of imports since 1885 being shown in Table 6:—

Imports of White and Red Lead in 1910, 1911, and 1912.

	Calendar Year 1910.		Calendar Year 1911.		Calendar Year 1912.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
		$		$		$
Lead, white, dry	2,076,629	75,463	1,467,193	58,335	2,499,725	138,627
Lead, white, ground in oil	811,510	37,475	1,033,732	46,986	714,362	37,916
Lead, red, dry and orange mineral	881,788	31,803	1,571,508	64,180	2,539,767	113,579
	3,769,927	144,741	4,072,433	169,501	5,753,854	290,122

LEAD.—TABLE 6.

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

Fiscal Year.	Lbs.	Value.	Average price.	Fiscal Year.	Lbs.	Value.	Average price.
		$	$ cts.			$	$ cts.
1885	5,540,753	198,913	3 69	1899	14,507,945	514,842	3 55
1886	6,703,077	213,258	3 18	1900	14,679,920	634,492	4 32
1887	6,998,820	233,725	3 34	1901	10,241,601	461,368	4 50
1888	6,361,334	216,654	3 41	1902	15,584,164	603,582	3 87
1889	7,066,465	267,236	3 78	1903	19,208,786	758,371	3 95
1890	10,359,672	381,959	3 52	1904	16,925,585	662,098	3 91
1891	8,560,615	337,407	3 94	1905	17,376,588	638,381	3 67
1892	10,288,760	351,686	3 42	1906	10,412,891	417,444	4 01
1893	10,365,183	364,680	3 36	1907	5,956,626	290,629	4 88
1894	10,958,170	353,053	3 22	1908	7,830,860	420,537	5 37
1895	8,780,052	282,353	3 22	1909	4,687,416	195,258	4 17
1896	11,711,496	367,569	3 14	1910	3,585,921	141,114	3 94
1897	10,310,463	347,539	3 37	1911	3,967,091	161,897	4 08
1898	12,682,808	448,659	3 54	1912	3,810,971	158.860	4 17

The production of lead as already shown was, in 1912, 17,882 tons, while the exports of lead were 149 tons, leaving 17,733 tons as the consumption of Canadian lead.

The imports of lead during the calendar year 1912 are shown to have been 20,880 tons, not including certain manufactures of lead, valued at $144,571, so that the total consumption of lead in 1912 probably exceeded 39,000 tons.

Nova Scotia.

There was no production from this Province during the year. There was, however, a certain amount of prospecting and development work done near Musquodoboit and East Bay.

Quebec.

No production is reported. Development work was done at several points, including Calumet island, and also in Portneuf county.

Ontario.

A small shipment was made during the year, but details are not available.

At Kingston two smelters have been erected by the Buffalo and Ontario Smelting and Refining Co., and by the North American Smelting Co. The former propose to treat ores from the Cobalt district mainly, while the latter were operating during the latter portion of the year on lead ores from British Columbia and from the United States.

British Columbia.

As already stated, almost all the production of 1912 was from British Columbia, and there was a decided increase, as is shown in Table 7 following.

The record given in this table for the years 1909 to 1912, inclusive, represents the recovery of lead at smelter or refinery as distinguished from the figures given for the same years in Table 8, which indicate the quantities of lead in ore sent to the smelters.

LEAD.—TABLE 7.

British Columbia:—Production.

Calendar Year.	Lbs.	Value.	Price per pound.	Calendar Year.	Lbs.	Value.	Price per pound.
		$	Cts.			$	Cts.
1887	204,800	9,216	4·40	1900	63,158,621	2,760,031	4·370
1888	674,500	29,813	4·42	1901	51,582,906	2,235,603	4·334
1889	165,100	6,488	3·93	1902	22,536,381	917,005	4·069
1890	Nil.			1903	18,089,283	766,443	4·237
1891	Nil.			1904	36,646,244	1,579,086	4·309
1892	808,420	33,064	4·09	1905	56,580,703	2,663,254	4·707
1893	2,131,092	79,490	3·73	1906	52,408,217	2,964,733	5·657
1894	5,703,222	187,636	3·29	1907	47,738,703	2,542,086	5·325
1895	16,461,794	531,716	3·23	1908	43,195,733	1,814,221	4·200
1896	24,199,977	721,159	2·98	1909	45,857,424	1,692,139	*3·690
1897	38,841,135	1,390,513	3·58	1910	32,987,508	1,216,249	3·687
1898	31,693,559	1,198,017	3·78	1911	23,784,969	827,717	†3·480
1899	21,862,436	977,250	4·470	1912	35,763,476	1,597,554	†4·467

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

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

LEAD.—TABLE 8.

British Columbia:—Production by Districts.*

—	1906.	1907.	1908.	1909.	1910.	1911.	1912.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Cassiar.	....	....	.....	.....	1,695	238,578	41,512
East Kootenay—							
Fort Steele..	44,487,481	37,526,194	30,204,788	27,004,528	23,874,562	17,158,069	18,238,238
Other districts.	167,691	73,842	358,270	18,724	66,010	.. ..	2,249,237
West Kootenay—							
Ainsworth	3,173,353	3,654,775	4,790,216	10,293,343	2,553,353	289,009	4,863,894
Nelson	1,034,553	1,582,113	345,424	1,097,069	1,245,844	1,928,836	2,293,000
Slocan.	2,975,674	4,305,826	6,572,268	4,976,199	6,406,358	6,705,571	16,944,811
Other districts.	469,000	570,534	903,552	979,916	470,241	522,615	240,762
Yale.	100,465	25,419	21,215	21,567	35,584	29,719	....
	52,408,217	47,738,703	43,195,733	44,396,346	34,658,746	26,872,397	44,871,454

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

The increased output of this Province, in 1912, is due to the greater activity apparent in almost all the lead mining camps. In the West Kootenay division, the Slocan, and Ainsworth districts were heavier shippers than usual. Nelson contributed to the total, while, as usual, the East Kootenay properties produced a large tonnage.

The return of the Blue Bell, in Ainsworth district, added another heavy shipper to the list.

Interest now centres round the silver-lead properties of Hazelton, in the Omineca. Though expected to ship in 1912, they were unable to do so until transportation arrangements were completed. The first shipments were made in January, 1913, and it is hoped are but the forerunners of a steady and increasing production.

NICKEL.

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

These nickel-copper ore deposits have been the subject of special reports by the Mines Branch and Geological Survey, Ottawa, and by the Ontario Bureau of Mines at Toronto.[1] To these reports reference may be made for comprehensive descriptions of the geology of the district.

During 1912, shipments of nickel-copper ore were also made from the Alexo mine, near Kilburn, on the Porcupine branch of the Timiskaming and Northern Ontario railway, to the Mond Nickel Company, at Victoria Mines.

The production of ore and its reduction to a Bessemer matte was carried on during 1912 to a greater extent than in any previous year. There were mined during the year, 737,726 tons of ore, much of which is subjected to open air heap roasting before being smelted. There were smelted 725,065 tons, from which were produced 41,925 tons of Bessemer matte, carrying approximately 22,421 tons of nickel and 11,116 tons of copper. The net value of the matte was returned as $6,303,102. The matte, which is shipped to the United States and Great Britain for refining, carries about 80 per cent of the combined metals, having averaged for the past year 53·5 per cent of nickel and 26·3 per cent in copper.

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

Compared with 1911 there was an increase in matte production, in 1912, of 9,318 tons, or 28·6 per cent, and the increase in total nickel content of matte was 5,372 tons, or 31·5 per cent. The total copper content of the matte was 11,116 tons, an increase of 2,150 tons, or 22·3 per cent.

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[1] Report on Nickel and Copper Deposits of Sudbury, Ont., by A. E. Barlow, Geological Survey, Canada. No. 873, 1901.
The Sudbury Nickel Region, by A. P. Coleman, Ph.D., Bureau of Mines, Vol. XIV, Part III, 1904.
The Nickel Industry, with special reference to the Sudbury Region, Ont. Report by A. P. Coleman, Ph.D., Mines Branch, Ottawa, No. 170, 1913.

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

	1909. Tons of 2,000 lbs.	1910. Tons of 2,000 lbs.	1911. Tons of 2,000 lbs.	1912. Tons of 2,000 lbs.
Ore mined	451,892	652,392	612,511	737,726
Ore smelted	462,336	628,947	610,834	725,065
Bessemer matte produced	25,845	35,033	32,607	41,925
Copper content of matte	7,873	9,630	8,966	11,116
Nickel " "	13,141	18,636	17,049	22,421
Spot value of matte	$3,913,017	$5,380,064	$4,945,592	$6,303,102
Wages paid mines and smelters	1,234,904	1,698,152	1,830,526	2,626,609
Men employed	1,573	1,882	1,885	3,110

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

	1908. Lbs.	1909. Lbs.	1910. Lbs.	1911. Lbs.	1912. Lbs.
To Great Britain	2,554,486	3,843,763	5,335,331	5,023,393	5,072,867
To United States	16,865,407	21,772,635	30,679,451	27,596,578	39,148,993
	19,419,893	25,616,398	36,014,782	32,619,971	44,221,860

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

During 1912 there were shipped from the cobalt-silver smelting works of Ontario, 349,054 pounds of cobalt oxide and nickel oxide, and 1,285,280 pounds of mixed cobalt and nickel oxides and cobalt material, having a total value of $320,244.

Bounty on Refined Nickel and Nickel Oxides.—Under the terms of 'The Metal Refining Act, 1907,' of the Province of Ontario (7 Edward VII, Chapter XIV), a bounty is authorized to be paid on nickel, cobalt, copper, and arsenic under certain conditions and restrictions during a period of five years following the passing of the Act (April, 1907). In March, 1912, the Act was amended to cover a further period of five years.

The sections affecting nickel ore are as follows:—

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

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

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

The full text of the Act will be found in the chapter on 'Cobalt.'

The price of refined nickel in New York during 1912 was quoted at from 40 to 45 cents per pound. Quotations being: large lots, contract basis, 40 to 45 cents a pound; retail spot, from 50 cents for 500 pound lots up to 55 cents for 200 pound lots. Price of electrolytic, 5 cents higher.

During 1911 the price of refined nickel was quoted in New York at from 40 to 45 cents per pound, according to size and terms of order.

Monel metal is finding an extended use in commerce; as this is put on the market at a price much lower than the final value of the metal content, an allowance has been made by adopting a lower price per pound for the nickel production than market quotations.

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

Statistics of the quantities of ore mined and smelted, matte produced, etc., will be found in the chapter on 'Smelter Production.'

NICKEL.—TABLE 1.

Annual Production.

Calendar Year.	Pounds of nickel in matte shipped.	Average price per lb.	Value.	Calendar Year.	Pounds of nickel in matte shipped.	Average price per lb.	Value.
		Cts.	$			Cts.	$
1889.....	*330,477	60	198,286	1901.....	9,189,047	50	4,594,523
1890.....	1,435,742	65	933,232	1902.....	10,693,410	47	5,025,903
1891.....	4,035,347	60	2,421,208	1903.....	12,505,510	40	5,002,204
1892.....	2,413,717	58	1,399,956	1904.....	10,547,883	40	4,219,153
1893.....	3,982,982	52	2,071,151	1905.....	18,876,315	40	7,550,526
1894.....	4,907,430	38½	1,870,958	1906.....	21,490,955	42	8,948,834
1895.....	3,883,525	35	1,360,984	1907.....	21,189,793	45	9,535,407
1896.....	3,397,113	35	1,188,990	1908.....	19,143,111	43	8,231,538
1897.....	3,997,647	35	1,399,176	1909.....	26,282,991	36	9,461,877
1898.....	5,517,690	33	1,820,838	1910.....	37,271,033	30	11,181,310
1899.....	5,744,000	36	2,067,840	1911.....	34,098,744	30	10,229,623
1900.....	7,080,227	47	3,327,707	1912.....	44,841,542	30	13,452,463

* Calculated from shipments made by rail.

The companies engaged in mining and smelting nickel ores are: The Canadian Copper Company (the International Nickel Company, Copper Cliff, Ont., and New York); the Mond Nickel Company, Coniston, Ont., and London, England. The latter Company has erected a new smelter at Coniston, Ontario, to replace that at Victoria Mines. A new company is entering this field: the Dominion Nickel-Copper Company. A number of mining properties have been secured, as well as a smelter site near Massey, Ontario.

The Alexo mine on the Porcupine branch of the Timiskaming and Northern Ontario railway, produced during the year, shipping nickel-copper ore to the Mond smelter at Victoria Mines.

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

Year.	Ore and concentrates shipped.	Nickel content (estimated.)
	Tons.	Tons.
1904	158	14
1905	2,144	75
1906	5,335	160
1907	14,788	370
1908	25,624	612
1909	30,677	766
1910	34,282	604
1911	26,653	392
1912	21,933	429

A large portion of these ores, particularly the high grade, is now being reduced at Thorold, Deloro, and Orillia, and shipments were made to three new smelters at Kingston, North Bay, and Welland.

At some of these plants, in addition to silver bullion and white arsenic, there is a recovery of nickel oxide and cobalt oxide.

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

NICKEL.—TABLE 2.

Exports of Nickel Contained in Ore, Matte, or Other Product.

Calendar Year.	Value.	Calendar Year.	Lbs.	Value.	Average price.
	$			$	Cts.
1890	89,568	1903	12,699,227	1,116,099	8·78
1891	667,280	1904	11,233,869	1,091,349	9·71
1892	293,149	1905	17,318,059	1,569,693	9·06
1893	629,692	1906	20,653,845	2,042,965	9·89
1894	559,356	1907	19,376,335	2,280,374	11·76
1895	521,783	1908	19,419,893	1,866,624	9·61
1896	658,213	1909	25,616,398	2,676,483	10·45
1897	723,130	1910	36,014,782	4,030,040	11·19
1898	1,019,363	1911	32,619,971	3,676,396	11·27
1899	939,915	1912	44,221,860	4,661,758	10·54
1900	1,031,080				
1901	751,080				
1902	1,007,211				

NICKEL.—TABLE 3.

Imports of Nickel and Nickel Anodes.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1890	3,154	1898	5,882	1906	15,976
1891	3,889	1899	9,449	1907	19,511
1892	3,208	1900	6,988	1908	36,870
1893	2,905	1901	12,029	1909	14,930
1894	3,528	1902	15,448	1910	23,266
1895	4,267	1903	26,177	1911	22,693
1896	4,787	1904	14,682	1912	34,121
1897	4,737	1905	19,076		

During the calendar year 1912 there was an import of 'nickel, nickel-silver, and German-silver in ingots or blocks' to the extent of 48,245 pounds, valued at $17,957, and 'nickel in bars and rods,' 619,523 pounds, valued at $154,387.

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

Exports of Nickel Ore from New Caledonia.[1]

Year.	Metric tons.	Year.	Metric tons.	Year.	Metric tons.
1898	53,200	1903	77,360	1908	108,000
1899	103,908	1904	98,655	1909	86,000
1900	100,319	1905	125,289	1910	99,000
1901	133,814	1906	118,890	1911	[2]142,000
1902	129,653	1907	120,105	1912	72,315

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

The nickel ore of New Caledonia carries about 6½ per cent of nickel. Practically all the above ore is smelted in France, Germany, and England.

The 'Statistique de l'Industrie Minérale en France et en Algérie 1911' states: 'The production of nickel from New Caledonia ores took place at two plants situated, respectively, at Havre and Dieppe. The output of this metal was, in 1911, 1880 metric tons, a decrease from 2,000 tons in 1910. Its value was, as formerly, 3,500 francs per ton.

'New Caledonia.—The production of nickel ore in 1911 was 142,000 metric tons, against 99,000 tons in 1910. The exports are made up as follows: 120,000 tons of ore, valued at 3,600,000 francs, or 30 francs per ton, and 2,950 tons of matte, valued at 2,137,600 francs, or 724 francs per ton.'

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

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

Producing country.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
United States of North America and Canada	6,000	4,500	6,500	6,500	7,000	9,000	10,000	12,000	15,000
England	2,200	3,100	3,200	3,200	3,000	3,200	3,500	4,500	5,200
Germany [1]	2,000	2,700	2,800	2,600	3,000	3,500	4,500	5,000	5,000
France	1,800	2,200	1,800	1,800	1,400	1,200	1,500	2,000	2,100
Other countries					200	400	600	1,000	1,200
Total production [2]	12,000	12,500	14,300	14,100	14,600	17,300	20,100	24,500	28,500

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

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

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

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

Year.	Prices in marks per kilo.	Cents per lb.	Year.	Prices in marks per kilo.	Cents per lb.
1889	4·50	48·6	1901	3·00	32·4
1890	4·50	48·6	1902	3·20	34·6
1891	4·50	48·6	1903	3·30	35·6
1892	4·50	48·6	1904	3·30	35·6
1893	3·80	41·0	1905	3·30	35·6
1894	3·60	38·9	1906	3 80	41·0
1895	2·60	28·1	1907	3·50	37·8
1896	2·50	27·0	1908	3·25	35·2
1897	2·50	27·0	1909	3·25	35·2
1898	2·50	27·0	1910	3·25	35·2
1899	2·50	27·0	1911	3·25	35·2
1900	3·00	32·4	1912	3·25	35·2

Mark=23·8 cents. Kilogram=2·20462 lbs.

SILVER.

Silver has, with the rapid development of the Cobalt camp in Ontario, risen in point of total value of output to second place in the list of our mineral products, being exceeded only by coal.

In 1912 the total production of silver, including that produced as bullion and the metal estimated as recovered from ores sent to smelters or otherwise treated, was reported as 31,955,560 fine ounces which, compared with a production of 32,559,044 ounces in 1911, shows a decrease of 1·85 per cent.

The average value of fine silver in 1912 was, however, according to New York quotations, 60·835 cents per ounce, as compared with an average value of 53·304 cents in 1911, an increase of about 14·13 per cent.

The total value of the silver production in 1912 was $19,440,165, an increase of 12·01 per cent over the value, $17,355,272, in 1911.

A comparison of the production of 1911 and 1910 shows a decrease for 1911 of 310,220 ounces, or 0·94 per cent in quantity, and $225,183, or 1·28 per cent in value, the average price having decreased about 0·34 per cent from 1910.

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

SILVER.—TABLE 1.

Annual Production, 1887-1912.

Year.	Ozs.	Value.	Average price per oz.	Year.	Ozs.	Value.	Average price per oz.
		$	Cts.			$	Cts.
1887	355,083	347,271	98·00	1900	4,468,225	2,740,362	61·33
1888	437,232	410,998	94·00	1901	5,539,192	3,265,354	58·95
1889	383,318	358,785	93·60	1902	4,291,317	2,238,351	52·16
1890	400,687	419,118	104·60	1903	3,198,581	1,709,642	53·45
1891	414,523	409,549	98·00	1904	3,577,526	2,047,095	57·22
1892	310,651	272,130	86·00	1905	6,000,023	3,621,133	60·35
1893	.....	330,128	77·00	1906	8,473,379	5,659,455	66·79
1894	847,697	534,049	63·00	1907	12,779,799	8,348,659	65·33
1895	1,578,275	1,030,299	65·28	1908	22,106,233	11,686,239	52·86
1896	3,205,343	2,149,503	67·06	1909	27,529,473	14,178,504	51·50
1897	5,558,456	3,323,395	59·79	1910	32,869,264	17,580,455	53·49
1898	4,452,333	2,593,929	58·26	1911	32,559,044	17,355,272	53·30
1899	3,411,644	2,032,658	59·58	1912	31,995,560	19,440,165	60·83

From 1887 to 1893 the production ranged in value between $300,000 and $400,000, and was derived chiefly from the Provinces of Ontario and Quebec. The next three years saw a rapid increase in the production, due to the development of the silver-lead deposits of British Columbia, and in 1896 a production of over $2,000,000 is recorded. From that year until 1905 the production varied from $2,000,000 to $3,500,000, rising rapidly during the next six years to $17,355,272, in 1911, as a result of the discovery of the rich ores of the Cobalt

district. In 1912 there was again a considerable increase in value, though there was actually a falling off in the number of ounces produced.

Ontario, in 1905, produced 40·9 per cent of the total output of Canada; in 1911, the production was 93·8 per cent—practically all from the Cobalt district.

In 1912, Ontario produced 91·3 per cent, while the contribution of British Columbia rose to 8·3 per cent. Statistics of the annual production in each province are separately shown in Table 2.

SILVER.—TABLE 2.

Production by Provinces, 1887-1912.

Calendar Year.	Ontario.		Quebec.		British Columbia.		Yukon Territory.	
	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.
		$		$		$		$
1887	190,495	186,304	146,898	143,666	17,690	17,301	.....	
1888	208,064	195,580	149,388	140,425	79,780	74,993	.....	
1889	181,609	169,986	148,517	139,012	53,192	49,787	.....	
1890	158,715	166,016	171,545	179,436	70,427	73,666	.....	
1891	225,633	222,926	185,584	185,357	3,306	3,266	.....	
1892	41,581	36,425	191,910	168,113	77,160	67,592	.....	
1893	.....	8,689	.....	126,439	.....	195,000	.....	
1894	.....	.....	101,318	63,830	746,379	470,219	.....	
1895	.....	.....	81,753	53,369	1,496,522	976,930	.....	
1896	.....	.....	70,000	46,942	3,135,343	2,102,561	.....	
1897	5,000	2,990	80,475	48,116	5,472,971	3,272,289	.....	
1898	85,000	49,521	74,932	43,655	4,292,401	2,500,753	.....	
1899	202,000	120,352	40,231	23,970	2,939,413	1,751,302	230,000	137,034
1900	161,650	99,140	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902	145,000	75,632	42,500	22,168	3,917,917	2,043,586	185,900	96,985
1903	17,777	9,562	28,600	15,287	2,996,204	1,601,471	156,000	83,362
1904	206,875	118,376	15,000	8,583	3,222,481	1,843,935	133,170	76,201
1905	2,451,356	1,479,442	19,620	11,841	3,439,417	2,075,757	89,630	54,093
1906	5,401,766	3,607,894	17,686	11,813	2,990,262	1,997,226	63,665	42,522
1907	9,982,363	6,521,178	16,000	10,452	2,745,448	1,793,519	35,988	23,510
1908	19,398,545	10,254,847	13,299	7,030	2,631,389	1,391,058	63,000	33,304
1909	24,822,099	12,784,126	13,233	6,815	2,649,141	1,364,387	45,000	23,176
1910	30,366,366	16,241,755	7,593	4,061	2,407,887	1,287,883	87,418	46,756
1911	30,540,754	16,279,443	18,435	9,827	1,887,147	1,005,924	112,708	60,078
1912	29,214,025	17,772,352	9,465	5,758	2,651,002	1,612,737	81,068	49,318

The average price of fine silver in New York during 1912 varied between a minimum of 54¾ cents per ounce in January, and a maximum of 64⅛ cents in October, the average price for the year being 60·835 cents per ounce.

In London the average price of silver in 1912 was 28·042 pence per standard ounce of a fineness of 0·925. For the year 1911 the average price per fine ounce in New York was 53·304 cents, the highest being 55·7 cents in November, and the lowest 52·1 cents in August of that year.

The average monthly prices of silver in New York from 1908 to 1912, and in London during 1912, are shown in tabulated form following:—

Average Monthly Prices of Silver.

Months.	New York.—Cents per fine ounce.					London.—Pence per Standard ounce (a).
	1908.	1909.	1910.	1911.	1912.	1912.
January	55·678	51·750	52·375	53·795	56·260	25·887
February	56·000	51·472	51·534	52·222	59·043	27·190
March	55·365	50·468	51·454	52·745	58·375	26·875
April	54·505	51·428	53·221	53·325	59·207	27·284
May	52·795	52·305	53·870	53·308	60·880	28·038
June	53·663	52·538	53·462	53·043	61·290	28·215
July	53·115	51·043	54·150	52·630	60·654	27·919
August	51·683	51·125	52·912	52·171	61·606	28·375
September	51·720	51·449	53·295	52·440	63·078	29·088
October	51·431	50·923	55·490	53·340	63·471	29·299
November	49·647	50·703	55·635	55·719	62·792	29·012
December	48·769	52·226	54·428	54·905	63·365	29·320
Average for the year	52·864	51·503	53·486	53·304	60·835	28·042

(a) 925 parts fine.

Important quantities of silver are now being produced in Canada, both as fine metal and as silver bullion, ranging in fineness from 850 to 998·2. Fine silver is produced at Trail, B.C., by the Consolidated Mining and Smelting Company of Canada, Limited, chiefly from the silver-lead ores of that Province, and is shipped to China, the United States, and to the Ottawa mint.

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

Year.	Fine ozs.	Year.	Fine ozs.
1904	551,450	1910	1,798,960
1905	1,088,328	1911	1,325,601
1906	1,263,809	1912	1,896,999
1907	1,631,422		
1908	1,956,039	Total	13,515,611
1909	2,003,003		

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

The Canada Smelting and Refining Co., Orillia, Ont.
Coniagas Reduction Co., Thorold, Ont.
Deloro Mining and Reduction Co., Deloro, Ont.
Buffalo and Ontario Smelting and Refining Co., Kingston, Ont.
Dominion Refineries, North Bay, Ont.
Metals Chemical Co., Welland, Ont.

The Canadian Copper Company, which was treating ores from this district, closed down their plant at the end of 1912.

Silver bullion of a fineness varying from 850 to 998·2 is produced at the works, other products being white arsenic, and, more recently, nickel and cobalt oxides or mixed oxides. The silver bullion, as a rule, finds a market in the United States and in England.

Bullion shipped in 1907 contained 4,449,722 fine ounces of silver; in 1908, 11,168,689 ounces; in 1909, 14,385,985 ounces; in 1910, 17,365,165 ounces; and in 1911, 17,753,167 fine ounces. In 1912 these smelters produced 15,675,218 fine ounces, while United States smelters report a content of 8,463,288 ounces silver in 25,758,282 pounds of ore received.

Quebec.

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

Ontario.

From a production of $118,376, in 1904, the silver output of the Province has grown to a value of $17,772,352, in 1912. Not only does this constitute about 91·3 per cent of the total production of Canada, but it forms about 13 per cent of the production of the world, Canada, as a whole, ranking third among the producers, with a contribution of about 15 per cent.

According to returns received by this Department, there were shipped during 1912, 17,899 tons of ore, and 11,217 tons of concentrates, or a total of 29,116 tons, having a value of $14,855,169, besides silver bullion shipped, carrying 4,778,852 fine ounces of silver.

The silver content of ore shipped was estimated as 15,929,289 ounces, or an average of 890 ounces per ton, and the concentrates shipped as 9,774,697 ounces, or an average of 871 ounces per ton, the total silver content of ore concentrates and bullion shipped from Cobalt district being 30,482,838 ounces. The mine owners receive payment for only 93 to 98 per cent of the silver content, and in estimating and valuing the production a deduction of 5 per cent is made from silver contained in ore and concentrates to cover losses in smelting and refining. On this basis, the silver recovery is estimated at 29,197,639 ounces, and valued at $17,762,384.

No payments for cobalt content were reported, but considerable interest was aroused by the news of payment being made for a small copper content in several shipments.

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

Silver Ore and Bullion Shipments from Cobalt Mines, 1904-1912.

Year.	Shipments.		Silver content.		Silver in ounces, per ton.		Silver bullion shipments. Fine ounces.	Total value of silver.
	Ore. Tons.	Concentrate. Tons.	Ore. Ozs.	Concentrate. Ozs.	Ore.	Concentrate.		
								$
1904	158	.....	206,875	.....	1,309	.....	.....	118,376
1905	2,144	.....	2,451,356	.....	1,143	.....	.....	1,473,192
1906	5,335	.....	5,401,766	.....	1,013	.....	.....	3,607,894
1907	14,644	.....	9,982,363	.....	682	.....	.....	6,521,178
1908	25,682	*	19,398,545	*	755	*	.....	10,254,847
1909	27,835	3,059	22,349,717	3,627,819	803	1,186	143,440	12,784,126
1910	28,684	6,943	23,797,111	7,111,579	830	1,024	1,003,111	16,241,755
1911	15,417	9,329	20,065,621	8,118,231	1,300	870	3,766,022	16,279,443
1912	17,899	11,217	15,929,289	9,774,697	890	871	4,778,852	17,762,384

* Included with ore.

As the camp has developed the average grade of ore shipped has gradually diminished. The introduction of concentration plants in 1908 has tended to keep the ore shipped up to a high standard, but again there is a tendency to convert the ore directly into bullion for shipment, and treat the high grade ore also at the mines.

During 1912 payment was not made for the cobalt nickel or arsenic content of the ore, and in some cases the latter was penalized.

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

Total Production Cobalt Mines, 1904-1912.*

Year.	Ore and concentrate shipped.	Metallic content.			
		Nickel.	Cobalt.	Arsenic.	Silver.
	Tons.	Tons.	Tons.	Tons.	Ozs.
1904	158	14	16	72	206,875
1905	2,144	75	118	549	2,451,356
1906	5,335	160	321	1,140	5,401,766
1907	14,788	370	739	2,958	10,023,311
1908	25,624	612	1,224	3,672	19,437,875
1909	30,677	766	1,533	4,294	25,897,825
1910	34,282	604	1,098	4,897	†30,645,181
1911	26,653	392	852	3,806	†31,507,791
1912	21,933	429	934	4,166	†30,243,859

* As per Ontario Bureau of Mines.
† Bullion shipments from mines included.

About 28 per cent of the ore shipped from Cobalt was treated in metallurgical works in Canada, and white arsenic is being produced therefrom, of which record will be found under 'Smelter Production.'

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

Ore Shipments from the Cobalt District for the Years 1904 to 1912.

Mine.	1904. to 1907.	1908.	1909.	1910.	1911.	1912.	Totals. 1904-1912.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Badger	...	...	...	...	27·10	...	27·10
Bailey	30·00	88·80	36·85	...	20·00	41·57	217·22
Beaver	...	...	51·38	140·06	790·81	402·97	1,385·22
Buffalo	2,435·14	536·90	648·86	1,185·77	1,275·19	1,251·64	7,333·50
Casey-Cobalt	...	10·00	8·50	48·40	277·74	214·34	558·98
Chambers-Ferland	...	223·89	517·88	885·92	622·85	501·29	2,751·83
City of Cobalt	50·61	761·04	566·82	329·40	281·30	230·00	2,219·17
Cobalt Lake	...	225·97	95·47	296·80	2,111·32	1,085·22	3,812·78
Cobalt Townsite	143·22	177·71	27·35	310·99	703·51	1,944·77	3,307·55
Colonial	55·38	...	...	178·60	114·10	86·48	434·56
Coniagas	2,899·99	610·25	806·93	1,261·46	1,813·89	2,119·87	9,512·39
Crown Reserve	...	657·35	3,167·52	2,814·25	977·32	561·65	8,178·09
Drummond	411·48	1,161·38	1,225·47	2,194·41	714·83	458·85	6,166·42
Foster	512·98	191·20	113·90	...	...	...	818·08
Green Meehan	135·42	...	...	...	102·98	...	238·40
†Hargrave	28·45	...	...	343·68	102·44	17·35	491·92
Hudson Bay	149·53	1,094·23	743·64	260·33	898·88	694·55	3,841·16
Imperial Cobalt	14·61	...	...	...	...	...	14·61
Kerr Lake	533·09	660·24	1,173·42	5,088·78	1,292·58	788·10	9,536·18
King Edward (Watts)	50·12	338·19	146·58	134·12	20·00	...	689·01
LaRose	4,337·97	4,843·17	6,757·21	5,131·53	3,581·54	3,511·40	28,162·82
‡Lawson	75·73	...	...	...	...	...	75·73
Lost and Found	...	...	...	...	...	65·20	65·20
McKinley-Darragh	467·69	1,808·39	1,056·49	2,393·39	3,238·64	2,673·40	12,460·27
Nancy Helen	...	201·32	116·32	...	...	...	347·74
Nipissing	...	3,571·96	6,470·52	6,833·81	2,952·20	1,869·27	26,904·12
Nova Scotia	...	237·95	224·79	...	...	...	778·90
North Cobalt	...	...	6·87	...	3·00	...	9·87
O'Brien	...	3,459·51	1,419·11	608·57	628·44	711·43	8,459·17
*Penn Canadian	77·33	187·99	339·01	285·62	22·40	126·35	1,038·70
Peterson Lake Leases							
(Little Nipissing)	...	40·67	39·62	313·76	28·45	...	422·50
(Nova Scotia)	...	...	121·15	...	...	...	121·15
Seneca Superior	...	...	...	...	...	432·97	432·97
Provincial	...	75·84	...	52·05	100·54	22·22	250·65
‡Princess	3·93	...	...	...	...	...	3·93
Red Rock	45·71	...	...	...	...	...	45·71
Right of Way	175·62	750·04	1,608·99	981·41	666·06	243·24	4,425·36
Rochester	...	...	...	28·30	...	...	28·30
Silver Bar	...	0·58	...	...	2·72	...	3·30
Silver Cliff	...	160·44	149·06	156·84	92·30	...	558·64
Silver Leaf	55·36	197·03	...	...	...	...	252·39
Silver Queen	654·14	885·70	316·64	...	...	31·25	1,887·83
Timiskaming	204·32	795·20	852·14	1,119·12	855·60	967·31	4,793·69
Timiskaming-Cobalt	88·45	...	...	...	...	...	88·45
Trethewey	1,271·64	1,408·69	1,134·50	536·64	602·98	579·10	5,533·55
‡University	231·51	...	...	...	...	...	231·51
Victoria	...	0·47	...	...	...	...	0·47
Violet	36·00	...	...	...	...	...	36·00
Waldman	...	...	...	38·81	...	...	38·81
Wyandoh	...	...	...	24·15	...	...	24·15
Total	23,182·42	25,362·10	29,942·99	33,976·97	24,921·71	21,631·79	159,018·05

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

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

*Shipments up to the end of 1911 made by the Cobalt Central Mining Company former owne of the Penn Canadian.

Ore Shipments from Cobalt Silver District, for the Calendar Year 1912.

Mine.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	December.	Totals.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Bailey										21·57		20·00	41·57
Beaver		62·00		63·35	55·55		35·76	63·82	55·12		64·37		402·97
Buffalo	90·20	117·85	132·34	84·84	92·24	123·48	114·53	92·10	124·91	95·09		184·06	1,251·64
Casey Cobalt		24·50				43·85	102·40		43·59				214·34
Chambers-Ferland	32·00	32·00	32·00	33·60	64·00	32·00	31·70	32·00	73·29	65·50		73·20	501·29
City of Cobalt		54·00	25·81	32·70				75·49			42·00		230·00
Cobalt Townsite	96·85	66·02	71·00	178·12	157·62	199·20	144·30	216·65	241·78	285·33	87·65	200·25	1,944·77
Cobalt Lake		37·54	65·72	72·33	31·15	134·85	91·69	121·50	128·74	123·74	151·43	126·53	1,085·22
Coniagas	170·01	124·86	112·15	303·36	172·35	117·54	137·33	207·94	163·95	158·39	215·38	236·61	2,119·87
Colonial	20·00				21·60			21·55				23·33	86·48
Crown Reserve	68·27	21·85	59·17	41·82	38·95	49·03	21·49	47·49	41·02	37·12	19·61	115·83	561·65
Drummond		300·00			18·56	20·74			52·75			66·80	458·85
Hargrave												17·35	17·35
Hudson Bay	62·95	61·58	63·34	62·03	62·75	31·60	96·86	62·80	35·61	30·85	93·26	30·92	694·55
Kerr Lake	30·29	83·00	84·18	85·38	50·77	30·37	60·55	105·78	45·98	90·95	92·00	28·90	788·10
LaRose	217·60	276·46	353·78	255·79	424·03	274·96	152·63	342·37	315·23	251·17	260·62	386·76	3,511·40
Lost and Found*						15·00				17·80		32·40	65·20
McKinley-Darragh	169·28	225·70	295·79	212·41	220·38	202·81	348·78	168·52	151·79	296·77	135·44	245·73	2,673·40
Nipissing	118·11	299·95	103·29	226·39	196·80	227·91	170·76	228·61	179·24		31·52	86·69	1,869·27
O'Brien	61·15	67·85	52·02		63·96	31·25	69·39		107·70	107·32	64·79	86·00	711·43
Penn Canadian†								29·69		31·25	34·46	30·95	126·35
Peterson Lake‡											191·63	241·34	432·97
Provincial		22·22											22·22
Right of Way	38·86	32·59	43·73	38·30			26·55	30·61	32·60				243·24
Silver Queen												31·25	31·25
Timiskaming	41·88	98·86	85·67	65·87	197·64	95·52	61·83	62·85	50·58	96·51	66·12	43·98	967·31
Trethewey	17·62	54·80	48·14	26·50	60·37	77·26		70·35	27·65	66·25	58·00	72·16	579·10
Totals	1,235·07	2,063·63	1,628·13	1,782·79	1,928·72	1,707·37	1,669·55	1,980·12	1,871·48	1,775·61	1,608·28	2,380·94	21,631·79

*December shipments made by the General Mines Ltd., they having acquired this property.
The General Mines Ltd., is operating the Red Rock, Ruby, Cobalt Contact, and the Agaunico (formerly Timiskaming Cobalt).
†Formerly the Cobalt Central.
‡Seneca Superior Lease.

CONCENTRATION.

The reduction of low grade ores at Cobalt plays a more important part each year in the history of the district. Thus the year 1912 reached a new record, the mills having treated a total of 455,516 tons. With the enlargements either planned or already accomplished at the Northern Customs, Beaver, McKinley-Darragh, Cobalt Lake, and Casey mills, 1913 bids fair to show further substantial increases.

During 1912 the Penn-Canadian mill, formerly known as the Cobalt Central, was reopened, and the new mills of the Beaver, Nipissing, and Casey were put into commission.

The high grade mill of the Nipissing operated steadily during the year, and the Buffalo completed a similar mill and started operations towards the end of the year.

Mills and mines.	Tons milled.	Concentrates.			Concentration ratio.
		Jigs.	Tables.	Total.	
Beaver	14,602·0	113·4	129·3	242·7	60·1
Buffalo	51,900·0	.....	.....	1,242·2	42·1
Casey Cobalt	1,585·0	.....	43·2	43·2	36·1
Cobalt Lake	23,410·4	182·2	477·3	659·5	36·1
Colonial	7,692·0	.....	.....	86·0	89·1
Coniagas	52,797·5	253·0	919·0	1,172·0	45·1
Hudson Bay	21,509·0	177·0	453·0	630·0	34·1
King Edward	9,895·5	65·7	200·0	265·7	37·1
City of Cobalt—					
McKinley Darragh	51,897·0	516·9	1,406·4	1,923·3	22·1
Nipissing Reduction—					
Cobalt Lake	1,803·4	62·7	16·8	79·5	23·1
Green Meehan	795·5	7·3	6·9	14·2	56·1
Nipissing	14,251·0	87·0	97·5	184·5	78·1
Silver Queen	219·8	2·8	1·6	4·4	50·1
Northern Customs—					
Drummond	3,427·0	.....	111·1	111·1	31·1
LaRose	33,984·0	.....	1,210·5	1,210·5	28·1
Townsite	27,898·0	.....	1,074·0	1,074·0	26·1
Penn Canadian—					
Penn Canadian	5,400·0	.....	.....	95·3	57·1
Hargraves	546·0	.....	.....	4·2	130·1
Timiskaming	40,056·0	280·7	609·3	890·0	45·1
Trethewey	26,803·9	159·6	435·1	594·7	45·1
Total	390,473·0	.....	.....	10,527·0	37·1

Cyanide mills.	Tons.	Ozs. bullion produced.
Dominion Reduction		
Crown Reserve	15,704·0	346,234
Kerr Lake	5,983·0	130,075
Nipissing	3,447·0	57,875
O'Brien	39,909·5	229,360
	65,043·5	763,544

Total tons milled by water concentrating mills	390,473·0
Total tons milled by cyanide mills	65,043·5
Total tons milled, 1912	455,516·5

Dominion Reduction Mill.

This mill, which was formerly known as the Nova Scotia mill, recommenced operations, and is now working steadily on ores from the Crown Reserve and Kerr Lake. The amalgamating pans formerly used are to be replaced by a tube-mill, the discharge from which will go to agitators for the fine ground concentrate product for separate cyanidation, and no residues will be shipped to the smelter.

Buffalo Mill.

The concentrates from this mill are now treated in the Company's high-grade mill. Besides this, the cyanide plant recovered 100,224 ounces silver from the slimes treated.

O'Brien Mill.

This mill produced and shipped 313 tons of concentrates, which contained 229,271 ounces silver, and also recovered in their cyanide plant 229,360 fine ounces silver, valued at $141,765.

Nipissing Low Grade Mill.

This new mill did not start operations until late in the year, which will explain the small quantity treated. The 116 tons of concentrates made were sent to the high grade mill for treatment, and the amount of silver recovered by cyaniding the remainder was 57,875 ounces, valued at $35,882.

The only mill idle in the camp at the end of the year was the Silver Cliff, and this was reopened early in 1913.

High Grade Mill, Nipissing Mining Company.

Owing to the great complexity of the high-grade silver ores of the Cobalt district, and particularly on account of their high arsenic contents, they have

always been considered undesirable ores by the ordinary custom smelter. A heavy smelting charge was consequently exacted by the smelters for their treatment.

Experiments were carried on by the Nipissing Mining Company for a considerable length of time in an endeavour, if possible, to find some method of treating the ore in the district so that the final product to be shipped out should be refined silver bullion. A simple and effective process was finally worked out by Charles Butters, assisted by G. H. Clevenger. The plant, which was designed and constructed by James Johnston, commenced operations February 1, 1911, and has run successfully ever since.

High Grade Mill, Buffalo Mines, Limited.

During the summer the Buffalo Mines erected a mill for the treatment of their high grade ore and concentrates, and the mill commenced operations at the end of November. The method of treatment adopted is very similar to that already in operation at the Nipissing high grade mill.

By December 31, 1912, this mill had treated 105 tons of concentrates, along with metallics, precipitates, and resmelted bullion, producing 205,302 ounces of fine silver bullion.

Sampling.

The Campbell and Deyell customs sampling works at Cobalt operated continuously during the year. For the twelve months ending September 30, 1912, 5,604 tons of ore, containing 12,655,450 ounces of silver, were sampled in these works. During the same period about 100 tons of gold ore were sampled.

The ore is crushed in a Krupp ball mill, fitted with 8-mesh screens. All metallics coarser than this mesh remain in the mill and are subsequently removed and melted down to bullion. The pulp can then be sampled with a reasonable degree of accuracy. The ground ore is divided into quarters, and each quarter sampled down separately by machines to $\frac{1}{1000}$ of its bulk. These samples are then ground to pass 100-mesh, and divided into the requisite number of packets.

Freight Rates.

Shipments are billed at the highest rates, and charges are collected at destination accordingly. On presentation of paid expense bill, and signed assay certificate from the smelter, showing the value of the ore to be less than the rating of Group D of schedule, charges are adjusted in accordance with the valuation to the above rates. The smelter returns to the mine or owner, before deducting transportation charges, are the values used in determining the freight rates.

Smelting.

The shipments of Cobalt ores during 1912 were mostly treated by the same smelters as received the production of the previous year. In Canada the bulk of the output went to the

(1) Canadian Copper Company, Copper Cliff, Ont.
(2) Canada Smelting and Refining Company, Orillia, Ont.
(3) Coniagas Reduction Company, Thorold, Ont.
(4) Deloro Mining and Reduction Company, Deloro, Ont.

A few consignments were also made to three new plants which commenced operations during the year, viz.,

(5) Buffalo and Ontario Smelting and Refining Company, Kingston, Ont.
(6) Dominion Refineries, North Bay, Ont.
(7) Metals Chemical Company, Welland, Ont.

Of the foreign shipments, all went to the United States with the exception of a few high grade shipments from the Crown Reserve mine to the Government of Saxony. The American smelting companies in this market were the

(8) American Smelting and Refining Company, at their works at Perth Amboy, Omaha, and Denver, and
(9) The Pennsylvania Smelting Company, Carnegie, Pa.,

while occasional consignments were taken by the

(10) Balbach Smelting and Refining Company, Newark, N.J., and the
(11) United States Metals Refining Company, Chrome, N.J.

As most of the Canadian plants produce refined cobalt oxide, the disorganized state of the market for this material has made it impossible at times to profitably dispose of their output, and they, therefore, welcomed a betterment of the market towards the end of the year.

When the smelters started treating Cobalt ores, cobalt oxide was selling at $2.50 per pound, but the consumption was so limited that the production from the Cobalt district soon glutted the market. Now the retail price quoted in New York is about 90 cents per pound, with an import duty of 25 cents per pound. It is selling in England and Europe at from 2s. 3d. to 3 shillings per pound, or about 68 cents, and the price paid to the smelters is necessarily still lower.

The Canadian smelters now supply practically the entire world's market with cobalt oxide of excellent grade, and if new uses are found for cobalt they are ready to increase the output and supply the demand.

The Canadian Copper Company decided to close down its Cobalt plant and received its last shipment of cobalt ore towards the end of October. Since that

time operations have been continued simply as a final clean-up to recover the values tied up in ore on hand, residues, furnace bottoms, etc.

The small smelting plant at North Bay is bidding for ore, rich in cobalt and low in silver.

The smelting schedules were practically unchanged from those in effect in 1911.

The ores shipped to the smelters will average about 1,000 ounces silver per ton, between the limits of 75 ounces and 7,000 ounces. A few exceptional shipments are known to have assayed even above this latter figure, the highest shipment recorded being one of 20 tons from the Crown Reserve mine, which assayed 8,903 ounces silver per ton.

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

Beaver Consolidated Mines, Limited.

Year ending February 28, 1913.

Following is the record of development and stoping for the year: drifting, 3,414·5 feet; cross-cutting, 744·5 feet; sinking, 185·5 feet; raising, 157 feet; total, 4,501·5 feet.

During the year two levels have been added to the property, making ten in all. The main shaft is now down to a depth of 730 feet, but the last station is cut at 700 feet, leaving a 30 ft. sump in preparation for resuming sinking.

Mill.—The concentrating mill which has been in operation for practically a year has given such good results that it was deemed advisable to increase the capacity, and we are now milling close to 100 tons daily, instead of 50. While the mill was constructed more especially to treat the big dump which had accumulated, it might be noted that the underground development has been so productive of milling ore that the dump remains almost intact. Mill report, March 15, 1912, to February 28, 1913: ore milled, 17,842 tons; concentrates produced, 289 tons; silver in concentrates, 278,511·69 ounces. Net profit, exclusive of all milling and marketing costs, $123,655.34. The heads averaged 21·48 ounces and the tails 3·9 ounces, giving an extraction of 81·8 per cent.

The Buffalo Mines, Limited.

Year ending April 30, 1913.

Drifting, total	1,762	feet for the year.
Raising, increase	30	"
Station cutting, total	25	"
Total shaft work to date	1,074	"
Total drifting	11,947	"
Total stoping	1,697,572	cubic feet.

Mill.—The mill treated, during the year, 55,783 tons, averaging 45·83 ounces of silver per ton, or a total of 2,556,403 ounces treated, of which 82·64 per cent was recovered as follows: 39,798 ounces in amalgams; 982,697 ounces in jig concentrates; 1,090,189 ounces in table concentrates; or a total of 2,122,684 ounces recovered by concentration.

The new amalgamation plant and refinery were put in commission the latter part of November, 1912.

Cobalt Lake Mining Company, Limited.

Year ending December 31, 1912.

During the year the concentrator was operated 312 days, and crushed 23,410·4 tons of ore, containing an average silver content of approximately 28 ounces per ton. From this has been produced 664·1 tons of concentrates, containing 541,570·5 ounces of silver. This figure is based on smelter returns except for two cars for which the mine estimate, arrived at by daily sampling, was used. Total cost of mill operation and maintenance for the year is $42,845.46, or $1.83 per ton. This includes cost of assay office.

Mining.—Drifting, 1,319·4 feet; cross-cutting, 1,885·6 feet; raising, 90 feet; winzes, 104 feet; shaft sinking, 68 feet; total for year, 3,467 feet. Total to January 1, 1913, 9,749·18 feet.

The Coniagas Mines, Limited.

Year ending October 31, 1912.

The total silver shipments from this mine during the past year amount to 3,508,377·27 ounces, which was contained in 650 tons of mine ore, and 1,287 tons of concentrates. This ore was mined and concentrated at the mine at a net cost of 8·515 cents per ounce, which is an exceedingly low figure, as it includes head office expenses and royalties, and all expenses exclusive of shipping, smelting, refining, and marketing charges, which amounted to 4·445 cents per ounce of silver. The average price received per ounce of silver was 59·39 cents, as compared with 53·175 cents for the previous year.

The total tonnage of ore milled was 53,627, or an average of 2·86 tons per stamp per 24 hours. There were 803·3 tons high grade concentrates shipped and 484·2 tons of low grade slimes. The heads to the mill average 34·12 ounces per ton.

The sand tailings from the mill average 4·12 ounces per ton, and the slime tailings, 7·29 ounces per ton. They are stacked separately on the Company's property.

Work done during the year:—

Drifting, 2,773 feet; cross-cutting, 1,401 feet; winzes, 112 feet; raises, 298 feet.

Crown Reserve Mining Company, Limited.

Year ending December 31, 1912.

Mine development for year:—

Sinking and raising	432	feet.
Drifting	1,973	"
Cross-cutting	2,184	"
Total	4,589	"
Total to date	16,798	"

Concentration.—During the year the Nova Scotia Mining Company went into liquidation, the plant and equipment being taken over by the Dominion Reduction Company, with which Company the Coniagas Mines, Limited, renewed their contract for the treatment of their milling ore.

The results of concentration for the year are as follows:—

Tons milled	15,704	
Ounces of silver returned	336,233	
Ounces per ton	21·41	
Total cost per ton	$4.39	
Cost per ounce	19·92	cents.

The Hudson Bay Mines, Limited.

Year ending August 31, 1912.

Average assay of shipments:—

High grade ore, 3,431·6 ounces silver per ton.
Concentrates, 855·73 ounces silver per ton.

The total number of ounces of silver produced during the year was 957,055·47, the gross value of which was $561,992.80. The total cost of production was $143,061.90, or 14·948 cents per ounce of silver.

During the year 13,939·2 tons of low grade ore were sent to the concentrator from the mine, and 7,500 tons were taken from the dumps, making a total of 21,439·2 tons of ore run through the crushers, or 21,221·5 tons treated by the stamps. This ore was concentrated to 721·2 tons, carrying approximately 617,155·7 ounces of silver, the ratio of concentration being approximately 30 into 1.

High grade ore to the amount of 99·05 tons was produced by the mine, carrying approximately 339,899·60 ounces of silver.

Development During Year.—Drifting, 1,195·8 lineal feet; cross-cutting, 1,653·9 lineal feet; total, 2,849·7 lineal feet.

Average cost of drifting, 10·04 cents per foot; average cost of cutting, 10·38 cents per foot.

Kerr Lake Mining Company.

Year ending August 31, 1912.

Production of silver by this operating company for the year amounted to 1,855,495 ounces. Of this, 1,741,804 ounces were produced from high grade, and 113,691 ounces from milling ore which was sent to customs mill for treatment.

The average price which the Company received for its silver for the year was 60 cents per ounce. The total cost of production per ounce of silver was 18·3 cents, made up as follows:—

Mining cost	12·1	cents.
Shipment and treatment	5·55	"
Administration and general	0·65	"

This is higher than last year on account of smaller production, and the necessity of obtaining ore from narrow veins.

La Rose Consolidated Mining Company.

Year ending December 31, 1912.

Summary of Results.—The year's work has resulted in a profit of $1,023,142.54, derived from the production of 2,816,597 ounces of silver.

The price received for silver was 61·66 cents per ounce, compared with 53·55 cents per ounce received in 1911. This increase of 8·11 cents per ounce was largely offset by an increase of 6·73 cents per ounce in the cost of production. The latter is due to the fact that more development work was done than ever before, and that while the amount of ore produced was practically the same, the average grade of the high grade ore dropped from 1,731 ounces to 1,307 ounces per ton.

The McKinley-Darragh-Savage Mines of Cobalt, Limited.

Calendar year 1912.

McKinley Mine.—Drifting, 3,085 feet; cross-cutting, 1,819 feet; raising, 332 feet; winzes, 100 feet; total footage, 5,336 feet; stoping, 31,801, broken.

Mill Report.—Total ore treated, 51,897 tons; average tons per day, 161·70; mill heads, 32·73 ounces; mill tails, 4·46 ounces; ounces of silver recovered, 1,489,514.

Savage Mine.—Drifting, 1,621·5 feet; cross-cutting, 1,345·5 feet; raises, 300·5 feet; winzes, 67·5 feet; shafts, 85 feet; total footage, 3,420 feet; stoping, 10,791·5 tons broken.

Sorting mill tons treated, 17,888; average tons treated per day of ten hours, 57·33; cost per ton milled, $0·469; cost per ounce recovered, $0·0133.

Nipissing Mines Company.

Calendar year 1912.

High Grade Mill.—The plant for the treatment of high grade ore ran successfully throughout the year, and treated 1,752 tons of Nipissing ore, averaging 2,212 ounces per ton; and 90 tons of custom ore. Bullion shipped amounted to 4,258,641 ounces.

A sampling plant was added and a blast furnace was installed in the refinery for the reduction of slags, flue dust, and precipitate. A new reverberatory furnace has also been built for the refining of the precipitate from the low grade mill, so that practically the entire silver product of the mine is now shipped as bullion over 997 fine.

Low Grade Mill.—The cyanide plant erected for the treatment of the low grade ores was completed in 1912, and is now in full operation. All the ore so far milled has come from the town side, being transported across the lake and to the top of the picking belt by an aerial tramway.

The first-class ore and the concentrate produced by the picking belt are sent to the high grade mill for treatment. The discard and tailing from the picking plant are transferred to the crushing department of the main mill.

Surface Prospecting.—No trenching was done during 1912; this gave way to surface prospecting by the hydraulic plant installed during the previous season. Pressure is obtained by a turbine pump situated on the shore of Cobalt lake. It throws 4,800 gallons of water per minute under a head of 415 feet at the pump, and is directly connected to a 650 H.P. high-speed motor.

The plant started operations on May 8 and ran without serious interruption until November 29—sixteen hours per day. The operation consists in removing the soil and boulders by a powerful jet of water, thereby plainly exposing the surface of the rock when any veins outcropping can be easily seen.

During the season, 33·2 acres of ground were cleared, the average depth of soil was 4·75 feet, a 3½″ or 4″ nozzle was used, the average pressure being 121 pounds at the nozzle. The area cleared had been trenched in previous years, but a great many additional small veins and stringers were exposed by the hydraulic operation.

British Columbia.

The chief sources of the silver production in this Province are the silver-lead ores of East and West Kootenay, supplemented by the silver contained in the gold-copper-silver ores of Rossland, Boundary, and Coast districts. The production in 1912, based on smelter recoveries, was 2,651,002 ounces, valued at $1,612,737.

The leading silver producers among the silver-lead mines of the Province, in order of importance, are the Standard, Van Roi, Sullivan, Molly Gibson, and Rambler-Cariboo.

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

The past year witnessed an increased production from the Slocan district, chiefly from Sandon and Silverton camps, with Ainsworth coming to the front. The newest promising camp is Hazelton, from which the opening of 1913 witnessed several shipments.

The following table is taken from the annual report of the Minister of Mines for British Columbia, 1912, and being a record of mine production the figures are somewhat higher than those showing production based on smelter recoveries:—

SILVER.—TABLE 3.

Production in British Columbia by Districts, 1908-1912.*

—	1908.	1909.	1910.	1911.	1912.
	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.
Cassiar	14,169	4,569	1,454	29,976	5,868
Kootenay, East—					
Fort Steele division	641,855	580,240	501,475	330,235	376,918
Other divisions	3,384	825	243		7,405
Kootenay, West—					
Ainsworth division	314,142	352,555	233,010	77,375	301,755
Nelson "	25,067	75,908	45,787	76,774	164,182
Slocan "	848,595	738,175	964,634	793,926	1,657,105
Trail Creek "	129,558	80,026	87,833	88,076	87,530
Other divisions	173,675	169,435	107,753	67,884	43,536
Yale—					
Boundary	451,323	492,333	460,945	326,849	389,341
Yale	23	.....	3	343	.....
Coast and other districts	29,598	38,676	47,104	100,926	98,468
Total	2,631,389	2,532,742	2,450,241	1,892,364	3,132,108

* From the Minister of Mines Reports, British Columbia.

Yukon.

The figures of silver production of the Yukon, given in Table 2, represent the silver alloyed with the placer gold, together with a small amount from the lode mines of the district. On an average, about one ounce of silver is contained in each five ounces of crude bullion from the alluvial workings. In 1909, the production was 45,000 ounces of silver, all from the placer mines. In 1910 the placer production was 50,000 ounces, valued at $26,743, and the lode production, 37,418 ounces, valued at $20,013, or a total of 87,418 fine ounces, valued at $46,756. In 1911 the placer production was 50,300 ounces, valued at $26,812, and the lode production, 62,408 ounces, valued at $33,266, a total of 112,708 fine ounces, with a value of $60,078. In 1912 the placer production was 60,302 ounces, valued at $36,685, and the lode production, 20,766 ounces, valued at $12,633, a total of 81,068 ounces, with a valuation of $49,318.

Exports.

The following table shows the statistics of silver contained in ore, matte, or other form, exported from Canada since 1886, as compiled from the reports of Trade and Navigation published by the Customs Department. The exports during 1912 were 34,911,922 ounces, valued at $19,494,416, as against exports of 31,216,725 ounces, valued at $15,807,366, in 1911.

SILVER.—TABLE 4.

Exports of Silver in Ore, etc.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1886	25,957	1895	994,354	1904	1,904,394
1887	206,284	1896	2,271,959	1905	2,777,218
1888	219,008	1897	3,576,391	1906	5,686,444
1889	212,163	1898	2,902,277	1907	9,941,849
1890	204,142	1899	1,623,905	1908	12,403,482
1891	225,312	1900	2,341,872	1909	15,719,909
1892	56,688	1901	2,026,727	1910	15,649,537
1893	213,695	1902	1,820,058	1911	15,807,366
1894	359,731	1903	1,989,474	1912	19,494,416

ZINC.

The production of zinc ore in Canada in 1912, as obtained by direct returns from the producers, was 6,415 tons, valued at $215,149, the greater part being from British Columbia. The zinc content of these shipments was returned as 5,354,700 pounds, which, if valued at the average New York price of spelter during the year, would be worth $371,377.

The ore shipped from British Columbia contains also a varying silver content, for which payment is made by the smelters, and without which, on account of the import duty to United States and the long rail haul, it would not, in many cases, pay to ship.

A small trial shipment of 10 tons of ore was made from Ontario for testing purposes.

The British Columbia shipments were heavy, as a result of the activity in Slocan mines and mills. This ore is exported for treatment to Kansas and Oklahoma smelters, and since the smelters demand over 30 per cent, the maximum rate of the United States customs tariff affects Canadian ores.

The present schedule of the tariff on zinc is as follows:—

Ores containing less than 10 per cent, free of duty.

Ores containing 10 per cent or more and less than 20 per cent, ¼ cent per pound.

Ores containing 20 per cent or more and less than 25 per cent, ½ cent per pound.

Ores containing 25 per cent or more, 1 cent per pound.

All rates being based on the metallic contents of the zinc.

The proposed new tariff may make a change in the rate on zinc ores.

The United States smelters usually pay on a basis of 45 per cent zinc content. The base price varies with the price of spelter at St. Louis, and a stated amount is added or deducted for every unit of zinc in excess of, or less than, the base. The silver is settled for at the New York price, after making deductions for loss in treatment. Limits are frequently set which lead or iron contents may not exceed. Thus zinc shipments are subject to the following penalties:—

(1) Freight, the long haul to the United States smelters.
(2) Duty on zinc in ore or concentrates, 1 cent per pound on metallic zinc content.
(3) Duty on lead contained in ore though not paid for by smelters, 1½ cents per pound on all lead contained.
(4) Payments. Deduction of six ounces of silver per ton, 75 per cent of the balance paid for.

The payment on zinc in ore is equivalent to about 63⅓ per cent of zinc content, at final market price of spelter, in some cases.

During 1912 there were received at American smelting works, 7,190 tons of zinc ore from Canadian mines, containing 6,392,983 pounds of zinc, 199,955 ounces of silver, 33,812 pounds lead. A large part of this was not smelted during the year, but was stocked.

The imports of zinc, taken as an index of consumption, show a fairly steady increase. The total imports of zinc in blocks and pigs and spelter were, in 1880, some 744 tons; in 1889 they had risen to 1,427 tons, and remained fairly stationary until about 1899, in which year the imports were 1,213 tons. In the fiscal year ending March, 1909, they had risen to 4,610 tons, and for the calendar year 1911, the total imports were 7,534 tons, in addition to which there were 4,269 tons of zinc white, and zinc manufactures to the value of $30,862.

For the calendar year 1912, the total imports were 10,897 tons, in addition to which there were 5,253 tons zinc white, zinc manufactures to the value of $46,336; also zinc dust, 154 tons, valued at $18,944; and sulphate and chloride of zinc, 471 tons, valued at $29,104.

Statistics of the production and imports of zinc, and the average monthly prices of spelter on the New York and London markets for two years, are given in the accompanying tables.

ZINC.—TABLE 1.

Annual Production of Zinc.

Calendar Year.	Zinc ore shipped.		Metallic zinc in ore shipped.	
	Tons.	Spot value.	Lbs.	Final value.
		$		$
1898	1,162	11,000	788,000	36,011
1899	865	18,165	814,000	46,805
1900	261	4,810	212,000	9,342
1901	.....	.....	.....	.....
1902	158	1,659	142,200	6,882
1903	1,000	10,500	900,000	48,660
1904	597	3,700	477,568	24,256
1905	9,413	139,200	*	*
1906	1,154	23,800	*	*
1907	1,573	49,100	*	*
1908	452	3,215	*	*
1909 (a)	18,371	242,699	16,468,204	906,245
1910	5,063	120,003	4,361,712	240,766
1911	2,590	101,072	2,346,845	135,132
1912	6,415	215,149	5,354,700	371,777

* Figures not available.
(a) Includes 7,424 tons shipped late in 1908.

ZINC.—TABLE 2.

Imports of Zinc in Blocks, Pigs, and Sheets.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		$			$			$
1880	13,805	67,881	1891	17,984	105,023	1902	34,871	141,560
1881	20,920	94,015	1892	21,881	127,302	1903	26,646	142,827
1882	15,021	76,631	1893	26,446	124,360	1904	25,553	138,057
1883	22,765	94,799	1894	20,774	90,680	1905	25,141	141,514
1884	18,945	77,373	1895	15,061	63,373	1906	24,462	158,438
1885	20,954	70,598	1896	20,223	80,784	1907 (9 mos.)	18,427	126,221
1886	23,146	85,599	1897	11,946	57,754	1908	30,362	191,081
1887	26,142	98,557	1898	35,148	112,735	1909	26,222	141,066
1888	16,407	65,827	1899	18,785	107,477	1910	35,040	201,777
1889	19,782	83,935	1900	28,748	156,167	1911	34,659	206,746
1890	18,236	92,530	1901	20,527	103,457	1912	33,379	213,141

ZINC.—TABLE 3.

Imports of Spelter.*

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		$			$			$
1880	1,073	5,301	1891	6,249	31,459	1902	18,356	80,757
1881	2,904	12,276	1892	13,909	62,550	1903	23,159	110,817
1882	1,654	7,779	1893	10,721	49,822	1904	33,952	164,751
1883	1,274	5,196	1894	8,423	35,615	1905	37,941	206,244
1884	2,239	10,417	1895	9,249	30,245	1906	50,137	290,686
1885	3,325	10,875	1896	10,897	40,548	1907 (9 mos.)	42,465	269,044
1886	5,432	18,238	1897	8,342	32,826	1908	65,593	314,369
1887	6,908	25,007	1898	2,794	13,561	1909	55,981	310,688
1888	7,772	29,762	1899	5,450	29,687	1910	132,001	658,285
1889	8,750	37,403	1900	5,836	29,416	1911	98,372	505,447
1890	14,570	71,122	1901	14,621	58,283	1912	125,721	716,064

* Spelter in blocks and pigs.

ZINC.—TABLE 4.

Imports of Zinc, Manufactures of.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1880	8,327	1891	7,178	1902	6,683
1881	20,178	1892	7,563	1903	9,754
1882	15,526	1893	7,464	1904	12,682
1883	22,599	1894	6,193	1905	11,912
1884	11,952	1895	5,581	1906	12,917
1885	9,459	1896	6,290	1907 (9 mos.)	12,556
1886	7,345	1897	5,145	1908	19,240
1887	6,561	1898	10,503	1909	15,621
1888	7,402	1899	14,661	1910	15,495
1889	7,233	1900	11,475	1911	24,128
1890	6,472	1901	6,882	1912	34,010

1912	Zinc seamless drawn tubing	Duty free	$	
	" manufactures of, N.O.P.	25%	$	34,010
	Total		$	34,010

World's Production of Spelter in Short Tons.*

Country.	1907.	1908.	1909.	1910.	1911.	1912
Australia	1,098	1,198	.....	560	1,904	2,531
Austria and Italy	12,522	14,063	13,931	14,666	18,602	21,050
Belgium	170,307	181,851	184,194	190,233	215,050	220,690
France and Spain	61,438	61,512	61,859	65,191	70,791	79,442
Germany—						
Rhine district	77,459	80,670	82,863	86,823	276,008	298,810
Silesia	152,611	158,328	159,731	154,596		
Great Britain	61,286	60,029	65,422	69,531	73,803	63,090
Holland	16,526	19,017	21,548	23,121	25,059	26,382
Poland	10,735	9,740	8,758	9,514	10,952	12,320
United States	249,860	210,424	255,760	269,184	286,526	338,806
Total	813,842	796,832	854,066	883,419	978,695	1,063,121

* Mineral Resources of the United States.

World's Consumption of Spelter in Short Tons.*

Country.	1907.	1908.	1909.	1910.	1911.	1912.
Austria-Hungary	34,171	35,925	36,155	37,258	47,950	51,692
Belgium	60,627	74,936	68,343	86,531	71,539	73,964
France	76,720	85,956	73,744	61,949	90,389	90,389
Germany	192,792	198,580	207,232	196,209	244,490	248,899
Great Britain	154,653	152,627	171,408	195,989	193,674	204,146
Holland	4,189	4,188	4,409	4,409	4,409	4,409
Italy	7,496	9,257	9,039	8,929	11,133	11,795
Russia	19,290	19,946	20,282	27,447	32,518	31,967
Spain	5,180	5,290	4,850	4,740	4,961	5,181
United States	13,228	11,020	6,614	13,228	17,857	21,715
Other countries	226,969	214,167	270,730	245,884	280,059	340,341
Total	795,315	811,892	872,806	882,573	998,979	1,084,504

* Mineral Resources of the United States.

Average Price of Spelter in Cents per Pound at New York.*

Month.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January	4·27	4·865	4·863	6·190	6·487	6·732	4·513	5·141	6·101	5·452	6·442
February	4·15	5·043	4·916	6·139	6·075	6·814	4·785	4·889	5·569	5·518	6·499
March	4·28	5·349	5·057	6·067	6·209	6·837	4·665	4·757	5·637	5·563	6·626
April	4·37	5·550	5·219	5·817	6·087	6·687	4·645	4·965	5·439	5·399	6·633
May	4·47	5·639	5·031	5·434	5·997	6·441	4·608	5·124	5·191	5·348	6·679
June	4·96	5·697	4·760	5·190	6·096	6·419	4·543	5·402	5·128	5·520	6·877
July	5·27	5·662	4·873	5·396	6·006	6·072	4·485	5·402	5·152	5·695	7·116
August	5·44	5·725	4·866	5·706	6·027	5·701	4·702	5·729	5·279	5·953	7·028
September	5·49	5·686	5·046	5·887	6·216	5·236	4·769	5·796	5·514	5·869	7·454
October	5·38	5·510	5·181	6·087	6·222	5·430	4·801	6·199	5·628	6·102	7·426
November	5·18	5·038	5·513	6·145	6·375	4·925	5·059	6·381	5·976	6·380	7·371
December	4·78	4·731	5·872	6·522	6·593	4·254	5·137	6·249	5·624	6·301	7·162
Year	4·84	5·40	5·100	5·822	6·198	5·962	4·726	5·503	5·520	5·758	6·943

* From the statistical publication of the Metallgesellschaft, etc., of Frankfort-on-the-Main, Germany.

Average Prices of Spelter, Ordinary Brands, in London.*

Month.	1903.			1904.			1905.			1906.			1907.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	20	0	8	21	11	2	24	19	9	28	8	2	27	7	1
February	20	15	4	21	16	5	24	10	6	26	2	4	26	1	5
March	22	18	2	21	19	6	23	13	6	24	15	3	26	4	8
April	22	8	7	22	5	1	23	14	3	25	19	3	25	17	5
May	21	2	4	22	2	10	23	11	8	27	0	2	25	14	2
June	20	8	2	21	14	6	23	16	8	27	9	9	24	10	2
July	20	8	5	22	2	9	23	19	6	26	15	11	23	18	11
August	20	9	5	22	7	6	24	14	6	27	0	5	22	1	7
September	20	17	7	22	11	5	26	8	3	27	12	5	21	0	11
October	20	9	4	23	1	7	28	1	7	27	18	10	21	12	11
November	20	14	7	24	12	9	28	5	11	27	15	1	21	8	4
December	20	19	10	24	17	1	28	14	11	27	19	3	20	3	3
Year	20	19	5	22	11	10	25	7	7	27	1	5	23	16	9

Month.	1908.			1909.			1910.			1911.			1912.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January	20	6	3	21	6	3	23	4	3	23	16	9	26	9	11
February	21	0	7	21	8	9	23	3	1	23	3	10	26	6	5
March	21	1	5	21	8	8	23	0	7	22	19	2	25	19	11
April	21	6	1	21	10	1	22	9	11	23	13	8	25	8	10½
May	20	2	10	21	19	..	22	1	1¼	24	6	1	25	11	2
June	19	2	2	21	19	11	22	3	2	24	9	7	25	11	11
July	18	14	1	21	18	9	22	5	6	24	13	10½	25	13	½
August	19	6	9	22	0	3	22	14	0	26	11	1½	26	1	2
September	19	10	2	22	17	1	23	2	7½	27	12	6½	26	17	..
October	19	15	1	22	3	4	23	16	6½	27	4	10	27	5	10
November	20	17	1	23	2	1	24	1	9	26	13	1½	26	14	3
December	20	19	2	23	1	3	23	17	7½	26	13	6½	26	..	4
Year	20	3	5	22	3	..	23	0	0	25	3	2	26	3	4

*From the annual publication of the Metallgesellschaft, etc., of Frankfort-on-the-Main, Germany.

MISCELLANEOUS METALLIC MINERALS

ALUMINIUM.

No commercial ores of aluminium have as yet been found in Canada. Aluminium is, however, made in extensive works at Shawenegan Falls, Quebec, from bauxite ores imported from France, Germany, and the United States by the Northern Aluminium Company. A wire mill for the manufacture of aluminium wire and cables is also operated by the same firm.

There being but one firm engaged in the manufacture of aluminium, we are precluded from publishing statistics of production.

Imports of alumina which probably include bauxite and exports of aluminium are, however, published in the reports of the Department of Customs.

During the twelve months ending December 31, 1912, the imports of alumina were 22,400,600 pounds, or 11,200 tons, while the exports of aluminium in ingots, bars, etc., during the same period, were 18,285,700 pounds, or 9,143 tons, besides manufactures of aluminium, valued at $10,898. The imported alumina was valued at 2 cents per pound, and the exported aluminium at 10·9 cents.

The imports of alumina and exports of aluminium during the past nine years are shown in tabular form, as follows:—

Annual Imports of 'Alumina' and Exports of Aluminium.

Calendar Year.	Imports of alumina.		Exports of aluminium.		
			Ingots, bars, etc.		Manufactures.
	Lbs.	Value. $	Lbs.	Value. $	Value. $
1905	5,360,800	138,765	2,535,386	508,219	1,588
1906	8,975,400	239,136	4,521,486	899,113	2,244
1907	12,705,300	268,502	5,478,203	1,109,353	1,499
1908	1,485,500	29,752	1,713,800	399,785	1,727
1909	11,794,100	234,544	6,134,500	918,195	3,453
1910	19,464,400	403,283	7,722,400	1,160,242	3,741
1911	18,607,200	372,009	4,990,100	747,587	1,555
1912	22,400,500	448,061	18,285,700	2,002,363	10,898

Prices.—The price of aluminium, No. 1, ingots in New York during 1912 varied between the limits of 18½ and 27 cents per pound; during 1911 the price varied between 18½ and 22 cents per pound; while 20 to 22 cents per pound were paid during 1910.

In Europe, prices for aluminium for several years have been considerably lower than in the United States.

In 1909 the prices per pound at works in Europe are reported by the 'Metallgesellschaft' as having ranged from 13½ cents to 16 cents; in 1910, from 14 cents to 17¼ cents; and in 1911, from 11 to 13½ cents.

ANTIMONY.

The production of antimony in Canada has been not only small but spasmodic.

In 1907 the production was 2,016 tons of antimony ore shipped, valued at $65,000, and 63,850 pounds of refined antimony, valued at $5,108.

In 1908 customs returns showed an export of 148 tons of antimony ore, valued at $5,443.

In 1909, in addition to the shipment of 35 tons of concentrates, there were produced about 61,200 pounds of antimony metal, chiefly at the works of the Canadian Antimony Company, Limited, at Lake George, New Brunswick, a small recovery being also reported from the Consolidated Mining and Smelting Company's refinery at Trail, B.C.

The total production of antimony in 1910, as reported to this Branch, consisted of 364 tons of antimony concentrates, valued at $13,906, shipped from West Gore, Nova Scotia.

The auriferous antimony property at West Gore, formerly operated by the Dominion Antimony Company, Limited, was taken over in July, 1909, by the West Gore Antimony Company.

The mines and works of the Canadian Antimony Company, Limited, at Lake George, New Brunswick, have not been in operation since 1909.

In British Columbia, some of the lead ores contain a small percentage of antimony—about one-third of one per cent, and some refined antimony was recovered at Trail in 1907 and 1909, the recovery being somewhat irregular.

No production is reported in 1912, the West Gore Antimony Company not operating their mill, being engaged part of the year retimbering their shaft.

Annual Shipments of Antimony Ore.*

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1886	665	31,490	1905 (a)	527	.....
1887	584	10,860	1906 (a)	782	.....
1888	345	3,696	1907*	2,016	65,000
1889	55	1,100	1908 (b)	148	5,443
1890	26½	625	1909*	35	1,575
1891	10	60	1910	364	13,906
1892 to 1897	Nil.	Nil.	1911	.....	.....
1898	1,344	20,000	1912	.....	.....
1899 to 1904	Nil.	Nil.			

(a) As recorded by the Nova Scotia Department of Mines: no value given.
(b) Exports.
* In addition to the shipments shown in the table, refined antimony was produced in 1907 to the extent of 63,850 pounds valued at $5,108, and in 1909, 61,207 pounds valued at $4,285.

Exports of Antimony Ore.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1880	40	1,948	1899	6¾	190
1881	34	3,308	1900	210	3,441
1882	323	11,673	1901	10	1,643
1883	165	4,200	1902	90	13,658
1884	483	17,375	1903	33	4,332
1885	758	36,250	1904	160	7,237
1886	665	31,490	1905	525	27,118
1887	229	9,720	1906	420	17,064
1888	352½	6,894	1907	1,327	37,807
1889	30	695	1908	148	5,443
1890	38	1,000	1909	4	120
1891	3½	60	1910	239	14,095
1892 to 1897	Nil.	Nil.	1911	57	4,946
1898	1,232	15,295	1912	Nil.	Nil.

Imports of Antimony.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$
1880	42,247	5,903	1897	134,661	8,031
1881		7,060	1898	156,451	12,350
1882	183,597	15,044	1899	289,066	16,851
1883	105,346	10,355	1900	186,997	20,001
1884	445,600	15,564	1901	350,7·7	24,714
1885	82,012	8,182	1902	504,822	39,276
1886	89,787	6,951	1903	868,146	65,434
1887	87,327	7,122	1904	418,943	27,112
1888	120,125	12,242	1905	186,454	12,828
1889	119,034	11,206	1906	403,918	56,297
1890	117,066	17,439	1907 (9 mos.)	321,385	71,493
1891	114,084	17,483	1908	484,899	66,484
1892	180,308	17,680	1909	444,254	32,133
1893	181,823	14,771	1910	563,662	40,681
1894	139,571	12,249	1911	640,208	42,234
1895	79,707	6,131	1912	533,517	35,462
1896	163,209	9,557			

				$
1912	Antimony, or regulus of, not ground, pulverized or otherwise manufactured	Duty free.	512,590	32,867
	Antimony salts	"	20,927	2,595
	Total		533,517	35,462

COBALT.

The silver-cobalt-nickel-arsenides of Coleman and adjacent townships, more familiarly known as the Cobalt district, in the Province of Ontario, are now the principal sources of the world's production of cobalt.

With respect to the greater part of the ore shipped in which silver is the chief constituent of value, the purchasing smelters make no allowance for cobalt content, and the mine owners, therefore, receive nothing for the cobalt.

The recovery of this metal in Canada, so far, has been confined to the production of cobalt oxide and mixed cobalt and nickel oxides by the Coniagas Reduction Company, and the Deloro Mining and Reduction Company. The Dominion Refineries, Limited, at North Bay, also entered the field in 1912. According to direct returns, there were produced during 1912, 349,454 pounds of cobalt and nickel oxides, and 1,285,280 pounds of cobalt material and mixed oxides of cobalt and nickel, the total value of all these products being $320,244.

No information is available as to the quantities recovered from ores shipped to smelters outside of Canada.

The following table shows the ore shipments, estimated cobalt content, and value received by the shippers for cobalt, as published by the Ontario Bureau of Mines:—

Year.	Ores shipped.	Estimated total cobalt content.	Per cent.	Value received by shippers for cobalt.
	Tons.	Tons.		$
1904	158	16	10·1	19,960
1905	2,144	118	5·5	100,000
1906	5,335	321	6·0	80,704
1907	14,788	739	5·0	104,426
1908	25,624	1,224	4·7	111,118
1909	30,677	1,533	5·0	94,965
1910	34,282	1,098	3·2	54,699
1911	26,653	852	3·2	170,890
1912	.....	.....	.....	.....

The production of cobalt has so largely exceeded the demand as to cause a very great fall in the price.

The price of cobalt oxide (78·6 per cent cobalt) in New York, during 1907, remained uniform at $2.50 per ton. In 1908 the price fell to $1.45 in April, and $1.40 in November. During the first three months of 1909, from $1.45 to $2.60 was quoted, after which the price again fell, quotations ranging from $1.10 to $1.75 until December. In the latter part of December there was a further falling off to prices ranging from 80 to 85 cents per pound.

During 1910 the price remained fairly constant at from 80 to 85 cents per pound, while in December, 1911, it fell to from 78 to 80 cents per pound.

With regard to present prices, the following quotation from the Weekly Report of the Department of Trade and Commerce, dated July 7, 1913, page 759, will be of interest:—

'Inquiries instituted in connexion with the recent application about the prospects of doing business in Europe in cobalt and nickel oxides and arsenic, indicate that such a considerable number of metal and chemical firms are interested in these products, that a memorandum is herewith included dealing with the current market conditions in these specialties which a leading firm in the trade has courteously supplied, and also authorized its publication for the benefit of Canadian producers likely to be interested.

'The European consumption of cobalt oxide is at present maintained almost entirely in the hands of certain interests working in conjunction with a syndicate composed of the principal European manufacturers of cobalt preparations. The selling price of this combination was, until recently, between 2s. 6d. and 2s. 9d. per pound, according to quantity, for black cobalt oxide guaranteed to contain not less than 70 per cent cobalt metal, and in other respects of good commercial quality. Within the last few weeks, however, a demand has been made to raise this price to a minimum of 3s. per pound. In view of the existence of a number of outside producers, it is considered unlikely that the syndicate will be able to maintain this advance.

'In addition to the black oxide of cobalt there is considerable outlet for the so-called "grey" or prepared cobalt oxide, containing approximately 76 per cent cobalt metal. This quality fetches a premium of 4d. to 6d. per pound on the black oxide.'

In the 'Statistique de l'Industrie Minerale en France et en Algerie' for 1911, the following statement is of interest: 'The production of cobalt ores, which was more than 2,360 metric tons in 1908, and then fell to 548 tons in 1909, was only 54 tons in 1910, and ceased completely in 1911.

'Thus New Caledonia, which for a long time enjoyed a veritable monopoly of cobalt ore, has been suddenly supplanted in these markets by Canada, as a result of the exploitation of the argentiferous-cobalt ores of the Cobalt district.'

In 1907 an Act was passed by the Ontario Legislature, authorizing the payment of bounties on certain nickel, cobalt, copper, and arsenic products, mined and refined in the Province. The Act and Amendment are quoted following:—

An Act to Encourage the Refining of Metals in Ontario.

Whereas, it is desirable to encourage the refining of nickel, cobalt, copper and arsenic ores within the Province;

Therefore His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. This Act may be cited as 'The Metal Refining Bounty Act.'

2. The treasurer of the Province may, under the authority of such regulations as may from time to time be made in that behalf by the Lieutenant-Governor in Council, pay in each year to the refiners of the metals or metal compounds hereinafter specified, when refined in the Province from ores raised and mined in the Province, a bounty upon each pound of such metal or compound so refined as follows:—

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

Class 2.—On refined metallic cobalt or on refined oxide of cobalt, 6 cents per pound on the free metallic cobalt or on the cobalt contained in the oxide of cobalt; but cobalt upon which a bounty has already been paid in one form of product shall not be entitled to any further bounty in any other form; and the amount to be paid as bounty on the cobalt products herein mentioned is not to exceed in all $30,000 in any one year.

Class 3.—On refined metallic copper or on refined sulphate of copper, 1½ cents per pound on the free metallic copper or on the copper contained in the sulphate of copper; or on any copper product carrying at least 95 per cent of metallic copper, one-half cent per pound; but copper upon which a bounty has already been paid in one form of product shall not be entitled to any further bounty in any other form; and the amount to be paid as bounty on the copper products herein mentioned is not to exceed in all $60,000 in any one year.

Class 4.—On white arsenic, otherwise known as arsenious acid, produced from mispickel ores and not from ores carrying smaltite or niccolite or cobalite, one-half cent per pound; but the amount to be paid as bounty on the arsenic compound herein mentioned is not to exceed in all $15,000 in any one year.

(1) Provided, however, that if so much of any of the above-mentioned classes of refined products is refined in the Province in any one year that the amount hereby set apart in respect of the said class would be insufficient to pay the bounties herein provided therefor, then the bounty payable to the refiners of such class of refined products shall abate and be payable upon a *pro rata* basis so that not more than the maximum amount herein specified for any of the said classes shall be paid in respect of said class in any one year.

(2) Provided, also, that the bounties herein provided for shall cease and determine with the payment of any sum or sums which shall have been earned during the period of five years from the passing of this Act.

(3) No person, firm or company shall be entitled to claim or receive any of the bounties in this Act provided for unless such person, firm or

company shall have been at all times prepared and ready and willing during the period for which the bounty is claimed, to smelt, treat and refine ores from which the same product as that on which the bounty is claimed can be produced, belonging to any other person, firm or company, at rate and on terms and conditions approved by the Lieutenant-Governor in Council, or shall have been ready to purchase such ores at rates approved by the Lieutenant-Governor in Council as current market rates.

An Act to Amend the Act to Encourage the Refining of Metals in Ontario.

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:—

1. Subsection 2 of section 2 of The Metal Refining Bounty Act is amended by striking out the word 'five' where the same appears in the last line of the said subsection, and substituting therefor the word 'ten.'

MERCURY.

There has been no production of mercury since 1897. The small production reported in 1895 and 1897 was derived from the deposits at the western end of Kamloops lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar. These veins are in a zone of decomposed volcanic rock of Tertiary age.

During 1911 and 1912 development work has been carried on by the Mercury Mines, Limited, at Sechart, Vancouver island. Some ore was taken out but has been piled on the dump for future treatment.

Production of Mercury.

Calendar Year.	Flasks. (76½ lbs.)	Price per flask.	Value.
		$ cts.	$
1895	71	33 00	2,343
1896	58	33 44	1,940
1897	9	36 00	324

Imports of Mercury.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$			$
1882	2,443	965	1893	50,711	22,998	1904	151,107	80,658
1883	7,410	2,991	1894	36,914	14,483	1905	103,330	48,412
1884	5,848	2,441	1895	63,732	25,703	1906	150,364	69,505
1885	14,490	4,781	1896	77,869	32,353	1907 (9 mos.)	98,368	45,662
1886	13,316	7,142	1897	76,058	33,534	1908	178,411	76,549
1887	18,409	10,618	1898	59,759	36,425	1909	92,220	46,217
1888	27,951	14,943	1899	103,017	51,695	1910	283,980	146,914
1889	22,931	11,844	1900	85,342	51,987	1911	128,980	74,956
1890	15,912	7,677	1901	140,610	94,564	1912 Duty free.	106,958	60,943
1891	29,775	20,223	1902	97,283	56,615			
1892	30,936	15,038	1903	164,968	91,625			

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MOLYBDENUM.

Although there are numerous occurrences of molybdenite in Canada, of more or less undetermined value, there has been very little production of the mineral.

In 1902, about 6,500 pounds of molybdenum, valued at $400, were reported as having been taken from a deposit in the township of Laxton, county of Victoria, by John Webber, of Toronto.

In 1903, Mr. A. W. Chisholm, of Kingston, reported the shipment to the United States, and elsewhere, of 85 tons of molybdenum ore, valued at $1,275, culled from about 500 or 600 tons of rock taken from the east half of lot 5, concession XIV, Sheffield township, Addington county.

Some work was done during 1912 in different parts of Quebec province, but there was no production of the mineral.

According to 'The Mineral Industry,' published in New York: 'The market for molybdenum ores is very narrow. The price fluctuates widely, and is generally subject to special negotiations at each particular sale. American buyers require concentrates to contain 90 to 95 per cent molybdenite, for which they will pay $400 to $450 per ton. The principal purchasers in the United States are: Electrometallurgical Company of America, New York; Primos Chemical Company, Primos, Penn.; DeGolia and Atkins, San Francisco, Cal. In Germany, Friedrich Krupp, of Essen, is a large user of molybdenum.'

During the year 1911 a report on the molybdenum ores of Canada was issued by the Mines Branch.[1]

[1] No. 93. Report on the Molybdenum Ores of Canada, by T. L. Walker, Ph.D., Mines Branch, Department of Mines, Ottawa, 1911.

PLATINUM AND PALLADIUM.

In past years the chief source of the platinum production in Canada was the placer gravels of British Columbia, principally in the Similkameen district. The nickel-copper ores of the Sudbury district also carry small quantities of the metals of the platinum group, and since 1902 considerable quantities of these metals have been recovered from the residues resulting from the treatment of the mattes from Sudbury.

Since 1906 no record of the recovery of metals of the platinum group from the Sudbury District ores has been published, but the International Nickel Company have been good enough to inform us that the recovery of gold, silver, platinum, and palladium at their works in New Jersey for the six years ending December 31, 1912, was as follows:—

Year.	Gold.	Silver.	Platinum.	Palladium.
	Ozs.	Ozs.	Ozs.	Ozs.
	993·572	63,400·70	226·800	607·300
1907	5,238·181	139,329·29	172·316	382·287
1908	2,113·669	63,138·66	546·627	1,270·598
1909	2,649·799	60,256·83	258·325	522·804
1910	2,203·052	70,954·38	665·552	753·363
1911	2,476·558	32,169·66	496·850	680·130
1912				
	15,674·831	459,249·52	2,366·470	4,216·482

In view, however, of the fact that other material has been treated in the Company's works in addition to the nickel-copper mattes from Copper Cliff, Ontario, it is impossible to state what proportion of the above recoveries was from Canadian sources, although it is, of course, safe to assume that part of these metals has been derived from the Sudbury District mattes.

An attempt has been made in the last few years to work the placer deposits of the Tulameen district of British Columbia, with a view to the recovery of platinum. In former times platinum was not recognized by the miners and in many cases was discarded as worthless. Several companies have been formed recently to operate in this district.

49509—11½

Annual Production of Platinum.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1887	5,600	1894	950	1901	457
1888	6,000	1895	3,800	1902	46,502
1889	3,500	1896	750	1903	33,345
1890	4,500	1897	1,600	1904	10,872
1891	10,000	1898	1,500	1905	500
1892	3,500	1899	825	1906	*
1893	1,800	1900	Nil.	1907–1912	**

* See under Palladium.
** See explanation in text.

Annual Production of Palladium.

	Ozs.	Value.
1902 Palladium	4,411	$86,014
1903 "	3,177	61,952
1904 "	952	18,564
1905 Metals of the platinum group	1,562	28,116
1906 " "	314	5,652
1907–1912	*	

* See explanation in text.

Imports of Platinum.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1883	113	1893	14,082	1903	21,251
1884	576	1894	7,151	1904	28,112
1885	792	1895	3,937	1905	61,719
1886	1,154	1896	6,185	1906	54,494
1887	1,422	1897	9,031	1907 (9 mos.)	113,485
1888	13,475	1898	9,781	1908	60,390
1889	3,167	1899	9,671	1909	45,534
1890	5,215	1900	57,910	1910	84,435
1891	4,055	1901	20,263	1911	137,241
1892	1,952	1902	19,357	1912*	191,370

* Platinum wire and platinum in bars, strips, sheets or plates; platinum retorts, pans, condensers, tubing and pipe, imported by manufacturers of sulphuric acid for use in their works; crucibles. Duty free.

TIN.

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

The occurrence of tin ore has been reported from several localities, the most important, perhaps, being the discovery of cassiterite, near New Ross, Lunenburg county, Nova Scotia. This occurrence has not yet been found of economic value. It has been visited by several officers of the Geological Survey, and reports upon it may be found in the Summary Report of the Geological Survey Branch of the Department of Mines, for 1907, pages 77 and 80 to 83, and in the report for 1908, page 154.

In further reference to the New Ross occurrences, Mr. Faribault, in his summary report for 1910, states that: 'At New Ross, Lunenburg county, some distance east of the district surveyed last summer, two important veins, one bearing manganese and the other tin and copper, were opened last summer.

'A tin-bearing vein, also recently discovered by Ernest Turner, at Mill Road, four miles north of New Ross, has been prospected under the management of A. L. McCallum. It has been proved to a depth of 20 feet, and for a length of 250 feet, while the float has been traced half a mile towards the north. The vein is 24 inches wide, mostly made up of quartz, merging with granite at the sides, and carries at the middle a streak of rich ore, from 3 to 5 inches wide. Several assays of the ore made by Mr. McCallum have given from 10 to 30 per cent tin, and 8 per cent copper, present in the form of cassiterite and chalcopyrite, with association of tungsten-bearing zinc minerals.'

In the Summary Report of the Geological Survey of Canada for 1911, page 13, will be found a note referring to the occurrence of tin associated with tungsten, on the southwest branch of the Miramichi river, New Brunswick.

The imports of tin and manufactures thereof into Canada are shown in the following table:—

Imports of Tin and Tinware.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1880	281,880	1891	1,206,918	1902	2,293,958
1881	413,924	1892	1,594,205	1903	2,712,186
1882	790,285	1893	1,242,994	1904	2,389,557
1883	1,274,150	1894	1,310,389	1905	2,791,757
1884	1,018,493	1895	973,397	1906	3,336,948
1885	1,060,883	1896	1,237,684	1907 (9 mos.)	2,719,813
1886	1,117,368	1897	1,274,108	1908	4,059,281
1887	1,187,312	1898	1,550,851	1909	2,985,361
1888	1,164,273	1899	1,372,813	1810	3,822,443
1889	1,243,794	1900	2,418,455	1911	4,647,784
1890	1,289,756	1901	2,339,109	1912	5,420,175

		Duty	Lbs.	$
1912	Tin crystals	Free.		3,626
	Tin in blocks, pig, and bars	"	4,174,000	1,706,678
	Tin plates and sheets	"	91,603,000	3,045,618
	Tin foil	"	1,470,423	168,315
	Tinware, plain, japanned or lithographed, and all manufactures of tin, N.E.S	25%		495,938
	Tin strip waste	Free.		
	Total			5,420,175

TUNGSTEN.

Scheelite was discovered in Halifax county, Nova Scotia, in 1908. Mr. Faribault, of the Geological Survey, visited this deposit again in 1909, and a preliminary report thereon will be found in the Summary Report of the Geological Survey for 1909, pages 228 to 234. During 1910 these deposits were developed by the Scheelite Mines, Limited, who have obtained very satisfactory results.

During 1912, the Scheelite Mines, Limited, continued development and prospecting work and operated their mill, making a shipment of 14 tons of tungsten concentrates—the first shipment from Nova Scotia—carrying 72 per cent tungstic acid.

In the Summary Report for 1910, Mr. Faribault refers to a discovery in Queens county, as follows:—

'A new discovery of tungsten ore in the form of scheelite has been made by A. N. Prest, at Middlefield, Queens county, near the Fifteen Mile Brook gold mine, and prospecting was started last fall in order to trace the float to the parent vein.'

The occurrence of wolframite has also been noted in association with molybdenite, by Dr. Walker, in New Brunswick, near the confluence of Burnt Hill brook and the southwest Miramichi. The property was tested by Mr. Freeze, of Doaktown, New Brunswick, and Mr. Matthew Lodge, of Moncton, who formed the Acadia Tungsten Mines Company. This Company has done a little development.

NON-METALLIC PRODUCTS.

ABRASIVE MATERIALS.

The abrasives produced in Canada comprise corundum, the various sandstone abrasives, such as grindstones, pulpstones, whetstones, etc., and tripolite or infusorial earth.

CORUNDUM.

The total shipments of grain corundum from operating mills in 1912 were 3,919,525 pounds, valued at $239,091, or an average price of 6·1 cents per pound, as compared with shipments of 2,943,150 pounds, valued at $161,873, or an average of 5·5 cents per pound in 1911. Of the 1912 shipments, 126,900 pounds, or 3·2 per cent of the total, were sold for consumption in Canada, and 3,792,625 pounds, or 96·8 per cent, were sold for export.

The quantity of rock milled was 36,879 tons, from which 3,240,800 pounds were graded, showing a recovery of 4·4 per cent of corundum from the rock. In 1911, 41,795 tons of rock were milled with a recovery of 3,281,750 pounds, or 3·93 per cent, of grain corundum.

The annual production since 1880 is shown in Table 1 below.

ABRASIVE MATERIALS.—TABLE 1.

Production of Corundum Ore and Corundum.

Calendar Year.	Corundum-bearing rock treated.	Grain corundum graded.	Grain corundum sold in Canada.	Grain corundum exported.	Total of grain corundum.	Value.	Average price.
	Tons.	Tons.	Tons.	Tons.	Tons.	$	Cts.
1900..	.....	60	3	.....	3	300	5·00
1901..	4,134	444	85	302	387	46,415	5·97
1902..	7,996	806	106	662	768	84,465	5·49
1903..	(a) 8,877	839	85	618	703	77,510	5·51
1904..	28,187	1,654	116	877	993	109,545	5·51
1905..	23,571	1,681	140	1,504	1,644	149,153	4 48
1906..	45,719	2,914	162	2,112	2,274	204,973	4·50
1907..	60,532	2,682	164	1,728	1,892	177,922	4·70
1908..	2,678	106	99	990	1,089	100,398	4·60
1909..	35,894	1,579	129	1,362	1,491	162,492	5·45
1910..	37,183	1,686	106	1,764	1,870	198,680	5·31
1911..	41,795	1,641	92	1,380	1,472	161,873	5·50
1912..	36,879	1,620	63	1,897	1,960	239,091	6·10

(a) In addition to this amount which was milled in Canada, 267 tons of ore were mined and shipped to the United States for treatment there.

Corundum is found in Faraday, Dungannon, Monteagle, Carlow, Raglan, and adjacent townships, the operating mines being located in the last two. Mining operations have been in progress since 1900. In the earlier years of

the industry, the amount of grain corundum graded averaged about 10 per cent of the rock treated. In more recent years, however, a much lower grade of rock has been milled, the recovery of corundum during the past few years varying between 3·9 and 4·5 per cent.

The Manufacturers Corundum Company, Limited, is the only operator at present, working the Craig mine at Craigmont, Renfrew county, and the Burgess mines in Hastings county.

The treatment of the ore consists in concentration, magnetic separation of the iron, air separation of mica, and sizing. The magnetic sand is now being sold as a by-product, and is used in the manufacture of school blackboards.

The corundum finds a market in Canada, the United States, England, France, Germany, and Belgium. Descriptions of mines and mills will be found in the Annual Report of the Ontario Bureau of Mines, and in Memoir No. 6, Geological Survey Publications.[1]

GRINDSTONES, PULPSTONES, ETC.

The annual production of grindstones which are obtained in Nova Scotia and New Brunswick has remained practically constant during the past twenty years.

The total production, including pulpstones, etc., in 1912, was 4,412 tons, valued at $52,090, as compared with 4,566 tons, valued at $52,942, in 1911.

These abrasives are quarried from the Millstone Grit of the Carboniferous formation, which occupies a large portion of the surface of the eastern half of the Province of New Brunswick and the northern and northwestern parts of Nova Scotia.

The localities at which quarrying operations are chiefly carried on are at Lower Cove, and Quarry island, near Merigomish, in Nova Scotia, and in New Brunswick on Chaleur bay, and at Woodpoint and Rockport on the Bay of Fundy.

The grindstones are all shipped in finished condition, and are worth from $10 to $12 per ton.

About 125 tons of pulpstones, valued at $4,000, were shipped in 1912 to Canadian pulp- and paper-mills. These stones weigh about 2½ tons each, and are usually made about 27″ face by 54″ diameter. The production of scythe stones was 64 gross, and about 45 tons of marble polishing grit were shipped.

Most of the pulpstones are made at Quarryville, New Brunswick, by the Miramichi Quarry Company. This quarry also produces an excellent building stone, which finds a market in Quebec, Montreal, and Toronto.

Statistics of the production of grindstones by Provinces since 1886 are given in Table 2.

[1] The Geology of the Haliburton and Bancroft Areas, Province of Ontario, by Frank D. Adams and Alfred E. Barlow.

ABRASIVE MATERIALS.—TABLE 2.

Annual Production of Grindstones.

Calendar Year.	Nova Scotia.		New Brunswick.		Total.		Average value per ton.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	
		$		$		$	$
1886	1,765	24,050	2,255	22,495	4,020	46,545	11 58
1887	1,710	25,020	3,582	38,988	5,292	64,008	12 10
1888	1,971	20,400	3,793	30,729	5,764	51,129	8 87
1889	712	7,128	2,692	23,735	3,404	30,863	9 07
1890	850	8,536	4,034	33,804	4,884	42,340	8 67
1891	1,980	19,800	2,499	22,787	4,479	42,587	9 51
1892	2,462	27,610	2,821	23,577	5,283	51,187	9 69
1893	2,112	21,000	2,488	17,379	4,600	38,379	8 34
1894	2,128	16,000	1,629	16,717	3.757	32,717	8 71
1895	1,400	14,000	2,075	17,932	3,475	31,932	9 19
1896	1,450	14,500	2,263	18,810	3,713	33,310	8 97
1897	1,407	17,500	3,165	24,840	4,572	42,340	9 26
1898	1,422	12,350	3,513	32,425	4,935	44,775	9 07
1899	1,378	10,300	3,133	32,965	4,511	43,265	9 59
1900	1,411	12,600	4,128	40,850	5,539	53,450	9 65
1901	358	3,200	4,223	42,490	4,581	45,690	9 97
1902	1,074	8,118	3,559	36,000	4,633	44,118	9 52
1903	1,337	9,562	4,201	38,740	5,538	48,302	8 72
1904	1,022	7,332	3,620	35,450	4,649	42,782	9 20
1905	1,020	10,200	4,520	52,175	5,540	62,375	11 25
1906	1,023	9,680	4,340	50,134	5,363	59,814	11 15
1907	551	4,480	4,863	55,896	5,414	60,376	11 15
1908	473	4,803	3,370	43,325	3,843	48,128	12 52
1909	312	3,204	3,963	51,460	4,275	54,664	12 79
1910	387	3,496	3,586	43,700	3,973	47,196	11 88
1911	380	3,382	4,186	49,560	4,566	52,942	11 59
1912	374	3,760	4,038	48,330	4,412	52,090	11 81

The imports of grindstones into Canada, principally into the Provinces of Ontario and Quebec, reached a total value during the calendar year 1912 of $112,020; the value of the other abrasives imported during the same period included: burrstones, 2,162, valued at $1,409; emery, valued at $46,616; manufactures of emery, $130,571; pumice stone, $21,310; sandpaper, $189,782; iron sand for glass or granite polishing or for sawing stone, 379,619 pounds, valued at $13,347; a total value of $515,055.

In 1911 the value of grindstones imported was $123,356, and the value of the other abrasives imported during the same period included: burrstones, valued at $1,642; emery, $46,274; manufactures of emery, $104,170; pumice stone, $18,779; sandpaper, $164,474; iron sand for glass or granite polishing or for sawing stone, $8,340; a total value of $467,035.

ABRASIVE MATERIALS.—TABLE 3.

Exports of Grindstones.*

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1884	28,186	1894	12,579	1904	35,612
1885	22,606	1895	16,723	1905	24,868
1886	24,185	1896	19,139	1906	31,978
1887	28,769	1897	18,807	1907	32,534
1888	28,176	1898	25,588	1908	19,721
1889	29,982	1899	23,288	1909	13,942
1890	18,564	1900	42,128	1910	23,502
1891	28,433	1901	29,130	1911	29,206
1892	23,567	1902	24,489	1912	26,535
1893	21,672	1903	27,659		

* Including stone for the manufacture of grindstones.

ABRASIVE MATERIALS.—TABLE 4.

Imports.

Fiscal Year.	Grindstones.		Burrstones. (c)	Emery. (a)	Mfrs. of emery. (b)	Pumice stone. (d)
	Tons.	Value.	Value.	Value.	Value.	Value.
		$	$	$	$	$
1880	1,044	11,714	12,049			
1881	1,359	16,895	6,337			
1882	2,098	30,654	15,143			
1883	2,108	31,456	13,242			
1884	2,074	30,471	5,365			
1885	1,148	16,065	4,517	5,066	4,920	9,384
1886	964	12,803	4,062	11,877	5,832	2,777
1887	1,309	14,815	3,545	12,023	4,598	3,594
1888	1,721	18,263	4,753	15,674	4,001	2,890
1889	2,116	25,564	5,465	13,565	3,948	3,232
1890	1,567	20,569	2,506	16,922	5,313	3,003
1891	1,381	16,991	2,089	16,179	6,665	3,696
1892	1,484	19,761	1,464	17,782	6,492	3,282
1893	1,682	20,937	3,552	17,762	5,606	3,798
1894	1,918	24,426	3,029	14,433	2,223	4,160
1895	1,770	22,834	2,172	14,569	7,775	3,609
1896	1,862	26,561	2,049	16,287	11,913	3,721
1897	1,521	25,547	1,827	16,318	11,231	2,903
1898		22,217	1,813	17,661	15,478	3,829
1899		27,476	1,759	21,454	22,343	5,973
1900		34,382	1,546	19,312	25,615	5,604
1901		39,068	5,762	16,311	22,190	5,516
1902		40,838	2,559	14,476	23,892	7,254
1903		53,388	586	18,058	22,177	6,152
1904		46,039	35	21,626	29,273	6,557
1905		49,747	2,607	21,980	33,250	8,447
1906		59,627	2,661	21,781	42,080	9,053
1907 (9 mos.)		40,780	245	20,498	41,086	5,745
1908		65,125	3,396	26,159	57,760	8,917
1909		56,692	1,141	25,931	47,700	8,117
1910		73,427	1,973	28,482	73,537	12,011
1911		64,439	880	42,188	95,982	16,284
1912		111,274	1,616	47,263	105,833	19,527

(a) Emery in bulk, crushed or ground. Duty free.
(b) Emery and carborundum wheels and manufactures of emery or carborundum.
(c) Burrstones in blocks, rough or unmanufactured, not bound up or prepared by binding into millstones.
(d) Pumice and pumice stone, ground or unground. Duty free.

Following is a list of producers of grindstones and pulpstones:—

Atlantic Grindstone Coal and Railway Co., Lower Cove, N.S.
Jas. W. Sutherland, West Merigomish, N.S.
The Read Stone Co., Ltd., Sackville, N.B.
The Read Stone Co., Ltd., Stonehaven, N.B.
J. L. Knowles, Clifton, N.B.
Miramichi Quarry Co., Ltd., Montreal, 10 Richmond Sq.
The Dorchester Stone Works, Ltd., Beaumont, N.B.

TRIPOLITE.

A small shipment of 38 tons of tripolite, valued at $230, was reported in 1912 from St. Ann, Cape Breton, by the Premier Tripolite Company of New York.

Statistics of shipment since 1896 are shown in Table 5.

ABRASIVE MATERIALS.—TABLE 5.

Annual Shipments of Tripolite.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1896	644	9,960	1904	320	6,400
1897	15	150	1905	200	3,600
1898	1,017	16,660	1906	Nil.	Nil.
1899	1,000	15,000	1907	30	225
1900	336	1,950	1908	30	195
1901	850	15,300	1909	Nil.	Nil.
1902	1,052	16,470	1910	22	134
1903	835	16,700	1911	20	122
			1912	38	230

ASBESTOS.

Asbestos is mined or quarried in Canada in the Province of Quebec only, from deposits in the Eastern Townships, in the districts of Black Lake, Thetford, East Broughton, and Danville. Other occurrences of the mineral have been noted and some shipments were at one time made from the township of Denholm, Ottawa county, north of the city of Ottawa.

The asbestos deposits and the asbestos industries have been described in a special report published by the Mines Branch.[1]

For a number of years preceding 1911 the annual output of asbestos exceeded the sales, but during the past two years the sales have greatly increased and stocks held in producers hands have been materially reduced. Returns for the year 1912 show a total output of 102,759 tons, as compared with 96,302 tons in 1911, and 100,430 tons in 1910. The sales (not including asbestic) in 1912 were 111,561 tons, valued at $3,117,572, or an average of $27.95 per ton, as compared with sales of 101,393 tons, valued at $2,922,062, or an average of $28.82 per ton, in 1911, and 77,508 tons, valued at $2,555,974, or an average of $32.98 per ton, in 1910. Sales of asbestic in 1912 were 24,740 tons, valued at $19,707, or an average of 80 cents per ton, and in 1911, 26,021 tons, valued at $21,046, or an average of 81 cents per ton. Stocks of asbestos on hand December 31, 1912, were reported as 23,288 tons, valued at $1,083,202, or an average of $46.51 per ton, as compared with stocks of 34,567 tons, valued at $1,509,101, or an average of $43.65 per ton, on December 31, 1911, and stocks of 41,903 tons, valued at $1,943,846, on December 31, 1910.

The average number of men employed in mines and mills during 1912 was 2,955, at a wage cost of $1,401,653.

The total quantity of asbestos rock sent to mills during 1912 is reported as 1,630,743 tons, which, with a mill production of 98,010 tons, shows an average estimated recovery of 6·01 per cent.

In 1911, 1,484,691 tons of asbestos rock were sent to the mills, with a recovery of 91,237 tons of asbestos, or an average of 6·14 per cent.

Statistics showing the output, sales, and stocks on hand on December 31, by grades, are given for the past three years in the next following tables.

In the absence of a uniform classification of asbestos of different grades, the divisions here shown have been adopted on a valuation basis: crude No. 1 comprising material valued at $200 and upwards, and crude No. 2 under $200;

[1] "Chrysotile-Asbestos: Its Occurrence, Exploitation, Milling, and Uses," by Fritz Cirkel, Mines Branch, Dept. of Mines, Ottawa, 1910.

mill stock No. 1 includes stock valued at from $30 to $100; No. 2, from $15 to $30, and No. 3, under $15.

Statistics of production given in Tables 2 and 3 represent sales or shipments.

Output, Sales, and Stocks of Asbestos in 1912.

	Output.	Sales.			Stock on hand, December 31.		
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
			$	$ cts.		$	$ cts.
Crude, No. 1	1,458¾	1,937·9	510,154	263 25	866·8	221,289	255 29
" No. 2	3,290	3,725	380,197	102 07	2,789	303,063	108 66
Mill stock, No. 1	21,522	21,679	945,994	43 64	8,059	379,904	47 14
" No. 2	36,872	44,819	895,322	19 97	6,301	132,970	21 10
" No. 3	39,616	39,400	385,905	9 79	5,272	45,976	8 72
Total, Asbestos	102,758¾	111,560·9	3,117,572	27 95	23,287·8	1,083,202	46 51
Asbestic		24,740	19,707	0 80			

Output, Sales, and Stocks of Asbestos in 1911.

	Output.	Sales.			Stock on hand Dec. 31	
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.
			$	$		$
Crude, No. 1	1,467·9	1,301·4	342,855	263·45	1,256	327,508
" No. 2	3,594·5	3,562·7	402,107	112·87	3,222·7	404,198
Mill stock, No. 1	20,379	18,315	916,678	50·05	8,471	380,570
" No. 2	39,289	47,826	991,370	20·73	17,794	365,458
" No. 3	31,572	30,388	269,052	8·85	3,823	31,367
Total asbestos	96,302·4	101,393·1	2,922,062	28·82	34,566·7	1,509,101
Asbestic		26,021	21,046	0·81		

Output, Sales, and Stocks of Asbestos in 1910.

	Output.	Sales.			Stock on hand Dec. 31.	
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.
			$	$		$
Crude, No. 1	2,181	1,817	471,675	259 58	1,702	446,675
" No. 2	3,268	1,923	192,833	100 28	3,219	440,571
Mill stock, No. 1	16,720	13,480	735,244	54 54	6,978	398,895
" No. 2	56,395	43,414	1,013,251	23 34	26,613	628,528
" No. 3	21,866	16,874	142,971	8 47	3,391	29,177
Total asbestos	100,430	77,508	2,555,974	32 98	41,903	1,943,846
Asbestic	.....	24,707	17,629	0 71	.....	.....

The shipments of crude asbestos and mill stock since 1903 are separately shown in Table 2. The record indicates that during the past ten years there has been but little variation in the quantity shipped as crude, the average price of which, however, nearly doubled between 1903 and 1908.

The shipments of mill stock, on the other hand, have been increased from 27,995 tons in 1903 to 105,898 tons in 1912, the average price per ton during that period having varied between the limits of $19.79 and $29.84.

ASBESTOS.—TABLE 2.

Annual Production of Crude and Mill Stock, 1903-12.

Calendar Year.	Crude.			Mill stock.		
	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.
		$	$ cts.		$	$ cts.
1903	3,134	361,867	115 46	27,995	554,021	19 79
1904	4,410	534,874	121 28	31,201	678,628	21 75
1905	3,767	472,859	125 53	46,902	1,013,500	21 61
1906	3,841	635,345	165 41	56,920	1,401,083	24 61
1907	4,327	830,632	191 97	57,803	1,654,135	28 62
1908	3,345·5	669,232	200 04	63,202	1,886,129	29 84
1909	3,074·3	575,510	187 20	60,275	1,709,077	28 35
1910	3,740	664,508	177 66	73,768	1,891,466	25 64
1911	4,864·1	744,962	153 15	96,529	2,177,100	22 55
1912	5,662·9	890,351	157 23	105,898	2,227,221	21 03

ASBESTOS.—TABLE 3.

Annual Production of Asbestos and Asbestic.

Calendar Year	Asbestos.			Asbestic.		
	Short tons.	Value.	Per ton.	Short tons.	Value.	Per ton.
		$	$ cts.		$	$ cts.
1880 (a)	380	24,700	65 00			
1881 (a)	540	35,100	65 00			
1882 (a)	810	52,650	65 00			
1883 (a)	955	68,750	71 99			
1884 (a)	1,141	75,097	65 82			
1885 (a)	2,440	142,441	58 38			
1886 (a)	3,458	206,251	59 64			
1887	4,619	226,976	48 92			
1888	4,404	255,007	57 90			
1889	6,113	426,554	69 78			
1890	9,860	1,260,240	127 81			
1891	9,279	999,878	107 76			
1892	6,082	390,462	64 20			
1893	6,331	310,156	86 81			
1894	7,630	420,825	55 15			
1895	8,756	368,175	42 05			
1896	10,892	423,066	38 84	1,358	6,790	5 00
1897	13,202	399,528	29 99	17,240	45,840	2 66
1898	16,124	475,131	29 47	7,661	16,066	2 10
1899	17,790	468,635	26 34	7,746	17,214	2 22
1900	21,621	729,886	33 76	7,520	18,545	2 47
1901	32,892	1,248,645	37 96	7,325	11,114	1 52
1902	30,219	1,126,688	37 28	10,197	21,631	2 20
1903	31,129	915,888	29 42	10,548	13,869	1 31
1904	35,611	1,213,502	34 08	12,854	12,856	1 00
1905	50,669	1,486,359	29 33	17,594	16,900	0 96
1906	60,761	2,036,428	33 52	21,424	23,715	1 11
1907	62,130	2,484,767	39 99	28,296	20,275	0 72
1908	66,548	2,555,361	38 40	24,225	17,974	0 74
1909	63,349	2,284,587	36 06	23,951	17,188	0 72
1910	77,508	2,555,974	32 98	24,707	17,629	0 71
1911	101,393	2,922,062	28 82	26,021	21,046	0 81
1912	111,561	3,117,572	27 95	24,740	19,707	0 80

(a) Figures of export taken as production.

EXPORTS AND IMPORTS.

Supplying, as it does, the greater part of the world's demand, the Canadian output of asbestos finds a wide distribution.

Exports to Great Britain, United States, Germany, and other countries during the past seven calendar years, as compiled from the reports of the Customs Department, are shown in Table 4, and the total exports each year since 1892, in Table 5.

Attention has been called to the fact that these figures apparently do not accurately indicate the destination of exports; that Germany, for instance, is a much larger consumer of Canadian asbestos than is shown by these figures. This may possibly be explained by the fact that frequently raw materials of this kind are sold in bond to brokers or dealers in New York, and by them resold to consumers in other countries. The record, according to British Trade

returns, also shows a smaller import from Canada into the United Kingdom than the exports to Great Britain as shown in Canadian statistics. It is, therefore, possible that material shown as exported to Great Britain finds its ultimate destination elsewhere.

The exports in 1912 were reported as 88,008 tons, valued at $2,349,353, or an average of $26.69 per ton, and include: 9,387 tons, valued at $208,464, exported to Great Britain; 69,222 tons, valued at $1,871,770, to the United States; 1,155 tons, valued at $43,898, to Germany; 4,738 tons, valued at $119,714, to Belgium; 2,073 tons, valued at $71,963, to France; and 1,433 tons, valued at $33,544, to other countries.

ASBESTOS.—TABLE 4.

Exports of Canadian Asbestos by Countries, 1903-1912.

Calendar Year.	To Great Britain.		To United States.		To Germany.		To other countries.		Total exports.		Average per ton.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	
		$		$		$		$		$	$ cts.
1903	2,743	40,120	24,252	714,781	1,429	25,150	3,356	110,982	31,780	891,033	28 04
1904	6,602	210,175	25,957	762,300	2,463	94,141	2,250	94,271	37,272	1,160,887	31 15
1905	9,731	305,056	29,696	811,080	2,969	100,061	4,635	169,918	47,031	1,386,115	29 47
1906	9,435	318,313	39,767	1,058,513	3,654	82,117	6,998	230,314	59,854	1,689,257	28 22
1907	5,432	200,909	44,861	1,312,582	225	8,195	6,235	147,613	56,753	1,669,299	29 41
1908	5,221	288,290	50,503	1,314,337	341	9,470	5,145	230,666	61,210	1,842,763	30 11
1909	5,227	204,978	45,675	1,243,795	693	17,706	5,376	263,378	56,971	1,729,857	30 36
1910	6,700	280,452	57,939	1,505,477	440	15,925	6,406	306,778	71,485	2,108,632	29 50
1911	7,511	192,993	62,551	1,732,541	361	20,494	4,697	121,231	75,120	2,067,259	27 52
1912	9,387	208,464	69,222	1,871,770	1,155	43,898	8,244	225.221	88,008	2,349,353	26 69

ASBESTOS.—TABLE 5.

Annual Exports, Calendar Years 1892-1912.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		$	$ cts.			$	$ cts.
1892.....	5,380	373,103	69 35	1902.....	31,074	995,071	32 02
1893.....	5,917	338,707	57 24	1903.....	31,780	891,033	28 04
1894.....	7,987	477,837	59 82	1904.....	37,272	1,160,887	31 14
1895.....	7,442	421,690	56 66	1905.....	47,031	1,386,115	29 47
1896.....	11,342	567,967	47 96	1906.....	59,854	1,689,257	28 22
1897.....	15,570	473,274	30 40	1907.....	56,753	1,669,299	29 41
1898.....	15,346	494,012	32 19	1908.....	61,210	1,842,763	30 11
1899.....	17,883	473,148	26 46	1909.....	56,971	1,729,857	30 36
1900.....	16,993	693,105	39 61	1910.....	71,485	2,108,632	29 50
1901.....	32,269	1,069,918	33 16	1911.....	75,120	2,067,259	27 52
				1912.....	88,008	2,349,35 3	26 69

Although the chief source for the raw material, Canada does not yet manufacture all the asbestos goods required for home consumption. There is, therefore, a considerable importation of asbestos goods under the import classifica-

tion, "Asbestos in any form other than crude, and all manufactures of," the duty being 25 per cent.

The total value of these imports during the calendar year 1912 was $461,449, as against $319,815 in 1911, $230,489 in 1910, and $196,742 in 1909.

The annual value of the imports during the fiscal year is shown in Table 6.

ASBESTOS.—TABLE 6.

Imports, Fiscal Years 1885-1912.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1885	674	1894	20,021	1903	75,465
1886	6,831	1895	26,094	1904	83,827
1887	7,836	1896	23,900	1905	116,836
1888	8,793	1897	19,032	1906	137,974
1889	9,943	1898	26,389	1907 (9 mos.)	127,509
1890	13,250	1899	32,607	1908	190,980
1891	13,208	1900	43,455	1909	180,598
1892	14,090	1901	50,829	1910	198,710
1893	19,181	1902	52,464	1911	254,331
				1912*	349,538

* Asbestos in any form other than crude, and all manufactures of. Duty 25 per cent.

The imports of asbestos into the United Kingdom will be of interest as indicating the market in that country and the sources from which it is supplied.

These imports and the sources of supply are shown as follows:—

Imports of Raw Asbestos into the United Kingdom, 1910, 1911, and 1912.

Country.	1910.		1911.		1912.	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
		$		$		$
Russia	961	119,267	1,548	202,049	2,170	267,477
Germany	354	62,011	198	26,888	203	24,903
Portuguese East Africa	260	35,016	300	23,988	32	1,465
Italy	167	21,779	53	7,042	44	7,076
United States	1,097	35,814	565	17,943	1,201	30,100
Other foreign countries	82	7,086	123	14,036	117	7,762
Total foreign	2,921	280,573	2,787	291,951	3,767	338,783
Cape of Good Hope	717	54,000	1,187	83,307	692	47,596
Natal	56	7,091	67	4,395	.....	.....
Canada	4,347	210,873	3,683	169,589	4,146	195,426
Other British possessions	14	1,762	2	34	15	852
Total British possessions	5,164	273,726	4,939	257,325	4,853	243,874
Grand total	8,085	554,299	7,726	549,276	8,620	582,657

Following is a list of the principal asbestos companies operating during 1912:—

Operator and head office address.	Name of mine.	Location.		Mine office.
		Township.	Range and lot.	
Asbestos Corporation of Canada, Ltd., 263 St. James, Montreal, Que.	Kings	Thetford	V, VI; 26	Thetford Mines.
	Beaver	Coleraine	C, 31, 32	" "
	British Canadian	"	Black Lake	Black Lake.
	Standard	"	"	"
Black Lake Asbestos and Chrome Co., Ltd., 60 Victoria, Toronto, Ont.	Union	"	B W ½, 27, W ½, 28.	"
	Union	"	B E ½, 27, E ½ 28.	"
Johnson's Asbestos Co., Ltd., Thetford Mines, Que.	Johnson	Ireland	VI, 27	"
	Johnson	Coleraine	B, 27	Thetford Mines.
Bell Asbestos Mines, Thetford Mines, Que.	Bell	Thetford	V, E ½, 27	
The Martin Bennett Asbestos Mine, Ltd., Thetford Mines, Que.		"	V, 27	" "
The Jacobs Asbestos Manufacturing Co., of Thetford, Ltd., 282 St. Catherine, Montreal, Que.	Jacobs	"	VI, 28	" "
The Beaudoin and Audet Asbestos Co., Robertsonville, Que.	B. and A.	"	VI, 9	Robertsonville.
The Berlin Asbestos Co., Berlin, Ont.		"	V, E ½, 2	Rumpleville.
The Beaver Asbestos Co., Ltd., Walkerville, Ont.	Beaver	Coleraine Canton.	IV, 5, 6	(Developing.)
Asbestos and Asbestic Co., Ltd., Asbestos, Que.	Jeffrey	Shipton	III, 8, 9	Asbestos.

CHROMITE.

Chromic iron ores are found in Canada in the Coleraine and Black Lake districts of the Eastern Townships, Province of Quebec.

No productive mining operations have been undertaken during the past three years, but small shipments were made from stock during 1910 and 1911.

The companies chiefly interested in the deposits are:—

The Black Lake Asbestos and Chrome Co., Ltd., Black Lake, Que.

The Dominion Chrome Co., Ltd., 86 Notre Dame street W., Montreal.

Statistics of production in past years are shown in Table 1. Imports of chrome into the United States from Canada in Table 2, and imports into the United States from all sources during 1911 and 1912 (fiscal years) in Table 3.

CHROMITE.—TABLE 1.

Annual Production in Canada, 1886-1912.

Calendar Year.	High grade.			Low grade.			Total.		
	Short tons.	Value.	Average price.	Short tons.	Value.	Average price.	Short tons.	Value.	Average price.
		$	$ cts.		$	$ cts.		$	$ cts.
1886	.....	.....	.....	.....	.....	.....	60	945	15 75
1887	.....	.....	.....	.....	.....	.....	38	570	15 00
1888 to 1893	.....	.....	.....	.....	.....	.....	.....	No output.	.....
1894	.....	.....	.....	.....	.....	.....	1,000	20,000	20 60
1895	.....	.....	.....	.....	.....	.....	3,177	41,300	13 00
1896	.....	.....	.....	.....	.....	.....	2,342	27,004	11 53
1897	.....	.....	.....	.....	.....	.....	2,637	32,474	12 31
1898	.....	.....	.....	.....	.....	.....	2,021	24,252	12 00
1899	.....	.....	.....	.....	.....	.....	2,010	21,842	10 86
1900	.....	.....	.....	.....	.....	.....	2,335	27,000	11 56
1901	.....	.....	.....	.....	.....	.....	1,274	16,744	13 14
1902	.....	.....	.....	.....	.....	.....	900	13,000	14 44
1903	2,842	44,280	15 58	667	6,849	10 27	3,509	51,129	14 57
1904	4,650	53,976	16 08	1,424	13,170	9 25	6,074	67,146	11 05
1905	.....	.....	.....	8,575	93,301	10 88	8,575	93,301	10 88
1906	4,975	57,484	11 55	4,060	34,375	8 47	9,035	91,859	10 17
1907	3,545	41,931	11 83	3,651	30,970	8 48	7,196	72,901	10 13
1908	3,472	45,300	13 05	3,753	36,708	9 78	7,225	82,008	11 35
1909	54	720	13 33	2,416	25,884	10 71	2,470	26,604	10 77
1910	25	430	17 20	274	3,304	12 06	299	3,734	12 49
1911	137	2,327	16 98	20	260	13 00	157	2,587	16 48
1912	.....	.....	.....	.....	.....	.....	.....	.....	.....

Imports of Chromite into the United States from Canada.[1]

Twelve months ending June 30.	Short tons.	Value.	Twelve months ending June 30.	Short tons.	Value.
		$			$
1904	2,790	36,322	1909	4,455	50,042
1905	6,489	70,934	1910	269	2,892
1906	9,951	107,580	1911	17	150
1907	6,179	66,115	1912	14½	258
1908	6,505	69,009			

[1]The Foreign Commerce and Navigation of the United States, Washington, long ton in original changed to short ton.

CHROMITE—TABLE 2.

Imports into the United States, Years Ending June 30, 1911 and 1912, in Tons of 2,240 Pounds.

	1911.			1912.		
	Long tons.	Value.	Per ton.	Long tons.	Value.	Per ton.
		$	$ cts.		$	$ cts.
Portugal				15,455	188,577	12 20
Canada	15	150	10 00	13	258	20 00
British South Africa	3,400	41,365	12 17			
French Oceania	8,957	114,239	12 75	6,600	41,399	6 27
Greece	4,500	48,188	10 71	7,540	70,595	9 36
British India				1,000	6,600	6 60
Japan	449	3,680	8 20	190	1,381	7 27
Netherlands				25	387	15 48
Portuguese Africa	16,318	198,538	12 17	5,100	62,048	12 17
Turkey in Asia	4,500	31,121	6 92	11,030	71,214	6 46
United Kingdom				54	676	12 52
Total	38,139	437,281	11 47	47,007	443,135	9 43

[1] The Foreign Commerce and Navigation of the United States.

COAL.

The production of coal in Canada in 1912 exceeded that of any previous year, the total production being reported as 14,512,829 short tons valued at $36,019,044 and constituting nearly 27 per cent of the total value of the mineral production of Canada during the year. The production was obtained by about 244 operating companies employing an average of 27,581 men at a wage cost of $20,784,843. Compared with 1911, in which year the production was 11,323,388 short tons valued at $26,467,646, an increase is shown of 3,189,441 tons, or 28 per cent in quantity and $9,551,398 or 36 per cent in total value.

The largest previous year's output was in 1910 when the production was 12,909,152 short tons valued at $30,909,779, compared with which 1912 shows an increase of 1,603,677 tons or 12 per cent and $5,109,265 or over 11·6 per cent in total value.

In contrast to 1911 there were no very serious interruptions to mining operations during 1912 with the exception of the labour troubles in the mines of the Canadian Collieries, Limited, on Vancouver island, during the latter part of the year, and on account of which the production in British Columbia was somewhat less than might otherwise have been expected.

The character of the coal mined in Canada is chiefly bituminous, although anthracite is obtained from one mine in Alberta and a considerable tonnage of lignite is mined in Alberta and Saskatchewan.

The term production in the tables and the text is used to represent the amount of coal actually sold or used by the producer as distinguished from the term output which is applied to the total coal extracted from the mine and which in some cases includes coal lost or unsaleable or coal carried into stock on hand at the end of the year.

Statistics of the production by provinces in 1912 are shown in Table 1 and of the production during 1909-10-11 in Table 2.

In Nova Scotia there was an increased production in 1912 of 779,468 tons or 11 per cent, over 1911. This Province produced nearly 54 per cent of the total in 1912 as against 62 per cent in 1911. The production in New Brunswick is quite small in proportion to the other provinces and amounted to only 44,780 tons in 1912, a decrease of nearly 20 per cent from 1911. In the west for the first time on record Alberta has the largest production, amounting to 3,240,577 tons, the production in British Columbia being 3,208,997 tons; but, as already stated, the latter Province would have had a higher production had

labour troubles not prevented a normal output at the mines of the Canadian Collieries, Limited. The production in Alberta is the highest recorded for that Province, while in British Columbia the greatest production was attained in 1910. Large decreases were shown in these Provinces in 1911 and correspondingly large increases in 1912 due to the abnormal conditions of miners out on strike and consequent cessation of work during a large part of 1911.

COAL.—TABLE 1.

Production of Coal by Provinces, 1912.

Province.	Average No. of men employed.	Wages paid.	Production of coal.		Average value per ton.	Per cent of total quantity.
			Tons.	Value.		
		$		$	$ cts.	
Nova Scotia.....	13,736	8,893,697	7,783,888	17,374,750	2·233	53·63
British Columbia...	6,633	6,125,239	3,208,997	10,028,116	3·125	22·12
Alberta..	6,648	5,474,192	3,240,577	8,113,525	2·503	22·33
Saskatchewan.....	374	213,690	225,342	368,135	1·633	1·55
New Brunswick....	144	50,000	44,780	89,560	2·000	0·31
Yukon Territory...	46	28,025	9,245	44,958	4·863	0·06
	27,581	20,784,843	14,512,829	36,019,044	2·481	100·00

COAL.—TABLE 2.

Production by Provinces, 1909-10-11, in Tons of 2,000 lbs.

Province.	1909.		1910.		1911.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Nova Scotia.....	5,652,089	$11,354,643	6,431,142	$12,919,705	7,004,420	$14,071,379
British Columbia..	2,606,127	8,144,147	3,330,745	10,408,580	2,542,532	7,945,413
Alberta.....	1,994,741	4,838,109	2,894,469	7,065,736	1,511,036	3,979,264
Saskatchewan.....	192,125	296,339	181,156	293,923	206,779	347,248
New Brunswick...	49,029	98,496	55,455	110,910	55,781	111,562
Yukon Territory...	7,364	49,502	16,185	110,925	2,840	12,780
Total.....	10,501,475	24,781,236	12,909,152	30,909,779	11,323,388	26,467,646

Comparison of Production 1910 with 1911 and 1911 with 1912.

Province.	(i) Increase or (d) Decrease.					
	Years 1910 and 1911.			Years 1911 and 1912.		
		Tons.	Per cent.		Tons.	Per cent.
Nova Scotia	(i)	573,278	8·91	(i)	779,468	11·13
British Columbia	(d)	788,213	23·66	(i)	666,465	26·21
Alberta	(d)	1,383,433	47·79	(i)	1,729,541	114·46
Saskatchewan	(i)	25,623	14·14	(i)	18,563	8·98
New Brunswick	(i)	326	0·59	(d)	11,001	19·72
Yukon Territory	(d)	13,345	82·45	(i)	6,405	225·00
Total for Canada	(d	1,585,764	12·28	(i)	3,189,441	28·04

The Province of Nova Scotia in 1912 produced nearly 54 per cent of the total Canadian production, British Columbia 22·1 per cent, Alberta 22·3 per cent, and Saskatchewan 1·5 per cent. The relative importance of the different provinces as coal producers for a number of years past is indicated in the next table, in which is shown the proportional contributions of each province to the total tonnage of coal produced in Canada. The coal-fields on the Atlantic seaboard still continue to produce more than half the total, although in 1910 the combined output of the western provinces was only a little less than 50 per cent of the total.

Province.	1874.	1890.	1900.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
	%	%	%	%	%	%	%	%	%	%	%	%	%
Nova Scotia, New Brunswick	91	71	62·9	71·3	68·0	65·5	64·07	60·79	61·40	54·29	50·25	62·35	53·94
Saskatchewan*	.....	.....	0·7	1·5	1·5	1·2	1·11	1·44	1·37	1·83	1·40	1·83	1·55
Alberta*	.....	4	5·4	6·2	8·0	10·8	12·77	15·14	15·42	18·99	22·42	13·34	22·33
British Columbia	8	25	31·0	21·0	22·5	22·4	21·98	22·50	21·77	24·82	25·80	22·46	22·12
Yukon Territory	.....	.....	.....	.....	.....	0·1	0·07	0·13	0·04	0·07	0·13	0·03	0·06

* Alberta and Saskatchewan were established as provinces on September 1, 1905. For the purpose of comparison, the coal production during the years previous to that date has been separated according to the present boundaries of these Provinces.

Statistics of the distribution of the coal production of Canada in 1912 given in following tables show 10,572,365 tons reported as sold for consumption in Canada, 1,537,585 tons sold for export to the United States, and 314,410 tons, sold for export to other countries, or total sales of 12,424,360 tons; 870,885 tons were used by colliery operators in the manufacture of coke, in steel plants and in brick plants, while 1,217,584 tons were used in the operation of collieries and by workmen. Of the coal thus disposed of 32,673 tons were derived from

stock carried forward from 1911. Returns as to the amount of coal lost due to breakage, washing, etc., are very incomplete, but 167,291 tons were thus reported bringing the total 'output' of coal up to 14,647,447 tons.

Notwithstanding Canada's large coal resources the total domestic production (including that exported) was equivalent in 1912 to only about 54 per cent of the total consumption, there having been imported for home consumption during 1912, 14,595,810 tons. The total consumption of coal as shown in subsequent tables was 26,934,800 tons, or an average of about 3·644 tons per capita, while the production averaged about 1·957 tons per capita of population.

The principal coal-fields are located on the extreme east and in the far west, while the central Provinces of Ontario and Quebec, which contain the great bulk of the population, are without coal deposits. Nova Scotia coal is largely consumed within the Province and also finds a considerable market in Quebec. A little less than 9 per cent of the coal production of this Province was reported as sold for export in 1912. The market in Ontario is almost altogether supplied, and that of Quebec province to a lesser degree, by coal imported from the nearer fields of the adjacent states of the United States. There are no anthracite coals in eastern Canada, and our requirements of this fuel have to be met entirely by imports from Pennsylvania. Manitoba is also supplied largely by importations from the United States.

The Saskatchewan production finds a local market within the Province and also in Manitoba.

Of the Alberta production about 91·8 per cent in 1912 was used by collieries or sold for consumption in Canada chiefly within the Province; 2·8 per cent was sold for export and 5·3 per cent used for making coke which was marketed in British Columbia and in the United States. British Columbia is the largest producer of coal for export. In 1912 about 52·4 per cent of the production in this Province was used by the collieries or sold for home consumpton; 33·7 per cent was sold for export, and 13·8 per cent used in making coke.

Production and Distribution of Coal Mined, by Provinces, 1912.

—	Nova Scotia.	New Brunswick.	Saskatchewan.	Alberta.	Yukon.	British Columbia.	Total.
Sales in Canada	6,133,348	42,780	215,796	2,772,374	8,053	1,410,014	10,572,365
Sales for export to U. S.	482,597	.....	.....	93,126	.....	961,862	1,537,585
Sales for export to other countries	193,274	.....	.....	.....	.....	121,136	314,410
Total sales	6,799,219	42,780	215,796	2,865,500	8,053	2,493,012	12,424,360
Used by producers in making coke, steel, brick, etc.	253,354	.....	2,048	170,818	.....	444,665	870,885
Used by producers for colliery consumption and workmen	731,315	2,000	7,498	204,259	1,192	271,320	1,217,584
Total used	984,669	2,000	9,546	375,077	1,192	715,985	2,088,469
Production*	7,783,888	44,780	225,342	3,240,577	9,245	3,208,997	14,512,829
Stock on hand Jan. 1	211,089	.....	.....	29,307	.....	74,346	314,742
" Dec. 31	176,509	.....	.....	51,060	.....	54,500	282,069
Difference	— 34,580	.....	.....	+ 21,753	.....	— 19,846	— 32,673
Losses due to breakage or other causes	85,416	.....	6,892	63,908	.....	11,075	167,291
Total output	7,834,724	44,780	232,234	3,326,238	9,245	3,200,226	14,647,447

* Production is obtained by adding coal sold and coal used.

Production and Distribution of Coal Mined, by Provinces, 1911.

—	Nova Scotia.	New Brunswick.	Saskatchewan.	Alberta.	Yukon.	British Columbia.	Total.
Sales in Canada	5,462,828	53,781	198,768	1,304,778	2,840	1,536,957	8,559,952
Sales for export to U. S.	385,095	.....	.....	40,723	.....	642,754	1,068,572
Sales for export to other countries	236,609	.....	.....	161	.....	43,465	280,235
Total sales	6,084,532	53,781	198,768	1,345,662	2,840	2,223,176	9,908,759
Used by producers in making coke	273,548	.....	.....	61,591	.....	117,215	452,354
Used by producers for colliery consumption and workmen	646,340	2,000	8,011	103,783	.....	202,141	962,275
Total used	919,888	2,000	8,011	165,374	.....	319,356	1,414,629
Production ‡	7,004,420	55,781	206,779	1,511,036	2,840	2,542,532	11,322,388
Stock on hand Jan. 1	173,164	.....	.....	10,675	.....	81,207	265,046
" Dec. 31	211,338	.....	.....	15,773	.....	80,644	307,755
Difference	+ 38,174	.....	.....	+ 5,098	.....	- 563	+ 42,709
Losses due to breakage or other causes	82,957	.....	10,414	49,796	.....	39,400	182,567
Total output	7,125,551	55,781	217,193	1,565,930	2,840	2,581,369	11,548,664

‡ Production is obtained by adding coal sold and coal used.

Distribution of Coal Mined in Canada During the Years 1908-9-10.

—	1908.	1909.	1910.
Sales in Canada	7,715,203	7,468,880	8,956,450
Sales for export to United States	1,218,656	1,173,772	1,847,943
" other countries	297,291	171,388	291,273
Total sales	9,231,150	8,814,040	11,095,666
Used by producers for the manufacture of coke	708,674	752,976	759,703
" colliery consumption and workmen	946,487	934,459	1,053,783
Production	10,886,311	10,501,475	12,909,152
Stock on hand Jan. 1	183,443	202,432	200,019
" Dec. 31	230,335	219,569	263,666
Difference	+ 46,892	+ 17,137	+ 63,647
Loss due to washing, breakage, or other causes	157,610	154,162	243,716
Total output	11,090,813	10,672,774	13,216,515

Statistics of the annual production of coal in Canada since 1785 are shown in Table 3. The total production from 1785 to 1912 has been 197,951,420 tons, of which 130,546,503 tons or 65·9 per cent are to be credited to Nova Scotia and 115,858, 438 tons or 23·2 per cent to British Columbia.

COAL.—TABLE 3.

Annual Production Showing the Increase or Decrease Each Year.

Year.	Tons.	Value.	Average value per ton.	Increase (i) or decrease (d) in tonnage.	Increase (i) or decrease (d) per cent.
		$	$		
1785 to 1873	*8,591,150				
1874	1,063,742	1,763,423	1 66		
1875	1,039,974	1,747,016	1 68	(d) 23,768	(d) 2·2
1876	994,762	1,729,546	1 74	(d) 45,212	(d) 4·3
1877	1,036,670	1,794,415	1 73	(i) 41,908	(i) 4·2
1878	1,089,744	1,941,285	1 78	(i) 53,074	(i) 5·1
1879	1,126,497	2,050,639	1 82	(i) 36,753	(i) 3·4
1880	1,482,714	2,657,194	1 79	(i) 356,217	(i) 31·6
1881	1,537,106	2,688,621	1 75	(i) 54,392	(i) 3·7
1882	1,848,148	3,248,446	1 76	(i) 311,042	(i) 0·2
1883	1,818,684	3,109,635	1 71	(d) 29,464	(d) 21·6
1884	1,984,959	3,593,831	1 81	(i) 166,275	(i) 9·1
1885	1,920,977	3,417,807	1 78	(d) 63,982	(d) 3·2
1886	2,116,653	3,739,840	1 77	(i) 195,676	(i) 10·2
1887	2,429,330	4,388,206	1 81	(i) 312,677	(i) 14·8
1888	2,602,552	4,674,140	1 80	(i) 173,222	(i) 7·1
1889	2,658,303	4,894,287	1 84	(i) 55,751	(i) 2·1
1890	3,084,682	5,676,247	1 84	(i) 426,379	(i) 16·0
1891	3,577,749	7,019,425	1 96	(i) 493,067	(i) 16·0
1892	3,287,745	6,363,757	1 94	(a) 290,004	(d) 8·1
1893	3,783,499	7,359,080	1 95	(i) 495,754	(i) 15·1
1894	3,847,070	7,429,468	1 93	(i) 63,571	(i) 1·7
1895	3,478,344	6,739,153	1 94	(d) 368,726	(d) 9·6
1896	3,745,716	7,226,462	1 93	(i) 267,372	(i) 7·7
1897	3,786,107	7,303,597	1 93	(i) 40,391	(i) 1·1
1898	4,173,108	8,224,288	1 97	(i) 387,001	(i) 10·2
1899	4,925,051	10,283,497	2 09	(i) 751,943	(i) 18·0
1900	5,777,319	13,742,178	2 38	(i) 852,268	(i) 17·3
1901	6,486,325	12,699,243	1 96	(i) 709,006	(i) 12·3
1902	7,466,681	15,210,877	2 04	(i) 780,356	(i) 15·1
1903	7,960,364	15,942,833	2 00	(i) 493,683	(i) 6·6
1904	8,254,595	16,592,231	2 01	(i) 294,231	(i) 3·7
1905	8,667,948	17,520,263	2 02	(i) 413,353	(i) 5·0
1906	9,762,601	19,732,019	2 02	(i) 1,094,653	(i) 12·6
1907	10,511,426	24,381,842	2 32	(i) 748,825	(i) 7·7
1908	10,886,311	25,194,573	2 31	(i) 374,885	(i) 3·5
1909	10,501,475	24,781,236	2 36	(d) 384,836	(d) 3·5
1910	12,909,152	30,909,779	2 39	(i) 2,407,677	(i) 22·93
1911	11,323,388	26,467,646	2 34	(d) 1,585,764	(d) 12·28
1912	14,512,829	36,019,044	2 48	(i) 3,189,441	(i) 28·04

* The total production for the years 1785 to 1873 is made up as follows :—

Nova Scotia (1785 to 1873) ..... 8,053,670 tons of 2,000 pounds.
British Columbia (1836 to 1873)..... 537,480 " 2,000 "

EXPORTS AND IMPORTS.

The statistics of exports and imports of coal as given in tables following have been compiled from the reports of the Department of Customs. The total exports during 1912 were 2,127,133 tons valued at $5,821,593 or $2.74 per ton, as compared with exports in 1911 of 1,500,639 tons valued at $4,357,074 or $2.90 per ton, and exports in 1910 of 2,377,049 tons valued at $6,077,350 or $2·56 per ton. The exports during 1911 were unusually low, on account of the strike conditions in Alberta and British Columbia during that year.

The total imports during 1912 were 14,595,810 tons valued at $39,478,037, as compared with imports in 1911 of 14,558,892 tons valued at $39,292,591 and imports in 1910 of 10,597,982 tons valued at $28,450,001.

Statistics of exports during 1910-11-12, showing the principal countries of destination, are given in Table 4, and the annual exports since 1873 in Table 5.

COAL.—TABLE 4.

Exports of Coal Produced in Canada During 1910-11-12.

Exported to	1910.		1911.		1912.		
	Tons.	Value.	Tons.	Value.	Tons.	%	Value.
		$		$			$
Great Britain..	5,872	18,901	14,185	48,496	59,302	2·8	202,151
United States..	1,947,287	4,583,626	1,035,889	2,809,204	1,603,145	75·4	4,042,803
Newfoundland..	203,626	574,157	223,553	617,299	167,519	7·9	482,194
Other countries	220,264	900,666	227,012	882,075	297,167	13·9	1,094,445
Total.....	2,377,049	6,077,350	1,500,639	4,357,074	2,127,133	100·0	5,821,593

The United States is the principal market for Canadian coal exported, that country having taken about 75·4 per cent of the total exports in 1912. There were exported to Newfoundland 167,519 tons or 7·9 per cent of the total. Exports to other countries of 297,167 tons included 48,599 tons to Mexico and 37,985 tons to Australia. Smaller tonnages were also exported to Bermuda, St. Pierre, Cuba, Japan, and many other points.

COAL.—TABLE 5.

Annual Exports.

Calendar Year.	Produce of Canada.	Not the produce of Canada.	Calendar Year.	Produce of Canada.	Not the produce of Canada.
	Tons.	Tons.		Tons.	Tons.
1873	420,683	5,403	1893	960,312	102,827
1874	310,988	12,859	1894	1,103,694	89,786
1875	250,348	14,026	1895	1,011,235	96,836
1876	248,638	4,995	1896	1,106,661	116,774
1877	301,317	4,829	1897	986,130	101,848
1878	327,959	5,468	1898	1,150,029	99,189
1879	306,648	8,468	1899	1,293,169	101,004
1880	432,188	14,217	1900	1,787,777	62,776
1881	395,382	14,245	1901	1,573,661	53,894
1882	412,682	37,576	1902	2,090,268	23,453
1883	486,811	44,388	1903	1,954,629	27,138
1884	474,405	62,665	1904	1,557,412	27,308
1885	427,937	71,003	1905	1,635,287	86,792
1886	520,703	78,443	1906	1,835,041	44,758
1887	580,965	89,098	1907	1,894,074	101,778
1888	588,627	84,316	1908	1,729,833	102,071
1889	665,315	89,294	1909	1,588,099	161,098
1890	724,486	82,534	1910	2,377,049	159,859
1891	971,259	77,827	1911	1,500,639	133,943
1892	823,733	93,988	1912	2,127,133	46,706

Coal imported is subdivided into three classes: anthracite, including anthracite dust; bituminous round and run of mine; and bituminous slack such as will pass through a $\frac{3}{4}$" screen. The imports of anthracite in 1912 were 4,184,017 tons valued at $20,080,388, an average of $4.80 per ton, showing an increase of 163,440 tons over the 1911 imports. The imports of bituminous round and run of mine in 1912 were 8,491,840 tons valued at $16,846,727, an average of $1.98 per ton, showing a decrease of 413,975 tons from the imports in 1911. The imports of bituminous slack in 1912 were 1,919,953 tons valued at $2,550,922 or an average of $1.33 per ton, showing an increase of 287,453 tons or 17 per cent over the 1911 imports.

COAL.—TABLE 6,

Annual Imports of Coal into Canada.

Fiscal Year.	Bituminous coal.		Anthracite coal and anthracite dust.		Bituminous coal dust.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$
1880	457,049	1,220,761	516,729	1,509,960	3,565	8,877
1881	587,024	1,741,568	572,092	2,325,937	337	666
1882	636,374	1,992,081	638,273	2,666,356	471	900
1883	911,629	2,996,198	754,891	3,344,936	8,154	10,082
1884	1,118,615	3,613,470	868.000	3,831,283	12,782	14,600
1885	1,011,875	3,197,539	910,324	3,909,844	20,185	20,412
1886	930,949	2,591,554	995,425	4,028,050	36,230	36,996
1887	1,149,792	3,126,225	1,100,165	4,423,062	31,401	33,178
1888	1,231,234	3,451,661	†2,138,627	5,291,875	28,808	34.730
1889	1,248,540	3,255,171	1,291,705	5,199,481	39,980	47,139
1890	1,409,282	3,528,959	1,201,335	4.595,727	53,104	29,818
1891	1,598,855	4,060,896	1,399,067	5,224,452	60,127	36,130
1892	1,615,220	4,099,221	1,479,106	5,640,346	82,091	39,840
1893	1,603,154	3,967,764	1,500,550	6,355.285	109,585	44,474
1894	1,359,509	3,315,094	1,530,522	6,354,040	117,573	49,510
1895	1,444,928	3,321,387	1,404,342	5,350,627	181,318	52,221
1896	1,538,489	3,299,025	1,574,355	5,667,096	210,386	53,742
1897	1,543,476	3.254,217	1,457,295	5,695,168	225,562	59,609
1898	1,684,024	3,179,595	1,460,701	5,874,685	229,445	45,556
1899	2,171,358	3,691,946	1,745,460	6,490,509	276,547	44,717
1900	2,439,764	4,310,964	1,6?4,401	6,602,912	330,174	98,349
1901	2,516,392	4,956,025	1,933.283	7,923,950	414,432	275,559
1902	3,047,392	5,712,058	1,652,451	7,021,939	489,548	264,550
1903	3,511,412	7,776,717	1,456,713	7,028.664	550,883	420,317
1904	4,053,900	9,108,208	2,275,018	10,461,223	608,041	544,128
1905	4,176,274	8,002,896	2,604,137	12,093,371	650,261	343,456
1906	4,495,550	8,360,348	2,200,863	10,304,308	747,251	489,180
Calendar Year.	Bituminous round and run of the mine.				Bituminous slack such as will pass through a $\frac{3}{4}$" screen.	
1907	6,370,152	13,232,445	3,141,873	14,506,129	1,139,256	1,121,949
1908	6,025,574	12,516,748	3,160.110	14,478,536	1,111,811	1,35?,677
1909	5,625,063	11,455,818	3,017,844	13,906,152	1,230,017	1,469,889
1910	5,966,466	11,919,341	3,266,235	14,735,062	1,365,281	1,795,598
1911	8,905,815	18,407,603	4,020,577	18,794,192	1,632,500	2,090,796
1912	(a)8,491,840	16,846,727	(b) 4,184,017	20,080,388	(c) 1,919,953	2,550,922

(*a*). Duty, 53c. per ton. (*b*). Coal, anthracite, and anthracite coal dust; duty free. (*c*). Duty 14c. per ton.

† In the anthracite column the imports show a very considerable increase in 1888 over 1887, an increase of over 94 per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888, and 1889, were $4.02, $2.47, and $4.03 respectively. Although a duty of 50c. per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation report, no explanation is available.

The total consumption of coal in Canada during 1912 deduced from the records of production, exports, and imports was 26,934,800 tons, as compared with 24,247,698 tons in 1911, an increase of 2,687,102 tons or 11 per cent. Of the total consumption during the past year 12,385,696 tons or 46 per cent was domestic coal and 14,549,104 imported coal.

The per capita consumption in 1912, based on an estimate of the population made by the Census Office, was approximately 3·596 tons, as compared with a per capita consumption of 3·384 tons in 1911.

Consumption of Coal in Canada, 1911-1912.

	1911.		1912.	
	Tons.	Tons.	Tons.	Tons.
Production, Table 3	11,323,388		14,512,829	
Exports of Canada, Table 4	1,500,639		2,127,133	
Home consumption of Canadian coal		9,822,749		12,385,696
Imports, Table 6	14,558,892		14,595,810	
Exports not produce of Canada, Table 4	133,943		46,706	
Canadian consumption of imported coal		14,424,949		14,549,104
Total consumption of coal in Canada		24,247,698		26,934,800

COAL.—TABLE 7.

Annual Consumption of Coal in Canada.

Calendar Year.	Canadian.	Imported.	Total.	Percentage Canadian.	Percentage imported.	Consumption per capita.
	Tons.	Tons.	Tons.	%	%	Tons.
1886	1,595,950	1,884,161	3,480,111	45·9	54·1	0·758
1887	1,848,365	2,192,260	4,040,625	45·7	54·3	0·871
1888	2,013,925	3,314,353	5,328,278	37·8	62·2	1·137
1889	1,992,988	2,490,931	4,483,919	44·4	55·6	0·946
1890	2,360,196	2,581,187	4,941,383	47·8	52·2	1·031
1891	2,606,490	2,980,222	5,586,712	46·7	53·3	1·153
1892	2,464,012	3,082,429	5,546,441	44·4	55·6	1·133
1893	2,823,187	3,110,462	5,933,649	47·6	52·4	1·198
1894	2,743,376	2,917,818	5,661,194	48·5	51·5	1·130
1895	2,467,109	2,933,752	5,400,861	45·7	54·3	1·066
1896	2,639,055	3,206,456	5,845,511	45·1	54·9	1·140
1897	2,799,977	3,124,485	5,924,462	47·3	52·7	1·143
1898	3,023,079	3,274,981	6,298,060	48·0	52·0	1.200
1899	3,631,882	4,092,361	7,724,243	47·0	53·0	1·454
1900	3,989,542	4,361,563	8,351,105	47·8	52·2	1·561
1901	4,912,664	4,810,213	9,722,877	50·5	49·5	1·810
1902	5,376,413	5,165,938	10,542,351	51·0	49·0	1·927
1903	6,005,735	5,491,870	11,507,605	52·2	47·8	2·055
1904	6,697,183	6,909,651	13,606,834	49·2	50·8	2·346
1905	7,032,661	7,343,880	14,376,541	48·9	51·1	2·362
1906	7,927,560	7,398,906	15,326,466	51·7	48·3	2·425
1907	8,617,352	10,549,503	19,166,855	45·0	55·0	2·947
1908	9,156,478	10,195,424	19,351,902	47·3	52·7	2·820
1909	8,913,376	9,711,826	18,625,202	47·9	52·1	2·682
1910	10,532,103	10,438,123	20,970,226	50·2	49·8	2·960
1911	9,822,749	14,424,949	24,247,698	40·5	59·5	3·384
1912	12,385,696	14,549,104	26,934,800	46·0	54·0	3·596

Nova Scotia.

The production of coal in Nova Scotia in 1912 was reported as 7,783,888 tons, as compared with a production of 7,004,420 tons in 1911, showing an increase of 779,468 tons or 13 per cent. This is entirely bituminous coal and represents the output of 13 operating companies, one of which, the Dominion Coal Company, contributed about 64 per cent of the total.

Of the production in 1912, the quantity sold for consumption in Canada was 6,123,348 tons, while 482,597 tons were reported as sold for export to the United States and 193,274 tons sold for export to other countries; 731,315 tons were used for colliery consumption and by workmen and 253,354 tons were used by colliery operators in making coke and in steel making, etc. A considerable tonnage of coal sold for consumption in Canada was also used in making coke, the total tonnage used for coke making in the Province being 913,157 tons of domestic coal.

About 37 per cent only of the total sales were for consumption within the Province itself. Almost an equal amount, about 35 per cent, was sold for consumption in the Province of Quebec. The adjacent Provinces of New Brunswick and Prince Edward Island and the colony of Newfoundland took in 1912 about 15 per cent of the output.

There are five principal coal-fields in the Province, that affording the largest production being the Sydney coal-field in Cape Breton county. The production in Cape Breton county in 1912 was 5,968,922 tons or 76·6 per cent of the total; Pictou produced 785,547 tons or 11 per cent of the total, Cumberland county, 715,988 tons or 9 per cent of the total, and Inverness and other counties, 313,431 tons or 4 per cent of the total.

Annual statistics of the production of coal in Nova Scotia since 1872 are shown in Table 8, the figures being given in both long and short tons; the production by counties during the past six years is shown in Table 9. The record in each case covers the calendar year.

The statistics published by the Provincial Department of Mines cover the fiscal year ending September 30, and the details of colliery output during the year ending September 30, 1912, as published in the Provincial Mines Report, are shown below; while the colliery output during the last three fiscal years is shown in Table 10 and the distribution of coal sold during the same periods in Table 11.

Coal Production by Companies, Nova Scotia, 1912, in Tons of 2,000 lbs.

—	Total sales.	Used.			Production.[2]	Stocks.		Losses.[3]	Output.
		For coke.[1]	Colliery consumpt'n.	Workmen.		Jan. 1.	Dec. 31.		
Inverness Ry. and Coal Co	280,811	3,967	21,677	6,974	313,431	2,426	478	1,353	312,836
Sydney Coal Co., Ltd	5 643	.....	106	123	5,872	.....	.....	.....	5,872
Dominion Coal Co., Ltd	4,617,274	.....	324,273	51,556	4,993,103	169,062	160,777	70,043	5,054,861
Nova Scotia Steel and Coal Co., Ltd	648,572	226,294	41,405	18,404	934,675	1,583	8,960	459	942,511
The Colonial Coal Co., Ltd	31,242	1,741	1,655	634	35,272	255	397	636	36,050
Acadia Coal Co., Ltd	413,790	.....	84,913	12,782	511,485	26,593	3,041	.....	487,933
Intercolonial Coal Mining Co	206,750	21,350	38,314	7,648	274,062	3,893	784	6,793	277,746
Cumberland Ry. and Coal Co	389,194	.....	72,246	13,046	474,486	7,277	2,072	107	469,388
Maritime Coal, Railway, and Power Co.	149,066	.....	25,526	4,384	178,976	.....	.....	.....	178,976
Minudie Coal Co., Ltd	55,813	.....	4,305	1,344	61,462	.....	.....	6,025	67,487
Atlantic Grindstone Coal and Ry. Co.	168	.....	.....	.....	168	.....	.....	.....	168
Riverside mine (Eastern Coal Co., Ltd.)	896	.....	.....	.....	896	.....	.....	.....	896
	6,799,219	253,354	614,420	116,895	7,783,888	211,089	176,509	85,416	7,834,724

[1] Includes also coal used by producers for steel making and other purposes, and for making briquettes.
[2] Production is obtained by adding sales and coal used.
[3] Complete records of losses are not furnished by all producers.

Nova Scotia: Output, Sales, Colliery Consumption, and Production.

Calendar Year.	Output, tons, 2,240 lbs.	Sold or used, tons, 2,240 lbs.	Colliery consumption, tons, 2,240 lbs.	Production, tons, 2,240 lbs.	Output, tons, 2,000 lbs.	Sold or used, tons, 2,000 lbs.	Colliery consumption, tons, 2,000 lbs.	Production* tons, 2,000 lbs.	Price per ton, 2,240 lbs.	Value of production.
									$ c.	$
1872	880,950	785,914	110,341	896,255	986,664	880,224	123,582	1,003,806	1 75	1,568,446
1873	1,051,467	881,106	108,398	989,504	1,177,643	986,839	121,406	1,108,245	1 75	1,731,632
1874	872,720	749,127	119,582	868,709	977,446	839,022	133,932	972,954	1 75	1,520,240
1875	781,165	706,795	124,110	830,905	874,905	791,610	139,003	930,613	1 75	1,454,084
1876	709,646	634,207	113,788	747,995	794,804	710,312	127,443	837,755	1 75	1,308,991
1877	757,496	687,065	98,841	785,906	848,396	769,513	110,702	880,215	1 75	1,375,339
1878	770,603	693,511	88,627	782,138	863,075	776,732	99,262	875,994	1 75	1,368,741
1879	788,271	688,624	84,787	773,411	882,863	771,259	94,961	866,220	1 75	1,353,469
1880	1,032,710	954,659	96,831	1,051,490	1,156,635	1,069,218	108,451	1,177,669	1 75	1,840,108
1881	1,124,270	1,035,014	107,888	1,142,902	1,259,183	1,159,216	120,834	1,280,050	1 75	2,000,079
1882	1,365,811	1,250,179	111,381	1,361,560	1,529,708	1,400,200	124,747	1,524,947	1 75	2,382,730
1883	1,422,553	1,297,523	111,949	1,409,472	1,593,259	1,453,226	125,383	1,578,609	1 75	2,466,576
1884	1,389,295	1,261,650	116,769	1,378,419	1,556,011	1,413,048	130,781	1,543,829	1 75	2,412,233
1885	1,352,205	1,254,510	127,624	1,382,134	1,514,470	1,405,051	142,939	1,547,990	1 75	2,418,735
1886	1,502,611	1,373,666	142,421	1,516,087	1,682,924	1,538,506	159,512	1,698,018	1 75	2,653,152
1887	1,670,830	1,519,684	139,777	1,659,461	1,871,330	1,702,046	156,550	1,858,596	1 75	2,904,057
1888	1,776,128	1,576,692	157,443	1,734,135	1,989,263	1,765,895	176,336	1,942,231	1 75	3,034,735
1889	1,756,279	1,555,107	158,131	1,713,238	1,967,032	1,741,720	177,107	1,918,827	1 75	2,998,167
1890	1,984,001	1,786,111	161,240	1,947,351	2,222,081	2,000,444	180,589	2,181,033	1 75	3,407,864
1891	2,044,784	1,849,945	174,983	2,024,928	2,290,158	2,071,938	195,981	2,267,919	1 75	3,543,624
1892	1,942,780	1,752,934	175,092	1,928,026	2,175,913	1,963,286	196,103	2,159,389	1 75	3,374,046
1893	2,223,042	1,977,543	205,425	2,182,968	2,489,807	2,214,848	230,076	2,444,924	1 75	3,820,194
1894	2,250,631	2,060,920	196,206	2,257,126	2,520,707	2,308,231	219,751	2,527,982	1 75	3,949,970
1895	1,999,756	1,793,098	193,639	1,986,737	2,239,727	2,008,270	216,875	2,225,145	1 75	3,476,790
1896	2,292,675	2,046,828	192,975	2,239,808	2,537,706	2,202,447	216,132	2,508,570	1 75	3,919,355
1897	2,340,031	2,044,672	181,716	2,226,388	2,620,835	2,290,032	203,522	2,493,554	1 75	3,896,170
1898	2,262,656	2,121,126	187,428	2,288,554	2,584,175	2,375,661	187,519	2,563,180	1 75	4,004,970
1899	2,865,443	2,633,989	177,460	2,811,449	3,209,296	2,950,067	138,775	3,148,822	2 00	5,622,808
1900	3,298,791	2,998,737	236,563	3,235,300	3,694,646	3,358,585	264,051	3,623,536	2 50	8,088,250
1901	3,821,033	3,411,127	301,434	3,712,561	4,279,557	3,820,462	337,606	4,158,068	1 75	6,496,982
1902	4,725,480	4,229,120	379,198	4,608,318	5,292,538	4,736,614	424,702	5,161,316	2 00	9,216,636
1903	5,215,562	4,565,720	481,903	5,047,623	5,841,429	5,113,607	539,731	5,653,338	2 00	10,095,246
1904	5,131,985	4,551,740	144,904	4,996,644	5,747,823	5,097,949	498,292	5,596,241	2 00	9,993,288

COAL.—TABLE 8—*Continued.*

Nova Scotia: Output, Sales, Colliery Consumption, and Production.

Calendar Year.	Output, tons, 2,240 lbs.	Sold or used, tons, 2,240 lbs.	Colliery consumption, tons, 2,240 lbs.	Production, tons, 2,240 lbs.	Output, tons, 2,000 lbs.	Sold or used, tons, 2,000 lbs.	Colliery consumption, tons, 2,000 lbs.	Production* tons, 2,000 lbs.	Price per ton, 2,240 lbs.	Value of production.
1905	5,197,877	4,613,818	427,774	5,041,592	5,821,622	5,167,476	479,107	5,646,583	2 00	10,083,184
1906	5,844,813	5,093,131	460,891	5,554,022	6,546,191	5,704,307	516,198	6,220,505	2 00	11,108,044
1907	5,775,503	5,236,077	437,256	5,673,333	6,468,563	5,864,406	489,727	6,354,133	2 25	12,764,999
1908	6,076,330	5,224,787	576,509	5,939,767	6,805,489	5,851,761	645,690	6,652,539	2 25	13,364,476
1909	5,106,135	4,524,029	522,479	5,046,508	5,718,871	5,066,912	585,177	5,652,089	2 25	11,354,643
1910	5,817,109	5,199,715	542,376	5,742,091	6,515,162	5,823,681	607,461	6,431,142	2 25	12,919,705
1911	6,362,099	5,676,857	577,089	6,253,946	7,125,551	6,358,080	646,340	7,004,420	2 25	14,071,379
1912	6,995,289	6,296,940	652,960	6,949,900	7,834,724	7,052,573	731,315	7,783,888	2 50	17,374,750

*This production is obtained by adding sales and colliery consumption,

COAL.—TABLE 9.

Nova Scotia: Coal Trade by Counties, in Short Tons, Calendar Years Since 1906.

Calendar Year.	Cumberland.		Pictou.		Cape Breton.		Other counties.		Total.	
	Raised.	Sales.	Raised.	Sales.	Raised.	Sales.	Raised.	Sales.	Raised.	Sales.
1906	659,734	566,308	769,496	657,310	4,804,407	4,221,293	312,554	259,396	6,546,191	5,704,307
1907	534,047	445,288	840,533	729,043	4,698,147	4,346,180	395,836	343,895	6,468,563	5,864,406
1908	662,157	530,648	849,802	678,025	4,840,653	4,267,346	452,877	375,742	6,805,489	5,851,761
1909	494,919	403,371	743,860	599,743	4,081,333	3,723,135	398,759	340,663	5,718,871	5,066,912
1910	350,363	288,706	714,846	588,678	5,035,800	4,571,347	414,153	374,950	6,515,162	5,823,681
1911	538,296	436,125	833,956	691,852	5,405,355	4,917,902	347,944	312,201	7,125,551	6,358,080
1912	716,914	595,138	765,678	641,890	6,039,296	5,530,765	312,836	284,780	7,834,724	7,052,573

Sales include coal used for making coke and steel.

Production and Sales by Companies, Nova Scotia, Year Ending September 30, 1912, in Short Tons.

Name of company.	Output.	Sales.	Colliery consumption.	Supplied workmen.	Supplied locomotive.	Reported unsaleable.	On bank at close of year.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons
Dominion Coal Co., Ltd	4,852,198	4,492,583	264,095	52,006	29,053	.....	76,524
Nova Scotia Steel & Coal Co., Ltd	919,705	871,236	38,393	21,008	4,527	.....	27,882
Cumberland Railway & Coal Co., Ltd	470,939	388,600	65,385	12,844	4,798	.....	6,982
Acadia Coal Co	492,213	402,362	85,727	12,657	1,875	.....	12,091
Maritime Coal, Railway & Power Co	169,465	141,304	24,444	3,717	568	.....	.....
Inverness Railway & Coal Co	324,469	290,433	21,389	6,713	9,951	.....	1,701
Intercolonial Coal Co	272,616	237,326	38,061	7,774	758	.....	1,207
Sydney Coal Co	5,143	5,294	94	171	.....	.....	24
Colonial Mining Co	39,448	34,188	4,628	632	.....	.....	402
North Atlantic Collieries Co	4,819	424	4,523	258	.....	.....	.....
Minudie Coal Co	68,179	55,061	4,063	1,473	254	7,581	.....
Atlantic Grindstone & Coal Co	163	118	10	36	.....	.....	.....
Total	7,619,357	6,918,929	550,812	119,289	51,784	7,581	126,813

COAL.—TABLE 10.

Nova Scotia: Output by Collieries During Fiscal Years Ending September 30, 1910-11-12.

Colliery.	1910. Tons of 2,000 lbs.	1911. Tons of 2,000 lbs.	1912. Tons of 2,000 lbs.
Cape Breton County.			
Dominion Coal Company	3,634,124	4,360,113	4,852,198
Nova Scotia Steel and Coal Co	936,710	848,762	919,705
North Atlantic Collieries	99,687	53,751	4,819
McKay Mining Company	19,136	32,571	(a)
Sydney Coal Company	4,464	4,129	5,143
Colonial Mining Co	15,625	5,023	39,448
Cumberland County.			
Cumberland Railway and Coal Co	60,298	214,871	470,939
Maritime Coal, Railway, and Power Co., Chignecto	181,264	133,416	169,465
" " " Joggins			
Minudie Coal Co	61,037	61,019	68,179
Great Northern Coal Co	988	1,419	.....
Atlantic Grindstone and Coal Co	239	374	163
Eastern Coal Co	7,381	.....	.....
Pictou County.			
Acadia Coal Co	397,962	522,297	492,213
Intercolonial Coal Co	307,692	293.060	272,616
Inverness County.			
Inverness Coal and Railway Co	310,528	326,577	324,469
Port Hood Coal Co	97,269	46,135	.....

(a) See Colonial Mining Co.

Nova Scotia: Distribution of Coal Sold.

Markets.	Fiscal years ending September 30.									
	1908.		1909.		1910.		1911.		1912.	
	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.	Tons. of 2,000 lbs.	Per cent.
Nova Scotia—										
Transported by land	1,804,377	29·37	1,642,716	31·77	1,681,052	30·65	2,007,192	32·25	2,197,213	31·76
" sea	380,332	6·19	339,462	6·57	342,787	6·25	354,514	5·70	373,594	5 40
Total Nova Scotia	2,184,709	35·56	1,982,178	38·34	2,023,839	36·90	2,361,706	37·95	2,570,807	37·16
New Brunswick	571,570	9·30	607,968	11·76	594,288	10·84	606,582	9·74	732,411	10·59
Prince Edward Island	70,931	1·15	88,365	1·71	89,031	1·62	90,314	1·45	103,378	1·49
Quebec Province	2,293,352	37·33	1,689,876	32·69	2,001,382	36·49	2,315,971	37·22	2,418,086	34·95
Newfoundland	231,909	3·77	174,998	3·39	19 ,224	3·62	206,299	3·32	224,719	3·25
United States	559,592	9·11	359,224	6·95	325,548	5·93	372,177	5·98	462,035	6·68
St. Pierre	9,976	0·16	11,463	0·22	8,405	0·15	10,107	0·16	10,535	0·15
Bunker coal	216,554	3·53	254,681	4·92	243,807	4·45	229,243	3·68	265,142	3·83
Other countries	5,261	0·09	846	0·02	.....	.....	*30,841	0·50	**131,816	1·90
Total	6,143,854	100·00	5,169,599	100·00	5,484,524	100·00	6,223,240	100·00	6,918,929	100·000

	*Tons.	Per cent.	**Tons	Per cent.
For time chartered boats	28,610	0·46	28,972	0·42
Other countries	2,231	0·04	102,844	1·48
	30,841	0·50	131,816	1·90

Number and Classes of Workmen Employed at Each Mine in Nova Scotia, Year Ending September 30, 1912.

Company.	Underground.				Surface.				Construction.				Totals.		Horses.		Days.
	Skilled labour.	Labourers	Boys.	Days.	Skilled labour.	Labourers	Boys.	Days.	Skilled labour.	Labourers	Boys.	Days.	Persons.	Days.	Above.	Below.	Pit days.
Dominion Coal Co.	3,029	1,930	240	1,468,063	586	425	60	303,863	....	....	...	.....	6,270	1,771,926	94	536	282
Nova Scotia Steel and Coal Co.	1,022	841	186	542,622	143	226	24	117,472	.....	.....	....	.....	2,442	660,094	1	22	306
Cumberland Railway and Coal Co.	444	369	40	256,431	81	119	9	63,273	9	10	....	5,490	1,081	325,194	10	59	300
Acadia Coal Co.	359	373	64	246,377	108	304	20	150,239	.....	....	....		1,228	396,616	38	43	296
Intercolonial Coal Co.	401	126	84	155,529	108	110	28	68,550	3	4	...	1,586	864	225,665	10	59	300
Joggins Mines.	333	66	3	102,430	19	48	9	20,882	.....	...	...	.....	478	123,312	4	9	299
Chignecto Mines.	28	21	3	13,338	14	16	3	7,408	.....	....	....	...	85	20,746	1	1	296
Inverness Railway and Coal Co	310	134	23	139,182	47	47	13	31,573	.....	.....	.....	.. ..	574	170,755	7	33	297
Sydney Coal Co.	8	3	.. ..	1,624	2	2	.....	629	.....	.....	.....	.....	15	2,253	1	1	260
Mackay Mining Co.	41	14	.....	15,876	6	11	1	5,326	2	1	....	1,060	76	22,262	3	6	304
Minudie Coal Co.	94	22	14	36,808	15	16	5	10,194	3	....	....	922	169	47,924	3	2	292
Colonial Coal Co.	5	.. ..	.....	1,456	4	.....	.....	1,302	3	3	....	1,725	15	4,483	1	1	306
Totals.	6,074	3,899	657	2,979,736	1,133	1,324	172	780,711	20	18	....	10,783	13,297	3,771,230	173	772	.....

New Brunswick.

The total shipments of coal from mines in this Province, as estimated by the Provincial Department of Works, was 42,780 tons, and adding 2,000 tons for colliery consumption and workmen, etc., the production is placed at 44,780 tons, which is 11,001 tons less than the production in 1911.

Mining operations are carried on in the Grand Lake coal-field, in Queens county, in which a comparatively large number of small mines or openings are intermittently operated. About 50 per cent of the total output was directly reported by the following operators: The Rothwell Coal Co., Limited, The Minto Coal Co., Limited, The Northfield Coal Co., Limited, all of Minto, and the Thompson Coal and Brick Co. of Beersville.

COAL.—TABLE 12.

New Brunswick: Annual Production.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		$	$ cts.			$	$ cts.
1887.....	10,040	23,607	2 35	1900.....	10,000	15,000	1 50
1888.....	5,730	11,050	1 93	1901.....	17,630	51,857	2 94
1889.....	5,673	11,733	2 07	1902	18,795	39,680	2 11
1890.....	7,110	13,850	1 95	1903.....	16,000	40,000	2 50
1891.....	5,422	11,030	2 03	1904.....	9,112	18,224	2 00
1892.....	6,768	9,375	1 39	1905..... ...	29,400	58,800	2 00
1893.....	6,200	9,837	1 59	1906.....	34,076	68,152	2 00
1894.....	6,469	10,264	1 59	1907.....	34,584	77,814	2 25
1895.....	9,500	14,250	1 50	1908.....	60,000	135,000	2 25
1896.....	7,500	11,250	1 50	1909.....	49,029	98,496	2 25
1897..... ...	6,000	9,000	1 50	1910.....	55,455	110,910	2 00
1898..... ..	6,160	9,240	1 50	1911.....	55,781	111,562	2 00
1899.....	10,528	15,792	1 50	1912.....	44,780	89,560	2 00

Saskatchewan.

The total production in 1912, as reported from 25 separate collieries, was 225,342 tons of lignite coal valued at $368,135, an increase of 18,563 tons or 9 per cent over the 1911 production. Of the 1912 production 215,793 tons were sold for consumption in Canada and 9,546 tons used by the producers for colliery consumption, for workmen, and in brickmaking.

The output which has hitherto been obtained entirely from the Estevan and Souris fields in the southeastern portion of the Province is used mainly for domestic purposes within the Province and in Manitoba. During the past two years mining operations have been commenced in a district about 115 miles east of the Estevan field and 40 miles south of Moosejaw.

The principal operating mines of the Estevan field are the Western Dominion Collieries, Limited, and the Manitoba and Saskatchewan Coal Com-

pany. Amongst the other mines, the chief operators are the Hawkinson Mining Co., the Estevan Coal and Brick Co., the Maple Leaf Mines, Limited, the Excelsior Coal Mining Co., and the Great West Coal Company.

COAL.—TABLE 13.

Saskatchewan: Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.	Calendar Year.	Tons.	Value.	Average value per ton.
		$	$ cts.			$	$ cts.
1890	200	200	1 00	1902	70,400	112,640	1 52
1891				1903	116,703	169,618	1 45
1892	5,400	9,325	1 73	1904	124,885	187,021	1 50
1893	8,325	12,485	1 50	1905	107,596	152,334	1 42
1894	†15,051	15,153	1 01	1906	108,398	164,146	1 51
1895	15,769	31,538	2 00	1907	151,232	252,437	1 67
1896	16,706	25,059	1 50	1908	150,556	253,790	1 69
1897	25,000	37,500	1 50	1909	192,125	296,339	1 54
1898	25,000	37,500	1 50	1910	181,156	293,923	1 62
1899	25,000	37,500	1 50	1911	206,779	347,248	1 68
1900	40,500	60,750	1 50	1912	225,342	368,135	1 63
1901	45,000	72,000	1 60				

† Including a small quantity from the Turtle Mountain district, Manitoba.

Alberta.

The coal production of Alberta has increased rapidly during the past few years and has in 1912 exceeded that of British Columbia, which until the past year has been the chief coal mining province of western Canada. Alberta has numerous small collieries, the total number operating in 1912 being about 182, and in addition 74 mines reported either no operations, or development only, nevertheless 91 per cent of the total production was, in the past year, derived from 34 collieries operated by 30 companies, each colliery having an output exceeding 10,000 tons. Nine of these collieries has each an output exceeding 100,000 tons.

The total production of marketable coal during the year was 3,240,577 tons valued at $8,113,525 or an average of $2.50 per ton. The coal production of this Province includes lignite, bituminous coal, and the only anthracite mined in Canada, the production of which in 1912 was 160,589 tons.

Of the total production in 1912, 2,772,374 tons were sold for home consumption in Canada and 93,126 tons for export; the producers used 204,259 tons for colliery consumption and for workmen, and 170,818 tons were used in making coke.

The production by collieries in 1912 and in 1911 is shown in tables following. The low production in 1911, it will be remembered, was due to the protracted

strike and closing down of all the large collieries in the southern part of the Province during that year.

The production in 1912 by 30 companies, each with an output exceeding 10,000 tons, was 2,961,056 tons. The aggregate production of all other collieries was 279,521 tons.

Production of Coal in Alberta in 1912, by Principal Collieries, in Short Tons.

Name of company.	Days in operation.	Total sales.	Total for colliery use.*	Total production.
Leitch Colliery, Ltd., Passburg	239	(a) 66,418	6,624	73,042
Davenport Coal Co., Burmis	207	37,986	495	38,481
Maple Leaf Coal Co., Bellevue	278	48,849	1,923	50,772
Hillcrest Coal and Coke Co., Hillcrest	281	173,478	10,806	184,284
West Canadian Collieries, Bellevue	262	317,725	6,508	324,233
" " Blairmore	266	80,858	4,936	85,794
" " Lille	122	(b) 38,177	6,919	45,096
Canadian Coal Consolidated Co., Frank	269	123,381	17,999	141,380
International Coal and Coke Co., Coleman	293	(c) 402,288	23,050	425,338
McGillivray Creek Coal and Coke Co., Coleman	255	119,342	4,056	123,398
Bankhead Mines, Ltd., Bankhead	256	(d) 124,589	(e) 36,000	160,589
Canmore Coal Co., Ltd., Canmore	236	142,231	9,931	152,162
" " "	299	97,527	1,742	99,269
Yellowhead Pass Coal and Coke Co., Ltd., *via* Bickerdike	313	11,207	2,075	13,282
Jasper Park Collieries, Ltd., Pocahontas	300	111,231	1,270	112,501
Western Coal and Coke Co., Lethbridge	301	11,969	2,431	14,400
City of Lethbridge Coal Mine "	262	10,467	.....	10,467
Lethbridge Collieries "	249	58,419	9,895	68,314
Canada West Coal Co., Taber	2?5	69,436	8,684	78,120
C.P.R. Dept. of Natural Resources, Lethbridge	220	311,259	4,293	315,552
Diamond Coal Co., Ltd., Diamond City	236	35,847	2,551	38,398
Battle River Collieries, Rosenroll	225	11,500	850	12,350
Round Hill Collieries, Round Hill	160	17,608	747	18,355
Tofield Coal Co., Tofield	302	17,458	2,100	19,558
The Clover Bar Coal Co., Ltd., Clover Bar	282	20,686	1,750	22,436
Edmonton Standard Coal Co., Edmonton	286	24,750	2,000	26,750
Twin City Coal Co., Ltd., Edmonton	269	32,800	1,280	34,080
Alberta Coal Mining Co., Cardiff	216	52,683	2,500	55,183
Cardiff Collieries, Ltd., Cardiff	280	92,161	2,985	95,146
5 other companies, each producing over 10,000 tons	.....	109,032	13,294	122,326
	.....	2,771,362	189,694	2,961,056
All other companies, each producing under 10,000 tons	.....	264,956	14,565	279,521
Total production, Alberta	.....	3,036,318	204,259	3,240,577

* Includes consumption under boilers, etc., and coal used by workmen.

(a) " 17,923 tons for coke manufacturing.
(b) " 27,177 " "
(c) " 125,718 " "
(d) " 90,000 tons of briquettes.
(e) " 1,300 "

Production of Coal in Alberta in 1911 by Principal Collieries, in Short Tons.

Name of company.	Days in operation.	Total sales.	Total for colliery use.*	Total production.
The Davenport Coal Co., Burmis	104	21,669	300	21,969
The Hillcrest Coal and Coke Co., Hillcrest	168	44,664	4,025	48,689
Leitch Collieries Ltd., Passburg	153	52,315	2,310	54,625
Maple Leaf Coal Co., Bellevue	144	13,150	1,138	14,288
Canadian Coal Consolidated Co., Frank	86	24,912	12,514	37,426
West Canadian Collieries, Blairmore mine	122			
" " Lille "	89	79,604	(c) 36,107	115,711
" " Bellevue "	30			
International Coal and Coke Co., Coleman	100	92,869	(d) 46,158	139,027
The Canmore Coal Co., Canmore	32	26,673	2,105	28,778
Bankhead Mines, Ltd., Bankhead	77	(a) 78,609	(b) 11,851	90,460
Jasper Park Collieries, Pocahontas	96	10,619	350	10,969
Breckenridge & Lund Coal Co., Lundbreck	252	43,482	1,123	44,605
Alberta Railway & Irrigation Co., Lethbridge	104	131,859	7,041	138,900
Eureka Coal Co., Taber	273	12,914	2,430	15,344
Rock Springs Sootless Coal Co., Taber	264	20,543	3,000	23,543
Red Cliff Brick and Coal Co., Redcliff	268	17,652		17,652
Round Hill Collieries, Round Hill	144	12,825	137	12,962
Edmonton Standard Coal Co., Edmonton	300	29,300	900	30,200
Ritchie Coal Co., Edmonton	168	10,000	550	10,550
Messrs. Love & Cameron, Edmonton	300	10,000	50	10,050
Alberta Coal Mining Co., Edmonton	200	33,708	2,500	36,208
Cardiff Collieries, Ltd., Cardiff	300	99,879	1,200	101,079
14 other companies, each producing over 10,000 tons		290,527	19,914	310,441
		1,157,773	155,703	1,313,476
Other companies, each producing under 10,000 tons		187,889	9,671	197,560
Total production, Alberta		1,345,662	165,374	1,511,036

* Includes consumption under boilers, workmen, etc., and coal used by workmen.
(a) " 47,308 tons of briquettes.
(b) " 892 " "
(c) " 23,754 tons used in making coke.
(d) " 37,837 " "

COAL.—TABLE 14.

Alberta: Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.	Calendar Year.	Tons.	Value.	Average value per ton.
		$	$ cts.			$	$ cts.
1887	74,152	157,577	2 13	1900	311,450	778,625	2 50
1888	115,124	183,354	1 59	1901	340,275	850,687	2 50
1889	97,364	179,640	1 85	1902	402,819	960,601	2 38
1890	128,753	198,298	1 54	1903	495,893	1,117,541	2 25
1891	174,131	437,243	2 51	1904	661,732	1,404,524	2 12
1892	178,970	460,605	2 57	1905	931,917	1,993,915	2 14
1893	230,070	586,260	2 55	1906	1,246,360	2,614,762	2 10
1894	184,940	473,827	2 56	1907	1,591,579	3,836,286	2 41
1895	169,885	382,526	2 25	1908	1,685,661	4,127,311	2 45
1896	209,162	581,832	2 78	1909	1,994,741	4,838,109	2 43
1897	242,163	630,408	2 60	1910	2,894,469	7,065,736	2 44
1898	315,088	788,720	2 50	1911	1,511,036	3,979,264	2 63
1899	309,600	774,000	2 50	1912	3,240,577	8,113,525	2 50

According to statistics published by the Coal Mines Branch of the Department of Public Works, Province of Alberta, the total output of coal in that Province in 1912, including a considerable tonnage of unmarketable slack, screening, etc., was 3,446,349 tons. The total sales are reported by the same authority as 2,879,489 tons; used in making coke, 170,818 tons; used under colliery boilers, 262,971 tons; added to stock, 22,002 tons; slack, including anthracite and lignite coals, 111,069 tons.

The total sales, as shown by returns furnished this Division, including sales to workmen, were 2,888,872 tons, which is slightly in excess of the record given above. There is a deficiency, however, of 82,084 tons in the quantity reported as colliery consumption and it is evident that a considerable tonnage of slack used under colliery boilers has not been included in some of the records sent to the Department of Mines.

The following tables show the total output of coal in Alberta during 1912, the output by districts and the labour employed according to the records compiled and published[1] by Mr. John T. Stirling, Provincial Inspector of Mines.

Output of Bituminous Coal.

Tons of 2,000 lbs.	Crows-nest pass.	Calgary	Leth-bridge.	Edmon-ton.	Total.
Sold for consumption in Alberta	1,081,657	245,714	.....	125,636	1,453,007
Sold for consumption in other provinces	98,399	.....	.....	.....	98,399
Sold for export to the United States	86,682	.....	.....	.....	86,682
Total sales	1,266,738	245,714	.....	125,636	1,638,088
Used in making coke	170,818	.....	.....	.....	170,818
Used under colliery boilers	79,533	11,510	.....	4,420	95,463
To stock	7,727	2,215	.....	12,060	22,002
Total	1,524,816	259,439	.....	142,116	1,926,371

Output of Anthracite Coal.

Tons of 2,000 lbs,	Calgary district.	
	Coal.	Briquettes.
Sold for consumption in Alberta	21,700	60,000
Sold for consumption in other provinces	12,589	29,920
Sold for export to the United States	300	80
Total sales	34,589	90,000
Used under colliery boilers	36,000	.....
Used in making briquettes	108,000	.....
Total	178,589	90,000

[1] Annual Report, Department of Public Works of the Province of Alberta, 1912, pp. 61, 62.

Output of Lignite Coal.

Tons of 2,000 lbs.	Crows-nest pass.	Calgary.	Leth-bridge.	Edmon-ton.	Total.
Sold for consumption in Alberta		77,181	206,584	343,774	627,539
Sold for consumption in other provinces		8,278	397,821	77,033	483,132
Sold for export to the United States			6,141		6,141
Total sales		85,459	610,546	420,807	1,116,812
Used under colliery boilers		1,688	112,126	17,694	131,508
Slack		1,788	38,015	53,266	93,069
Total output		88,935	760,687	491,767	1,341,389

Output of Coal in Alberta by Districts.

District.	Number of persons employed.	Lignite.	Bituminous.	Anthracite.
Crowsnest pass	2,261		1,500,594	
Pincher Creek	122		24,222	
Lethbridge	935	624,150		
Taber	430	124,795		
Bow Island	51	8,654		
Milk River	17	2,518		
Banff	906		256,896	178,589
Medicine Hat	147	35,223		
Aldersyde	49	11,888		
Carstairs	11		543	
Carbon	35	8,232		
Drumheller	115	14,581		
Three Hills	45	7,936		
Lacombe	87	12,076	2,000	
Wetaskiwin	154	48,126		
Edmonton	503	208,888		
St. Albert	60	8,479		
Tofield	83	37,241		
Cardiff	221	185,337		
Pembina	104	3,265		
Yellowhead pass	191		28,415	
Jasper Park	134		113,701	
Total	6,661	1,341,389	1,926,371	178,589

Average Number of Persons Employed.

Character of labour.	Bituminous.		Anthracite.		Lignite.		Total.	
	Above.	Below.	Above.	Below.	Above.	Below.	Above.	Below.
Supervision and clerical assistance	99	79	10	8	131	118	240	205
Miners and helpers	.....	1,586	.....	137	.....	1,818	.....	3,541
Mechanics or skilled labour	271	60	53	.....	207	58	531	118
Other employees	520	628	150	80	359	289	1,029	997
Total.	890	2,353	213	225	697	2,283	1,£00	4,861

British Columbia.

The total production of coal in British Columbia in 1912 from 17 collieries operated by 12 companies was 3,208,997 tons valued at $10,028,116, as compared with a production of 2,542,532 tons in 1911 and 3,330,745 tons in 1910. The actual colliery output was somewhat higher as a considerable tonnage is lost in washing at some of the Vancouver Island collieries. The production in 1911 was greatly restricted on account of the closing down of the Crowsnest collieries because of labour difficulties and the very large increase in 1912 merely shows a return to normal conditions of operation. The 1912 production, although slightly less than that of 1910, is, with the exception of that year, the largest that has been recorded for the Province, and would probably have been greater even than the 1910 production had it not been for the falling off in production at the mines of the Canadian Collieries Limited, because of strikes during the latter part of the year.

Of the total production in 1912, 1,410,014 tons or nearly 44 per cent were sold for consumption in Canada, 961,862 tons or 30 per cent were sold for export to the United States, and 121,136 tons or 3·8 per cent were sold for export to other countries. The quantity used by producers in making coke was 444,665 tons or nearly 14 per cent of the production and 271,320 tons or 8·4 per cent were used under colliery boilers and for workmen.

The total production of coal on Vancouver island in 1912 was 1,571,683 tons, a falling off of 217,847 tons, as compared with 1911 when the production was 1,789,530 tons. The mines of the Canadian Collieries (Dunsmuir) Limited, were operated with a reduced staff of workmen from September 16, 1912, to the end of the year, owing to differences that had arisen between the company and its employees. The production of the Crowsnest mines in 1912 was 1,413,714 tons compared with 499,580 tons in 1911, the mines of the Crowsnest Pass Coal Company and the Hosmer mines being in operation for three months only during the latter year. The production in the Nicola and Princeton valleys in 1912 was 223,660 tons, as compared with 253,421 tons in 1911, a decrease of 29,761 tons.

Production by Districts, 1911 and 1912.

Coal.	1911.			1912.		
	Coast.	Crowsnest and Nicola valley.	Total.	Coast.	Crowsnest and Nicola valley.	Total.
		Short tons.			Short tons.	
Sold for consumption in Canada	1,188,769	348,188	1,536,957	947,631	462,383	1,410,014
Sold for export to United States	405,535	237,219	642,754	340,115	621,747	961,862
Sold for export to other countries	43,465	.....	43,465	121,136	.....	121,136
Total sales	1,637,769	585,407	2,223,176	1,408,882	1,084,130	2,493,012
Used for making coke	.....	117,215	117,215	.....	444,665	444,665
Used for colliery consumption	151,761	50,386	202,141	162,801	108,519	271,320
Production	1,789,530	753,002	2,542,532	1,571,683	1,637,314	3,208,997

Coal Production by Collieries in British Columbia, in 1912, in Short Tons.

Colliery.	Sales.				Used in making coke.	Used under colliery boilers, etc.	Production.	Lost in washing.	Stocks.		Output.
	In Canada.	To United States.	To other countries.	Total.					First of year.	Last of year.	
1. Protection, No. 1	251,540	112,447	82,192	446,179	.....	44,495	490,674	.....	5,535	1,525	486,664
Northfield	18,697	86,838	21,725	127,260	.....	31,721	158,981	.....	526	168	158,623
Douglas	54	.....	70	124	.....	712	836	.....	.....	.....	856
2. New East Wellington	74,783	17,842	.....	92,625	.....	5,726	98,351	.....	448	942	98,845
3. Ladysmith (Wellington)	176,370	50,558	.....	226,928	.....	15,588	242,516	.....	1,641	102	240,977
Cumberland (Comox)	301,302	64,598	17,149	383,049	.....	45,087	428,136	.....	26,307	3,115	404,944
4. Fiddick and Richardson	121,497	7,831	.....	129,328	.....	18,704	148,032	7,703	37,167	46,182	164,750
Suquash	3,389	.....	.....	3,389	.....	767	4,156	.....	.....	875	5,031
5. Coal Creek	61,929	430,817	.....	492,746	248,058	39,801	780,605	.....	124	115	780,596
Michel	12,603	133,943	.....	146,546	115,316	22,368	284,230	.....	20	115	284,325
6. Hosmer	103,956	.....	.....	103,956	81,291	26,696	211,943	.....	1,889	778	210,832
7. Corbin	79,876	53,192	.....	133,068	.....	3,868	136,936	.....	.....	.....	136,936
8. Diamond Vale	3,080	.....	.....	3,080	.....	164	3,244	.....	.....	.....	3,244
9. Middlesboro	150,283	.....	.....	150,283	.....	10,052	160,335	.....	689	483	160,129
10. Inland	30,000	.....	.....	30,000	.....	1,299	31,299	.....	.....	100	31,399
11. Princeton	20,405	3,546	.....	23,951	.....	4,232	28,183	3,372	.....	.....	31,555
12. United Empire	250	250	.....	500	.....	40	540	.....	.....	.....	540
Total	1,410,014	961,862	121,136	2,493,012	444,665	271,320	3,208.997	11,075	74,346	54,500	3,200,226

1. Western Fuel Co.
2. Vancouver-Nanaimo Coal Mining Co.
3. The Canadian Collieries (Dunsmuir), Ltd.
4. Pacific Coast Collieries, Ltd.
5. Crowsnest Pass Coal Co., Ltd.
6. The Hosmer Mines, Ltd.
7. Corbin Coal and Coke Co., Ltd.
8. Diamond Vale Collieries, Ltd.
9. Nicola Valley Coal and Coke Co., Ltd.
10. Inland Coal and Coke Co., Ltd.
11. Princeton Coal and Land Co., Ltd.
12. United Empire Coal Co., Ltd.

Coal Production by Collieries in British Columbia in 1912, Tons of 2,240 lbs.

Colliery.	Sales.				Used in making coke.	Used under colliery boilers, etc.	Production.	Lost in washing.	Stocks.		Output.
	In Canada.	To United States.	To other countries.	Total.					First of year.	Last of year.	
1. Protection	224,589	100,399	73,386	398,374	.....	39,728	438,102	.....	4,942	1,362	434,522
Northfield	16,694	77,534	19,397	113,625	.....	28,323	141,948	.....	470	150	141,628
Douglas	48	.....	.....	111	.....	636	747	.....	.....	.....	747
2. New East Wellington	66,770	15,931	63	82,701	.....	5,112	87,813	.....	400	841	88,254
3. Ladysmith (Wellington)	157,473	45,141	.....	202,614	.....	13,918	216,532	.....	1,465	91	215,158
Cumberland (Comox)	269,020	57,677	.....	342,008	.....	40,256	382,264	.....	23,488	2,781	361,557
4. Fiddick and Richardson	108,479	6,992	15,311	115,471	.....	16,700	132,171	6,878	33,185	41,234	147,098
Suquash	3,026	.....	.....	3,026	.....	685	3,711	.....	.....	781	4,492
5 Coal Creek	55,294	384,658	.....	439,952	221,480	35,537	696,969	.....	111	103	696,961
Michel	11,253	119,592	.....	130,845	102,961	19,971	253,777	.....	18	103	253,862
6. Hosmer	92,818	.....	.....	92,818	72,581	23,836	189,235	.....	1,687	695	188,243
7. Corbin	71,318	47,493	.....	118,811	.....	3,453	122,264	.....	.....	.....	122,264
8. Diamond Vale	2,750	.....	.....	2,750	.....	146	2,896	.....	.....	.....	2,896
9. Middlesboro	134,181	.....	.....	134,181	.....	8,975	143,156	.....	615	431	142,972
10. Inland	26,786	.....	.....	26,786	.....	1,160	27,946	.....	.....	89	28,035
11. Princeton	18,219	3,166	.....	21,385	.....	3,778	25,163	3,011	.....	.....	28,174
12. United Empire	223	223	.....	446	.....	36	482	.....	.....	.....	482
Total	1,258,941	858,806	108,157	2,225,904	397,022	242,250	2,865,176	9,889	66,381	48,661	2,857,345

1. Western Fuel Co.
2. Vancouver-Nanaimo Coal Mining Co.
3. The Canadian Collieries (Dunsmuir), Ltd.
4. Pacific Coast Collieries, Ltd.
5. Crowsnest Pass Coal Co., Ltd.
6. The Hosmer Mines, Ltd.
7. Corbin Coal and Coke Co., Ltd.
8. Diamond Vale Collieries, Ltd.
9. Nicola Valley Coal and Coke Co., Ltd.
10. Inland Coal and Coke Co., Ltd.
11. Princeton Coal and Land Co., Ltd.
12. United Empire Coal Co., Ltd.

Coal Production by Collieries in British Columbia in 1911, in Tons of 2,240 lbs.

Colliery.	Sales.				Used in making coke.	Used under colliery boilers, etc.	Production.	Lost in washing.	Stocks.		Output.
	In Canada.	To United States.	To other countries.	Total.					First of year.	Last of year.	
1. Protection	240,459	140,162	1,726	382,347	.....	34,332	416,679	.....	9,712	4,942	411,909
Northfield	36,145	94,049	2,300	132,494	.....	30,833	163,327	.....	1,945	470	161,852
Douglas	.....	31	.....	31	.....	1,385	1,416	.....	.....	.....	1,416
2. Extension	255,007	62,494	.....	317,501	.....	14,591	332,092	.....	1,981	1,465	331,576
Union	321,690	42,640	32,782	397,112	.....	39,250	436,362	.....	22,515	23,488	437,335
3. Fiddick and Richardson	138,938	22,709	2,000	163,647	.....	11,441	175,088	22,279	30,829	38,510	205,048
Suquash	1,613	.....	.....	1,613	.....	669	2,282	.....	.....	.....	2,282
4. New East Wellington	67,549	.....	.....	67,549	.....	3,000	70,549	2,069	100	400	72,918
5. Middlesboro	184,182	.....	.....	184,182	.....	6,752	190,934	.....	259	615	191,290
6. Princeton	16,336	1,909	.....	18,245	.....	823	19,068	4,328	.....	.....	23,396
7. Coal Creek*	26,200	123,377	.....	149,577	44,688	13,709	207,974	.....	1,529	111	206,556
Michel*	13,505	51,519	.....	65,024	40,303	9,198	114,525	.....	159	18	114,384
8. Hosmer*	10,721	.....	.....	10,721	19,665	11,450	41,836	6,503	3,388	1,687	46,638
9. Corbin	44,154	34,998	.....	79,152	.....	2,567	81,719	.....	.....	.....	81,719
10. Diamond Vale	5,384	.....	.....	5,384	.....	.....	5,384	.....	.....	.....	5,384
11. Coal Hill	10,400	.....	.....	10,400	.....	483	10,883	.....	.....	.....	10,883
12. West Wellington	.....	.....	.....	.....	.....	.....	.....	.....	90	298	208
Total	1,372,283	573,888	38,808	1,984,979	104,656	180,483	2,270,118	35,179	72,507	72,004	2,304,794

* In operation during three months owing to strike.

1. The Western Fuel Co.
2. The Canadian Collieries (Dunsmuir), Ltd.
3. Pacific Coast Coal Mines, Ltd.
4. The Vancouver-Nanaimo Coal Mining Co., Ltd.
5. Nicola Valley Coal and Coke Co., Ltd.
6. Princeton Coal and Land Co., Ltd,
7. Crowsnest Pass Coal Co., Ltd.
8. Hosmer Mines, Ltd.
9. Corbin Coal and Coke Co., Ltd.
10. Diamond Vale Collieries, Ltd.
11. The Inland Coal and Coke Co., Ltd
12. Biggs Bros,

COAL.—TABLE 15.

British Columbia: Annual Production.

Calendar Year.	Output, tons. 2,240 lbs.	Home consumption, tons. 2,240 lbs.	Sold for export. 2,240 lbs.	Production.* Tons. 2,240 lbs.	Production.* Tons. 2,000 lbs.	Price per ton, 2,240 lbs.	Value.
						$ cts.	$
1836-52...	10,000				11,200	4 00	40,000
1852-59...	25,398				28,446	4 00	101,592
1859‡.....	1,989				2,228	4 00	7,956
1860. ...	14,247				15,957	4 00	56,988
1861.....	13,774				15,427	4 00	55,096
1862.....	18,118				20,292	4 00	72,472
1863.....	21,345				23,906	4 00	85,380
1864.... .	28,632	From 1836 to 1873, inclusive, the output is taken as production.			32,068	4 00	114,528
1865 .. .	32,819				36,757	4 00	131,276
1866.....	25,115				28,129	4 00	100,460
1867.....	31,239				34,988	4 00	124,956
1868.....	44,005				49,286	4 00	176,020
1869....	35,080				40,098	4 00	143,208
1870.....	29,843				33,424	4 00	119,372
1871-2-3..	148,459				166,274	4 00	593,836
1874.....	81,547	25,023	56,038	81,061	90,788	3 00	243,183
1875	110,145	31,252	66,392	97,644	109,361	3 00	292,932
1876.....	139,192	17,856	†122,329	140,185	157,007	3 00	420,555
1877.....	154,052	24,311	115,381	139,692	156,455	3 00	419,076
1878.....	170,846	26,166	164,682	190,848	213,750	3 00	572,544
1879.....	241,301	40,294	192,096	232,390	260,277	3 00	697,170
1880.....	267,595	46,513	225,849	272,362	305,045	3 00	817,086
1881.....	228,357	40,191	189,323	229,514	257,056	3 00	688,542
1882.....	282,139	56,161	232,411	288,572	323,201	3 00	865,716
1883	213,299	64,786	149,567	214,353	240,075	3 00	643,059
1884.....	394,070	87,388	306,478	393,866	441,130	3 00	1,181,598
1885	365,596	95,227	237,797	333,024	372,987	3 00	999,072
1886	326,636	85,987	249,205	335,192	375,415	3 00	1,005,576
1887	413,360	99,216	334,839	434,055	486,142	3 00	1,302,165
1888.....	489,301	115,953	365,714	481,667	539,467	3 00	1,445,001
1889.....	579,830	124,574	443,675	568,249	636,439	3 00	1,704,747
1890.....	678,140	177,075	508,270	685,345	767,586	3 00	2,056,035
1891.....	1,029,097	202,697	806,479	1,009,176	1,130,277	3 00	3,027,528
1892.....	826,335	196,223	640,579	836,802	937,218	3 00	2,510,406
1893.....	978,294	207,851	768,917	976,768	1,093,980	3 00	2,930,304
1894.....	1,012,953	165,776	827,642	993,418	1,112,628	3 00	2,980,254
1895.....	939,654	188,349	756,334	944,683	1,058,045	3 00	2,834,049
1896.....	894,882	261,984	634,238	896,222	1,003,769	3 00	2,688,666
1897.....	802,296	290,310	619,860	910,170	1,019,390	3 00	2,730,510
1898... ..	1,136,485	375,423	752,863	1,128,286	1,263,680	3 00	3,384,858
1899.....	1,306,324	526,058	751,711	1,277,769	1,431,101	3 00	3,833,307
1900.....	1,590,178	685,667	914,184	1,599,851	1,791,833	3 00	4,799,553
1901	1,691,557	799,666	914,163	1,713,829	1,919,488	3 00	5,141,487
1902.....	1,641,626	837,871	776,809	1,614,680	1,808,441	3 00	4,844,040
1903.....	1,450,663	947,499	549,449	1,496,948	1,676,581	3 00	4,490,844
1904.....	1,685,698	1,129,465	533,593	1,663,058	1,862,625	3 00	4,989,174
1905.....	1,736,696	1,089,667	647,343	1,737,010	1,945,452	3 00	5,211,030
1906.....	1,899,076	1,236,476	679,829	1,916,305	2,146,262	3 00	5,748,915
1907.... .	2,219,602	1,438,402	673,114	2,111,516	2,364,898	3 50	7,390,306
1808.....	2,111,931	1,486,511	597,157	2,083,668	2,333,708	3 50	7,292,838
1909.....	2,388,196	1,585,232	741,667	2,326,899	2,606,127	3 50	8,144,147
1910.....	3,152,207	1,798,873	1,175,007	2,973,880	3,330,745	3 50	10,408,580
1911.....	2,304,794	1,657,422	612,696	2,270,118	2,542,532	3 50	7,945,413
1912	2,857,345	1,898,213	966,963	2,865,176	3,208,997	3 50	10,028,116

* This production is obtained by adding 'Home Consumption' and 'Sold for Export.'

† 52,935 tons of this amount were exported as sales without the division into 'Home Consumption' and 'Sold for Export.'

‡ Two months only.

The following general summary of development in various coal mining fields of British Columbia is quoted from the Annual Report[1] of Mr. W. F. Robertson, Provincial Mineralogist of the Province.

'In addition to the coal mines actually producing, there are a number of important fields which have not as yet reached the producing stage—some of these partly developed and equipped, and others only prospected.

That these fields contain a large reserve of coal there is absolutely no doubt, and many of them will be developed and producing as soon as the market demands it and the transportation facilities can be provided.

Near Princeton, in addition to the colliery of the Princeton Coal and Land Company, which shipped some 21,386 tons of very good lignitic coal, a new colliery has begun shipping—United Empire—making a start this year by shipping 500 tons.

In the same section the Columbia Coal and Coke Company has continued development all year with a force of seventy men, but has not as yet begun shipping.'

'In the Nicola valley the Pacific Coast Coal and Coke Company has continued development with a small force, and although not shipping, reports indicate that the development has been successful in proving seams of good coal.

'In the coalfield of the Peace River valley, although the seams are thin, the coal is of exceptionally good quality.

'The Groundhog coal field was visited by the writer during the summer, an account of which will be found on page 81 et seq. of this Report. The extent of the coalfield proved to be all that was claimed, but the quality of the seams as exposed in the openings seen in the southern end of the field was very disappointing. The field has only been tested in one part, and it seems quite probable that further prospecting will develop cleaner seams of coal; the number and thickness of the seams is all that could be desired.

'The coalfields on the Bulkley, Telkwa and Zymoetz rivers, near the line of Grand Trunk Pacific Railway east of Hazelton, have all been undergoing development, but it is as yet premature to say how important they may prove to be.

'On the southern end of Graham island, on Skidegate inlet, a colliery (the British Pacific) has been partly equipped, but so far the output has been unimportant.

'In the interior of Graham island, to the east of the coal-outcrops at Camps Robertson and Wilson, systematic boring has been in progress all year, but without demonstrating workable coal. It would appear that the coal-measures had been laid down on a very uneven floor of igneous rock, many of the bosses of which were higher than the depth of the coal-deposit, so that they are now

[1] Annual Report of the Minister of Mines of British Columbia for the year ending December 31, 1912; p. 249.

found protruding through; it was on one of these bosses that the first boreholes happened to be put down. The work is to be continued this year in other spots.

'Drilling has been going on in the northern part of the island near Masset, but no word has been received of commercial coal-seams having been proved.

'But slight development has been done on the coal-area near Bear lake, in the Cariboo district.

'On Vancouver Island the coalfield on Quatsino sound has been undergoing development in a small way, with as yet no definite results.

'The large producing companies have all been quietly doing extensive development work—the Canadian Collieries, near Campbell river and south of Cumberland, and it is understood much of this has been satisfactory, but details are not available for publication.

'The Western Fuel Company has been engaged in opening a new shaft—which will develop a new and very extensive seam of coal. Two shafts, each 10 × 26 inside of timbers and 350 feet apart, are being sunk; no expense or trouble which would tend to increase the safety or economy of future work is being spared in opening up this new colliery—a policy for which the present management has already acquired an enviable reputation.

'The Pacific Coast Coal Mines, Limited, has continued the development of its Suquash Colliery, and has this year mined about 4,500 tons of coal.'

Yukon.

The principal coal mining companies operating in the Yukon district are the Five Finger Coal Company at Tantalus in the southern Yukon and the Northern Light, Power, and Coal Co., Limited, operating the Sourdough mine, Colliery No. 2, on Coal Creek, 40 miles northwest of Dawson. The total production in 1912 was 9,245 tons valued at $44,958.

COAL.—TABLE 16.

Yukon Territory: Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.
		$	$ cts.
1901	*5,864	86,230	14 70
1902	4,910	37,280	7 59
1903	1,849	29,584	16 00
1904			
1905	7,000	21,000	3 00
1906	7,000	28,000	4 00
1907	15,000	60,000	4 00
1908	3,847	21,158	5 50
1909	7,364	49,502	6 72
1910	16,185	110,925	6 85
1911	2,840	12,780	4 50
1912	9,245	44,958	4 86

*Part of this production was mined in 1900.

COKE.

The statistics of coke production given herewith do not include coke made as a by-product in the manufacture of illuminating gas but are restricted to a record of the output of 'oven coke' produced chiefly for metallurgical purposes.

During 1912 the total quantity of coke made in Canadian coke oven plants from both domestic and imported coals was 1,406,028 tons. The quantity of coal used for this production was 2,053,807 tons, of which 1,428,509 tons were domestic coal and 525,298 tons were imported.

In 1911 the production was 954,388 tons of coke made from 1,409,844 tons of coal, of which 1,025,501 tons were domestic and 384,343 tons imported. In 1910 the production of coke was 901,269 tons derived from 1,373,793 tons of coal, of which 1,331,585 tons were domestic and 42,208 tons imported.

The quantity of coke sold or used by the producers in 1912 was 1,411,229 tons, as compared with 935,651 tons in 1911 and 902,715 tons in 1910.

The smaller quantity of Canadian coal used in 1911 was due to the coal miners' strike in southern Alberta and British Columbia during the greater part of that year, and the increased quantity of imported coal used to the construction of coke ovens in Ontario.

The consumption of coke in Canada is much in excess of the domestic production, there being a considerable importation of coke, chiefly into Ontario and Quebec, for use in the metallurgical industries.

The imports of coke during the calendar year 1912 were 628,174 tons and the exports 57,744 tons. Adding the production 1,411,229 tons to the net imports a consumption is shown of 1,981,659 tons. Similarly estimated the consumption in 1911 was 1,677,188 tons, and in 1910, 1,581,832 tons.

The production by provinces in 1911 and 1912 and the distribution of coke sold or used in 1912 are shown in the next two tables.

Coke Production, 1912.

Province.	Coal charged to ovens.	Output of coke.	Stock on hand.		Coke sold or used.	Per cent.	Value of sales, etc.
			Jan. 1.	Dec. 31.			
	Tons.	Tons.	Tons.	Tons.	Tons.		$
Nova Scotia.....	(a) 935,784	624,762	7,097	5,941	625,918	44·4	1,840,129
Ontario.....	(b) 502,671	376,314	22,937	19,397	379,854	26·9	1,709,343
Alberta.....	170,818	108,900	628	3,844	105,684	7·5	424,027
British Columbia.....	444,534	296,052	8,411	4,690	299,773	21·2	1,190,832
Total.....	2,053,807	1,406,028	39,073	33,872	1,411,229	100·0	5,164,331

(a) Including 22,627 tons imported coal.
(b) All imported coal.

Coke Production, 1911.

Province.	Coal charged to ovens.	Output of coke.	Stock on hand.		Coke sold or used.	Per cent.	Value of sales, etc.
			Jan. 1.	Dec. 31.			
	Tons.	Tons.	Tons.	Tons.	Tons.		$
Nova Scotia	846,695	562,512	210	5,168	557,554	59·6	1,814,977
Ontario	384,343	282,874	1,274	24,594	259,554	27·7	1,318,303
Alberta	61,591	35,059	1,785	625	36,216	3·9	146,251
British Columbia	117,215	73,943	14,557	6,173	82,327	8·8	350,879
Total	1,409,844	954,388	17,826	36,560	935,651	100·0	3,630,410

Distribution of Coke Production, 1912.

—	Nova Scotia.	Ontario.	Alberta.	British Columbia.	Total.
Sold in Canada	12,585	10,388	98,939	243,383	365,295
Sold for export	.....	.....	6,705	56,288	62,993
Total sales	12,585	10,388	105,644	299,671	428,288
Used by maker in blast furnace or otherwise.	613,333	369,466	40	102	982,941
Total sold or used	625,918	379,854	105,684	299,773	1,411,229
Number of ovens in operation December 31.	765	110	174	856	1,905
Number of ovens idle December 31	183	100	193	472	948
Number of ovens building December 31	.....	.....	.....	.....	.....

The annual production of coke since 1886 is shown in Table 1 and the annual production by provinces since 1897 in Table 2.

COKE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar. Year.	Tons.	Value.	Valu per ton.
		$	$ cts.			$	$ c
1886.	35,396	101,940	2 88	1899.	100,820	350,022	3
1887.	40,428	135,951	3 36	1900.	157,134	649,140	4 1
1888.	45,373	134,181	2 96	1901.	365,531	1,228,225	3 36
1889.	54,539	155,043	2 84	1902.	502,043	1,519,185	3 03
1890.	56,450	166,298	2 95	1903.	561,318	1,734,404	3 09
1891.	57,084	175,592	3 08	1904.	554,083	2,032,048	3 66
1892.	56,135	160,249	2 85	1905.	700,488	2,436,211	3 48
1893.	61,078	161,790	2 65	1906.	782,055	2,863,503	3 66
1894.	58,044	148,551	2 56	1907.	842,003	3,583,468	4 26
1895.	53,356	143,047	2 68	1908.	858,257	3,449,361	4 02
1896.	49,619	110,257	2 22	1909.	862,011	3,484,393	4 04
1897.	60,686	176,457	2 91	1910.	902,715	3,462,872	3 84
1898.	87,600	286,000	3 26	1911.	935,651	3,630,410	3 88
				1912.	1,411,229	5,164,331	3 66

COKE.—TABLE 2.

Annual Production of Coke by Provinces.

Calendar Year.	Nova Scotia.		Ontario.		British Columbia.		Alberta.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
1897.	41,532	90,950	.....	.....	19,154	85,507	.....	.....
1898.	48,400	111,000	.....	.....	39,200	175,000	.....	.....
1899.	62,459	178,767	.....	.....	38,361	171,255	.....	.....
1900.	61,767	223,395	.....	.....	95,367	425,745	.....	.....
1901.	222,694	590,560	.....	.....	142,837	637,665	.....	.....
1902.	363,330	899,930	.....	.....	138,713	619,255	.....	.....
1903.	371,745	888,094	.....	.....	189,573	846,310	.....	.....
1904.	275,927	808,022	.....	.....	257,172	1,148,090	20,984	78,936
1905.	386,366	1,054,712	.....	.....	269,256	1,202,035	44,866	179,464
1906.	476,364	1,540,976	.....	.....	236,205	1,054,485	69,486	268,042
1907.	524,110	1,688,070	.....	.....	241,572	1,049,432	76,321	297,595
1908.	505,929	1,658,151	.....	.....	276,683	1,482,191	75,645	309,019
1909.	492,992	1,608,092	.....	.....	281,786	1,509,567	87,233	366,734
1910.	508,058	1,655,775	24,685	148,110	248,394	1,172,675	121,578	486,312
1911.	557,554	1,814,977	259,554	1318,303	36,216	146,251	82,327	350,879
1912.	625,918	1,840,129	379,854	1709,343	299,773	1,190,832	105,684	424,027

In Nova Scotia coke was made at Sydney, Sydney Mines, and Westville during 1912, but the ovens at Stellarton and Londonderry were idle. The output is used almost entirely in the manufacture of iron and steel. The Ontario

production was all from the ovens of the Lake Superior Corporation at Sault Ste. Marie, the blast furnaces and coking ovens of the Atikokan Iron Company at Port Arthur being idle throughout the year. In Alberta coke ovens were operated at Coleman, Lille, and Passburg, and in British Columbia at Fernie, Michel, and Hosmer, all in the Crowsnest district. The coke output of these Provinces is used chiefly by the copper and lead smelters, finding a market in the United States as well as in British Columbia.

The total number of ovens in active operation on December 31, 1912, was 1,905, while 948 were reported idle on the same date. In Nova Scotia the Dominion Iron and Steel Company at Sydney has 620 finished ovens all of the Otto Hoffman, by-product type. The by-products from these ovens include tar and ammonia. The tar is sold to the Dominion Tar and Chemical Company, whose works are contiguous to the coke oven plant, and this product is further treated for the manufacture of refined tar, pitch of various grades, benzole, creosote, carbolic acid, etc. The Nova Scotia Steel and Coal Company has 30 ovens of the Bauer type and 120 Bernard ovens; the latter are situated near the blast furnace and the surplus gas is used for the production of steam for the electric power plant. The surplus gas from the Bauer ovens is used in generating steam for general colliery use. The other ovens in this Province number 178 and are all of the Beehive type.

The Atikokan Iron Co., Limited., has 100 Beehive ovens at Port Arthur, Ont., and the Algoma Steel Company 110 Koppers by-product regenerative ovens at Sault Ste. Marie.

In Alberta the West Canadian Collieries, Limited, at Lille, has 50 ovens of the Bernard or Belgian type. The ovens of the International Coal and Coke Company at Coleman, 216 in number, are of the ordinary Beehive type, while the Leitch Collieries, Limited, have erected at Passburg 191 Mitchell rectangular ovens.

There are 1,420 beehive ovens in the Crowsnest district of British Columbia and 150 on Vancouver island.

The production of by-products from coke ovens in 1912 at Sydney and Sault Ste. Marie included 8,428,896 gallons of tar, and ammonia liquor containing 11,289 tons of sulphate of ammonia. In 1911 the production was 6,646,155 gallons of tar, and ammonia liquor containing 7,124 tons of sulphate of ammonia. Production in 1910 was: tar 3,963,591 gallons, sulphate of ammonia 3,491 tons, and in 1909, tar 4,016,824 gallons, and sulphate of ammonia 3,351 tons.

Statistics of exports and imports of coke as published by the Customs Department are shown in Tables 3 and 4 following.

The exports of coke during the calendar year 1912 were 57,744 tons, as against exports of only 9,852 tons in 1911 and 57,971 tons in 1910. These exports are all from British Columbia and Alberta. The imports during the calendar year 1912 were 628,174 tons, valued at $1,702,856, as against imports

of 751,389 tons, valued at $1,843,248, in 1911, and 737,088 tons, valued at $1,908,725, in 1910.

The imports shown in Table 4 cover the fiscal year.

COKE.—TABLE 3.

Annual Exports of Coke.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1897	2,987	6,078	1905	116,071	509,908
1898	3,774	8,394	1906	37,003	168,571
1899	5,557	18,726	1907	70,617	320,357
1900	41,529	131,278	1908	58,708	248,759
1901	57,505	176,990	1909	74,067	329,051
1902	62,568	180,920	1910	57,971	250,715
1903	32,608	135,957	1911	9,852	39,823
1904	102,463	345,031	1912	57,744	252,763

COKE.—TABLE 4.

Annual Imports of Oven Coke.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		$			$
1880	3,837	19,353	1896	61,612	203,826
1881	5,492	26,123	1897	83,330	267,540
1882	8,157	36,670	1898	135,060	347,040
1883	8,943	38,588	1899	141,284	362,826
1884	11,207	44,518	1900	187,878	506,339
1885	11,564	41,391	1901	308,786	680,138
1886	11,858	39,756	1902	267,142	842,815
1887	15,110	56,222	1903	256,723	1,222,756
1888	25,487	102,334	1904	221,050	765,123
1889	29,557	91,902	1905	371,593	807,842
1890	36,564	133,344	1906	480,222	1,311,375
1891	38,533	177,605	1907*	400,536	1,132,680
1892	43,499	194,429	1908	619,269	2,166,036
1893	41,821	156,277	1909	466,292	1,136,624
1894	42,864	176,996	1910	702,053	1,695,603
1895	43,235	149,434	1911	763,114	1,887,493
			1912†	641,903	1,637,091

* For nine months only. † Duty free.

FELDSPAR.

The total shipments of feldspar in 1912 were reported as 13,733 tons, valued at $30,916, or an average of $2.25 per ton, as compared with shipments in 1911 of 17,723 tons, valued at $51,939, or an average of $2.93 per ton.

The shipping firms were:—

The Kingston Feldspar and Mining Co., Kingston, Ont. Mines at Verona, Ont.

The Dominion Feldspar Co., Ltd., 425 Roxton Road, Toronto, Ont. Mines near Bobs lake, Frontenac county.

The Dominion Improvement and Development Co., Perth, Ont.

Messrs. O'Brien and Fowler, Hope Building, Ottawa. Mines at Villeneuve, Que.

The greater part of the shipments are exported to the United States; the exports of feldspar in 1912 being reported as 12,779 tons, valued at $44,114, or an average value of $3.45 per ton.

Almost the entire production of Canadian feldspar is derived from the Province of Ontario, the principal mines being located in the county of Frontenac, about 20 miles north of the town of Kingston on the St. Lawrence river. A few small deposits, also, have been worked in the Parry Sound district, in the vicinity of the Muskoka lakes. Formerly, feldspar was mined to some extent also in the Province of Quebec, the deposits being located in Ottawa county. No development of these properties has taken place during recent years, the distance from the United States factories rendering mining unprofitable. One mine in this region yields a remarkably pure white feldspar, which is in demand for the manufacture of artificial teeth. During 1912 some development was undertaken on feldspar deposits at Manikuagan bay on the north shore of the gulf of St. Lawrence.

Statistics of the production and exports of feldspar are shown in the following table:—

Production and Exports of Feldspar.

Calendar Year.	Production.		Exports.	
	Tons.	Value.	Tons.	Value.
		$		$
1890	700	3,500	.....	.....
1891	685	3,425	.....	.....
1892	175	525	.....	.....
1893	575	4,525	50	500
1894	Nil.	Nil.	Nil.	Nil.
1895	.....	*2,545	.....	2,545
1896	972	*2,583	972	2,583
1897	1,400	3,290	3,078	5,637
1898	2,500	6,250	1,542	4,396
1899	3,000	6,000	1,757	5,126
1900	318	1,112	379	1,116
1901	5,350	10,700	4,367	10,973
1902	7,576	15,152	7,374	13,708
1903	13,928	18,966	13,760	23,319
1904	11,083	22,166	13,960	29,263
1905	11,700	23,400	9,161	27,660
1906	16,948	40,890	18,183	60,312
1907	12,584	29,819	12,068	37,932
1908	7,877	21,099	9,524	34,045
1909	12,783	40,383	10,834	35,234
1910	15,809	47,667	15,601	47,962
1911	17,723	51,939	16,150	56,085
1912	13,733	30,916	12,779	44,114

*Exports.

GRAPHITE.

The total shipments of graphite in 1912 were reported as 2,060 tons, valued at $117,122, and included 210 tons of crude graphite, valued at $1,365, and 1,850 tons of refined graphite, valued at $115,757, or an average of $62.57 per ton.

In 1911 the total shipments were 1,269 tons of refined or milled graphite, valued at $69,576, or an average of $54.83 per ton.

In 1910 the total shipments of graphite were 1,392 tons, valued at $74,087, comprising 245 tons of crude graphite, valued at $2,450, and 1,147 tons of refined graphite, valued at $71,637, an average of $62.46 per ton.

Statistics of the annual production since 1886 are shown in Table 1.

GRAPHITE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1886	500	4,000	1899	1,130	24,179
1887	300	2,400	1900	1,922	31,040
1888	150	1,200	1901	2,210	38,780
1889	242	3,160	1902	1,095	28,300
1890	175	5,200	1903	728	23,745
1891	260	1,560	1904	452	11,760
1892	167	3,763	1905	541	16,735
1893	Nil.	Nil.	1906	387	18,300
1894*	3	223	1907	579	16,000
1895	220	6,150	1908	251¼	5,565
1896	139	9,455	1909	864	47,800
1897	436	16,240	1910	1,392	74,087
1898	.....	13,698	1911	1,269	69,576
			1912	2,060	117,122

* Exports.

The graphite shipments in 1912 comprised 604 tons, valued at $50,680, from mills in the Buckingham district, Province of Quebec, and 1,456 tons, valued at $66,442, from mines and mills at Calabogie, Port Elmsley, and Wilberforce, Ontario.

The total value of the exports of graphite in 1912 was $129,683, being classified as crude ore and concentrates, and manufactures of plumbago. The ore and concentrates exported in 1912 are given as 1,654 tons, valued at $70,763, and manufactures of plumbago, valued at $58,920. Of the ore and concentrates exported, 59 tons, valued at $4,984, were reported as shipped to Great Britain; 1,550 tons, valued at $62,680, to the United States; and 45 tons, valued at $3,099, to other countries.

The manufactures of plumbago exported included $3,932 to Great Britain, $46,796 to the United States, and $8,192 to other countries.

GRAPHITE.—TABLE 2.

Exports of Graphite.

Year.	Crude ore and concentrates.		Manufactures.	Total value.
	Tons.	Value.	Value.	
		$	$	$
1886				3,586
1887				3,017
1888				1,080
1889				538
1890				1,529
1891				72
1892				3,952
1893	1	38	10	48
1894	3	223		223
1895	544	4,803	30	4,833
1896	136	9,126	354	9,480
1897	205	2,988	1,337	4,325
1898	591	11,527	1,571	13,098
1899	1,237	19,326	3,164	22,490
1900	1,550	40,132	6,065	46,197
1901	1,194	30,535	4,567	35,102
1902	886	23,097	1,742	24,839
1903	412	26,230	17,412	43,642
1904	177	9,609	6,958	16,567
1905	254	7,596	518	8,114
1906	106	2,468	5,274	7,742
1907	121	3,036	2,847	5,883
1908	385	10,158	876	11,034
1909	1,004	52,438	864	53,302
1910	788	53,008	66,658	119,666
1911	813	43,249	33,956	77,205
1912	1,654	70,763	58,920	129,683

Statistics of the imports of graphite into Canada given in Table 3, show an importation, principally of manufactured graphite products, to a value of $130,381 during the fiscal year 1912, and a valuation of $111,869 during the fiscal year 1911.

The imports of graphite during the calendar year 1912 were valued at $155,484, and comprised: plumbago, not ground, $7,249; black lead, $9,587; plumbago, ground, and manufactures, $56,324; and crucibles of clay or plumbago, $82,324.

The imports of graphite during the calendar year 1911 were valued at $112,946, and comprised: plumbago, not ground, $4,940; black lead, $14,172; plumbago, ground, and manufactures, $37,042; and crucibles of clay or plumbago, $56,814.

GRAPHITE—TABLE 3

Imports of Raw and Manufactured Graphite.

Fiscal Year.	Plumbago not ground.	Black lead.	Ground and manufactures.	Crucibles, clay or plumbago.	Total.
	$	$	$	$	$
1880	1,677	18,055	2,738		22,470
1881	2,479	26,544	1,202		30,225
1882	1,028	25,132	2,181		28,341
1883	3,147	21,151	2,141		26,439
1884	2,891	24,002	2,152		29,045
1885	3,729	24,487	2,805		31,021
1886	5,522	23,211	1,408		30,141
1887	4,020	25,766	2,830		32,616
1888	3,802	27,824	22,604		34,230
1889	3,546	11,852	21,789		37,187
1890	3,441	10,276	26,605		40,322
1891	7,217	8,292	26,201		41,710
1892	2,988	13,560	23,085		39,633
1893	3,293	16,595	23,051		42,939
1894	2,177	17,614	15,196	1,490	36,477
1895	2,586	13,922	16,361	5,627	38,496
1896	2,865	18,434	12,090	7,407	40,796
1897	1,406	17,863	14,768	5,906	39,943
1898	1,862	19,638	20,120	12,533	54,153
1899	4,979	21,334	22,140	14,350	62,803
1900	4,437	22,078	17,869	20,571	64,955
1901	2,357	25,646	11,016	38,874	77,893
1902	3,649	20,467	15,021	28,635	67,772
1903	2,870	22,559	12,493	34,624	72,546
1904	1,802	26,053	12,737	28,773	69,365
1905	2,499	30,743	13,192	31,353	77,787
1906	2,791	33,907	19,058	32,950	88,706
1907 (9 mos.)	3,176	16,646	13,740	27,271	60,833
1908	3,030	9,042	31,428	40,092	83,592
1909	1,408	11,009	26,918	37,213	76,548
1910	5,223	11,930	39,815	43,029	99,997
1911	4,300	10,728	43,733	53,108	111,869
1912	6,163	11,864	39,978	72,376	130,381

The market for graphite in Great Britain is, to some extent, indicated by the exports into that country, which are shown as follows:—

Imports of Plumbago into Great Britain,[1] 1911 and 1912.

	1911.			1912.		
	Tons (short.)	Value.	Per ton.	Tons (short.)	Value.	Value per ton.
		$	$		$	$
Germany	3,020	119,301	39·5	3,362	128,212	38·1
France	1,209	116,795	96·6	185	8,230	44·5
Madagascar				2,025	208,240	102·8
Italy	986	18,523	18·8	1,136	22,737	20·0
Austria-Hungary	226	9,193	40·7	197	4,672	43·7
Japan	2,893	79,015	27·3	3,072	84,140	27·4
United States	284	29,677	104·5	355	34,281	96·6
Other foreign countries	823	32,826	39·9	764	23,160	30·3
British India	1,827	104,336	57·1	1,681	81,011	48·2
Ceylon and dependencies	6,426	598,746	95·8	5,880	618,918	105·3
Australia	16	720	45·0	6	122	20·3
Canada	76	7,388	97·2	39	3,484	89·3
Other British possessions	11	448	40·7			
Total	17,797	1,116,968	62·7	18,702	1,217,207	65·1

[1] British Trade Report, 1912.

Prices of refined graphite in London, England, as quoted in the *Mining Journal* of December 28, 1912, were as follows:—

PURIFIED, MILLED, AND GROUND.

Ceylon,	97 to 99 per cent	£59 to £63 per ton	f. o. b. London.
"	90 to 91 "	40 to 42 "	"
"	80 to 81 "	30 to 32 "	"
"	70 to 71 "	27 to 28 "	"
American, large flake,		45 to 49 "	"
" small "		35 to 45 "	"

Following is a list of the principal firms operating graphite mines:—

Operator and Address.	Location.			Mine office.
	County.	Township.	Range or concession and lot.	
Quebec.				
The Canadian Graphite Co., Ltd., Montreal, 207 Coristine Building.	Argenteuil..	Wentworth.	III, 1A, 1B.....	Lachute.
Graphite Limited, Montreal, 220 Board of Trade Building.	Ottawa.....	Amherst....	VI and VII, 16...	St. Remi d'Amherst.
The Quebec Graphite Co., Ltd., Buckingham, Box 262.	"	Buckingham	IV, 1, E½ 2, 3, ¼4, ⅛5	Buckingham.
		Lochaber...	IV, 28.....	
Buckingham Graphite Co., Ltd., Buckingham.	"	" ..	VI, 28.....	"
The Bell Graphite Co., Ltd., Buckingham, Box 185.	"	" .	V, 2.....	"
Dominion Graphite Co., Toronto, 7 and 9 King East.	"	" ..	V, 28.....	In liquidation.
Peerless Graphite Co., Rochester, N.Y., 64 Clinton, North.	" .. .	" ..	IX, 12; X, 13.....	Buckingham.
Ontario.				
Black Donald Graphite Co., Calabogie.	Renfrew....	Brougham..	III, IV, Whitefish Lake.	Calabogie.
The Globe Refining Co., Ltd., Ottawa, 175 Cooper St.	Lanark...	Elmsley N..	VI, 23.....	Port Elmsley.
	"	Burgess N...	V, 21, VI, 22.....	"
Virginia Graphite Co., Ltd., Wilberforce.	Hastings ..	Monteagle..	XIII, 23...	Maynooth.
	Haliburton	Monmouth..	XV, S ½ 35.....	Wilberforce.
New York Graphite Co., Harcourt ...	"	Cardiff	XXI.....	Harcourt.

ARTIFICIAL GRAPHITE.

The manufacture of artificial graphite in electric furnaces has been carried on for some years at Niagara Falls, Ontario, by the International Atcheson Graphite Company. The production has been as follows:—

	Pounds.
1906	445,047
1907	407,779
1908	428,540
1909	513,436
1910	2,442,166
1911	2,172,098
1912	2,302,625

GYPSUM.

Gypsum has been extensively quarried or mined for many years in the Provinces of Nova Scotia and New Brunswick and, to a lesser extent, in the Province of Ontario. During the past twelve years the gypsum deposits north of Lake St. Martin, Manitoba, have been operated with a growing annual production. The existence of several gypsum deposits in British Columbia has been known for some years, and in 1911 some development work was done and the first shipments made.

The total shipments of gypsum products in 1912, including crude, ground, and calcined gypsum, were 578,458 tons, valued at $1,324,620, as compared with 518,383 tons, valued at $993,394, in 1911.

The total quantity of crude gypsum mined in 1912 was 549,856 tons, as compared with 515,979 tons in 1911. The quantity calcined in 1912 was reported as 133,392 tons, compared with 76,718 tons in 1911. The total shipments in 1912 included: 453,577 tons of crude gypsum, valued at $525,345, or an average value of $1.16 per ton; 15,487 tons of ground gypsum, valued at $29,244, or an average value of $1.89; and 109,394 tons of calcined gypsum, valued at $770,031, or an average value of $7.04 per ton. The total shipments in 1911 included 449,823 tons of crude gypsum, valued at $481,077, or an average value of $1.07 per ton; 7,149 tons of ground gypsum, valued at $23,125, or an average value of $3.23 per ton; and 61,411 tons of calcined gypsum, valued at $489,192, or an average value of $7.97 per ton.

The total quantity of gypsum mined and the total quantity calcined during the past eight years are shown hereunder.

Gypsum Mined and Gypsum Calcined.

Year.	Total gypsum mined.	Gypsum calcined.
	Tons.	Tons.
1905	443,569	26,855
1906	492,759	28,831
1907	489,962	34,752
1908	375,444	48,727
1909	493,086	63,670
1910	548,019	69,889
1911	515,979	76,718
1912	549,856	133,392

A very large part of the gypsum mined is shipped in the lump form, as quarried, to calcining mills in the United States. From 8,000 to 15,000 tons are ground for various uses, while the balance, nearly 24 per cent in 1912, is

calcined in Canada for the manufacture of wall plaster, plaster of Paris, and other gypsum products. Crude gypsum is also used to a considerable extent in the manufacture of Portland cement.

Detailed statistics of the production and sales of crude, crude ground, and calcined gypsum during the past eight years are shown in Table 1, while the total annual sales of gypsum products since 1886 are shown in Table 2, and the sales by provinces in Table 3.

GYPSUM.—TABLE 1.

Sales and Shipments of Crude, Ground, and Calcined Gypsum, 1905-1912.

Calendar Year.	Crude (Lump).			Crude, ground.		
	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
		$	$ cts.		$	$ cts.
1905	412,155	409,146	0 99	3,255	8,779	2 70
1906	442,132	473,960	1 07	3,195	9,823	3 07
1907	454,668	473,831	1 04	6,732	16,268	2 42
1908	298,188	307,532	1 03	9,504	25,468	2 68
1909	423,474	457,038	1 08	8,814	26,159	2 97
1910	469,573	508,686	1 08	6,121	17,390	2 84
1911	449,823	481,077	1 07	7,149	23,125	3 23
1912	453,577	525,345	1 16	15,487	29,244	1 89

Calendar Year.	Calcined.			Total sales.		
	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
		$	$ cts.		$	$ cts.
1905	26,748	168,243	6 29	442,158	586,168	1 32
1906	23,695	159,511	6 73	469,022	643,294	1 37
1907	24,521	156,815	6 40	485,921	646,914	1 33
1908	33,272	242,701	7 29	340,964	575,701	1 69
1909	40,841	326,435	7 99	473,129	809,632	1 71
1910	49,552	408,370	8 24	525,246	934,446	1 78
1911	61,411	489,192	7 97	518,383	993,394	1 92
1912	109,394	770,031	7 04	578,458	1,324,620	2 29

GYPSUM.—TABLE 2.

Annual Production of Gypsum Products.

Calendar Year.	Tons.	Value.	Per ton.	Calendar Year.	Tons	Value.	Per ton.
		$	$ cts.			$	$ cts.
1886	162,000	178,742	1 10	1900	252,101	259,009	1 02
1887	154,008	157,277	1 02	1901	293,799	340,148	1 16
1888	175,887	179,393	1 01	1902	333,599	379,479	1 14
1889	213,273	205,108	0 96	1903	314,489	388,459	1 24
1890	226,509	194,033	0 86	1904	345,961	373,479	1 08
1891	203,605	206,251	1 01	1905	442,158	586,168	1 32
1892	241,048	241,127	1 00	1906	469,022	643,294	1 37
1893	192,568	196,150	1 02	1907	485,921	646,914	1 33
1894	223,631	202,031	0 90	1908	340,964	575,701	1 69
1895	226,178	202,608	0 89	1909	473,129	809,632	1 71
1896	207,032	178,061	0 86	1910	525,246	934,446	1 78
1897	239,691	244,531	1 02	1911	518,383	993,394	1 92
1898	219,256	232,515	1 06	1912	578,458	1,324,620	2 29
1899	244,566	257,329	1 05				

GYPSUM.—TABLE 3.

Annual Production by Provinces.

Calendar Year.	Nova Scotia.		New Brunswick.		Ontario.		Manitoba.		Br. Columbia.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Val e.
		$		$		$		$		$
1887	116,346	116,346	29,102	29,216	8,560	11,715			.....	.....
1888	124,818	120,429	44,369	48,764	6,700	10,200			.....	.....
1889	165,025	142,850	40,866	49,130	7,382	13,128			.....	.....
1890	181,285	154,972	39,024	30,986	6,200	8,075			.....	.....
1891	161,934	153.955	36,011	33,996	5,660	18,300			.....	.....
1892	197,019	170,021	39,709	65,707	4,320	5,399			.....	.....
1893	152,754	144,111	36,916	41,846	2,898	10,193			.....	.....
1894	168,300	147,644	52,962	48,200	2,369	6,187			.....	.....
1895	156,809	133,929	66,949	63,839	2,420	4,840			.....	.....
1896	136,590	111,251	67,137	59,024	3,305	7,786			.....	.....
1897	155,572	121,754	82,658	118,116	1,461	4,661			.....	.....
1898	132,086	106,610	86,083	121,704	1,087	4,201			.....	.....
1899	126,754	102,055	116,792	151,296	1,020	3,978			.....	.....
1900	138,712	108,828	112,294	145,850	1,095	4,331			.....	.....
1901	170,100	136,947	121,595	189,709	1,504	5,692	600	7,800	.....	.....
1902	206,087	181,425	124,041	170,153	1,917	7,699	1,554	20,202	.....	.....
1903	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510	.....	.....
1904	218,580	153,600	190,991	187,524	2,390	18,350	4,000	14,000	.....	.....
1905	272,252	298,248	163,553	232,586	1,853	23,834	4,600	31,500	.....	.....
1906	333,312	345,414	131,246	250,960	2,965	24,420	3,200	22,500	.....	.....
1907	357,411	380,859	118,106	213,638	10,404	52,417	.....	.....	.....	.....
1908	234,455	230,433	81,620	191,312	10,389	42.456	14,500	111,500	.....	.....
1909	345,682	364,379	98,716	226,975	11,731	48,278	17,000	170,000	.....	.....
1910	400,455	458,638	90,236	213,579	15,055	67,229	19,500	195,000	.....	.....
1911	353,999	406,457	93,205	115,044	27,399	98,018	43,000	372,000	780	1,875
1912	376,082	481,493	82,757	185,821	53,119	176,056	66,500	481,250	.....	.....

EXPORTS AND IMPORTS.

Statistics of exports and imports of gypsum, as compiled from the reports of Trade and Navigation, are shown in Tables 4, 5, and 6. The exports of gypsum during the calendar year 1912 were 364,643 tons, valued at $423,208, or an average of $1.16 per ton, as compared with exports of 362,102 tons, valued at $425,161, or an average value of $1.17 per ton, in 1911.

There was also an export of ground gypsum in 1912, valued at $6,495, as compared with an export valued at $4,429 in 1911. The exports of crude gypsum since 1874 are shown in Table 4, and of ground gypsum since 1890, in Table 5.

The imports during the calendar year 1912 totalled 43,071 tons, valued at $268,103, and included: crude gypsum, 3,503 tons, valued at $16,254, or $4.64 per ton; ground gypsum, 7,072 tons, valued at $19,651, or $2.78 per ton; and plaster of Paris, 32,496 tons, valued at $232,198, or $7.15 per ton.

The imports during the calendar year 1911 totalled 32,234 tons, valued at $205,782, and included: crude gypsum, 2,035 tons, valued at $11,792, or 5.79 per ton; ground gypsum, 1,681 tons, valued at $3,619, or $2.15 per ton; and plaster of Paris, 28,518 tons, valued at $190,371, or $6.68 per ton. The record given in Table 6 covers the fiscal year.

The imports of gypsum previous to 1905 were comparatively small; since that year, however, imports, particularly of plaster of Paris, have increased considerably. During the past seven years the imports of plaster of Paris have increased from 6,000 tons to over 32,000 tons per annum, whereas formerly the imports ranged from 150 to 720 tons annually. The imports classed as "crude" and "ground" have varied considerably both in quantity and particularly also in grade of product, judging by the differences in average values.

GYPSUM.—TABLE 4.

Exports of Crude Gypsum.

Calendar Year.	Nova Scotia.		New Brunswick.		Ontario.		Total.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$		$
1874	67,830	68,164	....	.....	.....	.....	67,830	68,164
1875	86,065	86,193	5,420	5,420	.....	.....	91,485	91,613
1876	87,720	87,590	4,925	6,616	120	180	92,765	94,386
1877	106,950	93,867	5,030	5,030	... .	.....	111,980	98,897
1878	88,631	76,695	16,335	16,435	489	675	105,455	93,805
1879	95,623	71,353	8,791	8,791	579	720	104,993	80,864
1880	125,685	111,833	10,375	10,987	875	1,240	136,935	124,060
1881	110,303	100,284	10,310	15,025	657	1,040	121,270	116,349
1882	133,426	121,070	15,597	24,581	1,249	1,946	150,272	147,597
1883	145,448	132,834	20,242	35,557	462	837	166,152	169,228
1884	107,653	100,446	21,800	32,751	688	1,254	130,141	134,451
1885	81,887	77,898	15,140	27,730	525	787	97,552	106,415
1886	118,985	114,116	23,498	40,559	350	538	142,833	155,213
1887	112,557	106,910	19,942	39,295	225	337	132,724	146,542
1888	124,818	120,429	20	50	670	910	125,508	121,389
1889	146,204	142,850	31,495	50,862	483	692	178,182	194,404
1890	145,452	139,707	30,034	52,291	205	256	175,691	192,254
1891	143,770	140,438	27,536	41,350	5	7	171,311	181,795
1892	162,372	157,463	27,488	43,623	.....	.....	189,860	201,086
1893	132,131	122,556	30,061	36,706	.....	.....	162,192	159,262
1894	119,569	111,586	40,843	46,538	....	.....	160,412	158,124
1895	133,369	125,651	56,117	67,593	.....	.....	189,486	193,244
1896	116,331	109,054	64,946	77,535	.....	.....	181,277	186,589
1897	122,984	116,665	66,222	80,485	.....	.....	189,206	197,150
1898	99,215	93,474	70,399	81,433	.....	.....	169,614	174,907
1899	104,795	99,984	96,831	108,094	*½	12	201,626	208,090
1900	.....	.....	.....	.....	.....	.....	188,262	201,912
1901	.....	.....	.....	.....	.....	.....	236,247	231,594
1902	....	.....	.....	....	.....	.....	289,600	295,215
1903	.....	.....	.....	.....	.....	.....	287,496	311,580
1904	....	....	... ...	... .	.....	.....	298,211	316,436
1905	.....	.....	.....	.....	.....	.....	359,246	388,474
1906	.....	.....	.....	....	.....	.....	404,464	462,814
1907	.. ..	.....	.....	.....	.....	.....	375,026	424,794
1908	....	.....	.....	....	.....	.....	280,091	324,574
1909	.. ..	.....	.....	.....	.....	.....	315,201	372,286
1910	.....	....	.....	.....	.....	.....	346,081	416,725
1911	.....	.....	.....	... .	.....	.....	362,102	425,161
1912	.....	....	.....	.....	.....	.....	364,643	423, 208

* Exported from British Columbia.

GYPSUM.—TABLE 5.

Exports of Ground Gypsum.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1890	105	1898	6,448	1905	2,673
1891	588	1899	8,123	1906	2,934
1892	20,255	1900	19,834	1907	557
1893	22,132	1901	15,337	1908	9,765
1894	20,054	1902	5,101	1909	2,787
1895	22,233	1903	12,457	1910	12,306
1896	21,267	1904	2,333	1911	4,429
1897	6,763			1912	6,495

GYPSUM.—TABLE 6.

Imports of Gypsum.

Fiscal Year.	Crude gypsum.		Ground gypsum.		Plaster of Paris.	
	Tons.	Value.	Lbs.	Value.	Lbs.	Value.
		$		$		$
1880	1,854	3,203	1,606,578	5,948	667,676	2,376
1881	1,731	3,442	1,544,714	4,676	574,006	2,864
1882	2,132	3,761	759,460	2,576	751,147	4,184
1883	1,384	3,001	1,017,905	2,579	1,448,650	7,867
1884	.....	3,416	687,432	1,936	782,920	5,226
1885	1,353	2,354	461,400	1,177	689,521	4,809
1886	1,870	2,429	224,119	675	820,273	5,463
1887	1,557	2,492	13,266	73	594,146	4,342
1888	1,236	2,193	106,068	558	942,338	6,662
1889	1,360	2,472	74,390	372	1,173,996	8,513
1890	1,050	1,928	434,400	2,136	693,435	6,004
1891	376	640	36,500	215	1,035,605	8,412
1892	626	1,182	310,250	2,149	1,166,200	5,595
1893	496	1,014	140,330	442	552,130	3,143
1894	.....	1,660	23,270	198	422,700	2,386
1895	603	960	20,700	88	259,200	1,619
1896	1,045	848	64,500	198	297,000	2,000
1897	.....	772	45,000	123	969,900	4,489
1898	1,147	1,742	35,700	293	329,600	2,025
1899	325	692	33,900	338	496,300	3,120
1900	77	958	6,300	69	849,100	6,492
1901	286	1,125	65,400	1,097	502,200	3,978
1902	541	1,697	56,700	249	475,300	2,641
1903	1,076	2,187	68,700	228	630,800	3,599
1904	249	663	106,300	559	625,100	2,885
1905	2,344	7,386	2,255,700	2,681	7,924,100	37,643
1906	6,332	22,008	1,968,600	1,799	12,866,500	43,742
1907 (9 mos)	9,189	23,410	609,600	1,619	19,849,400	58,364
1908	9,393	36,510	382,500	1,781	15,020,000	51,328
1909	10,317	35,268	6,286,200	5,765	17,009,000	64,849
1910	3,790	12,137	21,417,000	17,402	42,095,700	123,965
1911	12,500	22,872	13,764,300	12,298	38,562,800	135,837
1912	2,147	12,263	1,965,300	3,939	60,803,100	205,676

Crude gypsum, duty free. Ground gypsum, duty 15 per cent. Plaster of Paris, duty 12½c. per 100 lbs.

The Province of Nova Scotia is the largest producer of gypsum. In both this Province and New Brunswick the deposits are extensive, and the facilities for water shipment to United States ports are unexcelled. The total quantity of gypsum mined in Nova Scotia in 1912 was 330,422 tons, as compared with 337,605 tons in 1911, and 438,131 tons in 1910. Of the total in 1912 about 85 per cent was mined from quarries in Hants county, at Windsor, Walton, Cheverie, Noel, etc., the balance being quarried at St. Ann, McKinnon Harbour, Victoria county, and Cheticamp, Inverness county. The greater part of the gypsum ground was shipped crude, chiefly to the United States. Two calcining mills were operated in the Province, one at Windsor, the other at Eastern Harbour, Cape Breton. The total shipments of calcined gypsum were 10,123 tons, as against 14,272 tons in 1911.

In New Brunswick the principal operating quarries are located at Hillsborough, some production being also made from the Tobique River deposits at Plaster Rock, in Victoria county. The total crude gypsum mined in the Province in 1912 was 82,348 tons, as against 92,446 tons in 1911, and 97,867 tons in 1910. About 80 per cent of the output was shipped crude, either in lump or ground, and the balance calcined, the calcined product finding a market throughout Canada.

In Ontario, 57,096 tons were reported as having been mined during 1912, as compared with 32,148 tons in 1911, and 12,021 tons in 1910. The total sales in 1912, including crude, ground, and calcined gypsum were 53,119 tons, valued at $176,056. The sales included a quantity of alabastine manufactured by one firm, and valued at about $50 per ton.

The production of gypsum in Manitoba has continued to increase steadily each year, and in 1912 the value of the shipments was second only to those of Nova Scotia. Practically all of the gypsum mined in this Province is calcined in mills situated at Winnipeg. The total quantity of gypsum mined in 1912 was 80,000 tons, as compared with 53,000 tons in 1911, 25,000 tons in 1910, and 22,000 tons in 1909. The shipments in 1912 were 66,500 tons, chiefly calcined gypsum, valued at $481,250, as compared with 43,000 tons, valued at $372,000, in 1911, and 19,500 tons, valued at $195,000, in 1910.

There was no production of gypsum from British Columbia deposits during 1912.

Following is a list of the principal active operators:—

Location of quarry.	Name of operator.	Address.
St. Ann, N.S.	Victoria Gypsum Mining and Mfg. Co.	Quarry, St. Ann, N.S.
McKinnon Harbour, N.S.	Newark Plaster Co.	McKinnon Harbour, N.S.
Cheticamp, N.S.	Great Northern Mining and Ry. Co., Ltd.	Eastern Harbour, N.S.
Cheverie and Walton, N.S.	Albert Parsons	Walton, N.S.
Newport Station, N.S.	Windsor Gypsum Co	Windsor, N.S.
Eagle Swamp, N.S.	Wentworth Gypsum Co., Ltd.	"
Burtons, N.S (Brooklyn)	Windsor Plaster Co., Ltd	"
Threemile Plains, N.S.	Nova Scotia Gypsum Co., Ltd.	Threemile Plains, N.S.
Nappan, N.S.	Maritime Gypsum Co., Ltd.	New York, 381 Fourth Ave.
Noel, N.S.	Noel Plaster Co.	Noel, N.S.
Avondale, N.S.	Newport Plaster Mining and Mfg. Co.	Windsor, N.S., Box 225.
Hillsborough, N.B	Hillsboro Plaster Co.	Windsor, N.S.
Hillsborough, N.B.	Albert Manufacturing Co.	Hillsborough, N.B.
Cape Maringouin, N.B.	The New Brunswick Gypsum Co	" "
Plaster Rock, N.B.	John E. Stewart	Andover, N.B.
Plaster Rock, N.B.	The Stinson-Reeb Builders Supply Co.	Montreal, Que.
Caledonia, Ont.	Alabastine Co., Paris, Ltd.	Paris, Ont.
Sythemore, Ont.	The Crown Gypsum Co.	Sythemore, Ont.
Gypsumville, Man.	Dominion Gypsum Co.	Winnipeg, Man., 407 McArthur Bldg., Box 537.
Gypsumville, Man	Manitoba Gypsum Co., Ltd.	Winnipeg, Man., 504 Trust and Loan Co. of Canada Bldg.
Merritt, B.C.	Dr. Geo. Schumacher	Vancouver, B.C., 703 Bower Bldg.

MANGANESE.

The manganese industry was at one time of considerable magnitude in the Provinces of Nova Scotia and New Brunswick, particularly during the decade between 1880 and 1890, the annual value of shipments ranging from $30,000 to nearly $50,000.

During the past two years the only production reported was that of the Nova Scotia Manganese Company at their mine at New Ross, Nova Scotia. This Company began operations in 1910, and during 1911 and 1912 was engaged in the development of the mine and the construction of a mill. Shipments in 1912 were reported as 75 tons of high grade pyrolusite, valued at $1,875, and in 1911, 5½ tons, valued at $300. During the past year operations were confined largely to surface work, in building and equipping a granulating mill and a concentrating mill, and in building 10 miles of road.

Pyrolusite or manganese peroxide is used as an oxidizer in the manufacture of chlorine, bromine, and oxygen, and of potassium ferromanganate; as a drier in paints and varnishes, as a decolorizer of glass, and in the manufacture of the dry and the Leclanche cells. As a colouring material, manganese is used in colouring glass, bricks, and pottery. Several manganese salts are used in drying cloth and as paints.

Statistics of the annual production of manganese ore are shown in Table 1, and of exports in Table 2.

The annual imports of oxide of manganese are shown in Table 3.

The exports in 1912 are reported as 10 tons, valued at $300, as compared with exports in 1911 of 4 tons, valued at $225. The imports of manganese oxide during the calendar year 1912 were 2,512,610 pounds, or 1,256 tons, valued at $27,707, an average of $22.05 per ton, as compared with imports in 1911 of 1,924,520 pounds, or 962 tons, valued at $22,612, or an average of $23.50 per ton.

MANGANESE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		$	$ cts.			$	$ cts.
1886	1,789	41,499	23 20	1899	1,581	20,004	12 65
1887	1,245	43,658	35 07	1900	30	1,800	60 00
1888	1,801	47,944	26 62	1901*	440	4,820	10 95
1889	1,455	32,737	22 50	1902*	172	4,062	23 62
1890	1,328	32,550	24 51	1903	91	2,775	30 49
1891	255	6,694	26 25	1904	66	2,740	41 51
1892	115	10,250	89 13	1905*	22	1,720	78 18
1893	213	14,578	68 44	1906*	93	925	9 95
1894	74	4,180	56 49	1907*	1	22	22 00
1895	125	8,464	67 71	1908	Nil.	.....	.....
1896*	123½	3,975	32 19	1909	Nil.	.....	.....
1897*	15¼	1,166	76 46	1910	Nil.	.....	.....
1898	50	1,600	32 00	1911	5½	300	54 55
				1912	75	1,875	25 00

* Exports.

MANGANESE.—TABLE 2.

Exports of Manganese Ore.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1873	1,031	20,192	1893	133	12,521
1874	732	16,973	1894	56	3,120
1875	203	5,514	1895	108·3	6,351
1876	412	8,039	1896	123·5	3,975
1877	891	15,909	1897	15·3	1,166
1878	626	10,860	1898	11	325
1879	1,886	27,436	1899	70	2,410
1880	2,179	34,797	1900	34	1,720
1881	1,704	40,554	1901	440	4,820
1882	894	25,747	1902	172	4,062
1883	1,326	25,343	1903	135	1,889
1884	603	20,089	1904	123	2,706
1885	1,684	34,649	1905	22	1,720
1886	(a) 1,818	58,338	1906	93	925
1887	1,415	34,802	1907	1	22
1888	1,181	21,832	1908		
1889	1,436	29,350	1909	3	434
1890	1,906	36,831	1910	4	160
1891	255	6,694	1911	4	225
1892	143	8,205	1912	10	300

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

MANGANESE.—TABLE 3.

Imports: Oxide of Manganese.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$
1884	3,989	258	1899	141,356	5,539
1885	36,778	1,794	1900	126,725	4,155
1886	44,967	1,753	1901	272,134	8,176
1887	59,655	2,933	1902	476,331	5,360
1888	65,014	3,022	1903	279,611	8,051
1889	52,241	2,182	1904	275,696	7,051
1890	67,452	3,192	1905	235,289	6,832
1891	92,087	3,743	1906	244,620	5,508
1892	76,097	3,530	1907 (9 mos.)	386,404	11,087
1893	94,116	3,696	1908	732,242	17,863
1894	101,863	4,522	1909	382,137	6,561
1895	64,151	2,781	1910	810,529	13,048
1896	108,590	4,075	1911	1,471,462	18,347
1897	70,663	2,741	1912	2,135,010	24,381
1898	130,456	5,047			

MICA.

According to returns furnished by the producers, the total production of mica in 1912 was 588 tons, valued at $143,976, and included 196 tons, valued at $81,044, from the Province of Quebec, and 384 tons, valued at $62,932, from Ontario; the average value per ton of the Quebec shipments being $413.48, and of the Ontario shipments, $163.89.

The total production in 1911 was reported as 590 tons, valued at $128,677, and included 217 tons, valued at $69,465, or an average value per ton of $320.12, in the Province of Quebec, and 373 tons, valued at $59,212, or an average value per ton of $158.75, from Ontario.

These statistics represent, as far as can be ascertained, the quantities and values of mica shipped from the mines. Much of this mica is shipped to trimming shops in Ottawa, Hull, Kingston, and other centres, where it is prepared for the market and the value considerably increased, thus, the mica is exported at a considerably higher value than that reported as production.

The exports in 1912 were reported as 448 tons, valued at $334,054, as compared with exports in 1911 of 347 tons, valued at $242,548.

Phlogopite, or amber mica, is the kind chiefly found and mined, although muscovite, or white mica, is also produced in small quantities.

The mica deposits of Canada have been the subject of a special monograph recently published by the Mines Branch.[1]

Mica is mined in Canada in the Provinces of Quebec and Ontario. In Quebec the deposits being worked are situated chiefly in the region to the north of the city of Ottawa, in the townships of Hull, Wakefield, Buckingham, Portland, and Templeton. The Ontario deposits being worked are included in an area lying directly east of the Kingston and Pembroke railway, and are located chiefly in the townships of North Burgess and South Sherbrooke in Lanark county, South Burgess in Leeds county, and in Bedford and Loughborough in Frontenac county. Some considerable development has also been done on deposits in British Columbia, particularly at Big Bend on the Columbia river, north of Donald, B.C.

These latter deposits, however, are not as yet provided with transportation facilities and consequently have not yet made any production.

[1] "Mica, Its Occurrences, Exploitation, and Uses," by Hugh S. DeSchmid, M.E., Mines Branch, Department of Mines, 1912.

Mica, Rough and Thumb-trimmed, Reported as Shipped During 1911 and 1912.

Province.	1911			1912		
	Tons.	Value.	Value per ton.	Tons.	Value.	Value per ton.
		$	$ cts.		$	$ cts.
Quebec	217	69,465	320 12	196	81,044	413 48
Ontario	373	59,212	158 75	384	62,932	163 89
Total	590	128,677	218 10	580	143,976	248 23

MICA.—TABLE 1.

Annual Production.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1886	29,008	1895	65,000	1904	160,777
1887	29,816	1896	60,000	1905	178,235
1888	30,207	1897	76,000	1906	303,913
1889	28,718	1898	118,375	1907	312,599
1890	68,074	1899	163,000	1908	139,871
1891	71,510	1900	166,000	1909	147,782
1892	104,745	1901	160,000	1910	190,385
1893	75,719	1902	135,904	1911	128,677
1894	45,581	1903	177,857	1912	143,976

Table 2 following gives the exports of mica from Canada since 1887, as compiled from the reports of the Customs Department.

MICA.—TABLE 2.

Exports.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Tons.	Value.
	$		$			$
1887	3,480	1896	47,756	1904		198,482
1888	23,563	1897	69,101	1905		179,049
1889	30,597	1898	110,507	1906	912	581,919
1890	22,468	1899	158,002	1907	558	422,172
1891	37,590	1900	146,750	1908	290	198,839
1892	86,562	1901	152,553	1909	359	256,834
1893	70,081	1902	391,812	1910	469	330,903
1894	38,971	1903	196,020	1911	347	242,548
1895	48,525			1912	448	334,054

The destination of exports during the calendar years 1910, 1911, and 1912 is shown in the following table. United States continues to be the chief market for Canada's mica.

	1910		1911		1912	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$
To Great Britain	87	37,787	67	53,203	68	35,959
To United States	378	291,533	278	188,201	379	297,345
To other countries	4	1,583	2	1,144	1	750
Total	469	330,903	347	242,548	448	334,054

Table 3 is given for the purpose of illustrating the relative importance of the imports of Canadian mica into the United States, as compared with those from other countries which also supply part of the mica consumed in that country, while Table 4 shows the imports of mica into Great Britain from various sources during 1910, 1911, and 1912.

MICA.—TABLE 3.

Imports of Mica into the United States.[1]

Year ending June 30.	Imports from Canada.		Total imports from all countries.	
	Short tons.	Value.	Short tons.	Value.
		$		$
1895	273	39,637	410	127,515
1896	310	57,908	632	214,997
1897	208	54,630	441	187,845
1898	233	53,854	313	94,294
1899	512	131,310	808	259,228
1900	549	136,981	1,019	314,882
1901	484	161,741	1,011	369,644
1902	427	184,287	903	384,818
1903	417	196,470	973	414,953
1904	287	137,191	693	306,937
1905	253	121,560	594	296,362
1906	539	328,991	1,206	731,484
1907	767	596,321	1,724	1,295,606
1908	172	140,166	655	567,550
1909	167	132,941	403	313,525
1910	434	333,196	1,008	682,539
1911	316	239,964	872	612,936
1912	362	213,750	742	513,792

[1] The Foreign Commerce and Navigation of the United States.

MICA.—TABLE 4.

Imports of Mica into Great Britain.*

	1910		1911		1912	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
		$		$		$
Germany	131,152	22,333	108,752	20,294	100,800	18,946
German East Africa	10,864	1,859				
United States	216,832	18,255	183,456	8,658	113,680	6,035
Brazil	224	212			3,584	788
Other foreign countries	112,560	20,727	141,904	25,501	149,520	27,263
British India	2,513,056	453,685	2,889,152	496,410	3,995,264	653,876
Canada	152,992	49,566	119,168	39,561	120,736	42,797
Other British possessions	10,976	2,910	4,368	1,012	59,696	14,123
Total	3,148,656	569,449	3,446,800	591,436	4,543,280	763,828

* British Trade Report.

Following is a list of the principal firms engaged in mica mining:—

Operator.	Location of mine.	Address.
Ontario:—		
Kent Bros. & J. Stoness	Frontenac Co., Bedford Tp.	Kingston.
H. & C. Campbell	" "	Perth Road.
S. H. Orser	" "	"
J. W. Trousdale	" Loughborough Tp.	Sydenham.
Kingston Feldspar and Mining Co., Ltd.	" "	Kingston.
The Loughboro Mining Co., Ltd.	" "	Sydenham.
Scriven and Whyte	" "	"
Wood, Solliday, and Freeman	" "	"
The Birch Lake Mining Co	" "	Ottawa, 115 York.
Sewell and Smith	Lanark Co., Burgess Tp.	Micaville.
Dominion Improvement & Development Co	" "	Perth, Box 26.
R. McConnell	" "	Ottawa.
W. L. McLaren	" "	Perth Nevis Cottage.
John Mahon	" "	Rideau Ferry.
Thompson, Donnelly, & Gemmill	" "	Perth.
W. W. Brown	Leeds Co., S. Crosby Tp	Elgin.
Quebec:—		
W. Argall	Argenteuil Co., Wentworth Tp.	Laurel.
W. L. Parker	Labelle Co., Bigelow Tp.	Buckingham.
The Mica Co. of Canada	Ottawa Co., Beauclaire Tp.	Montreal, 22 St. John.
Wm. Cleland	" Cameron Tp.	Bouchette.
Emile Joanis	" Egan Tp.	Maniwaki.
Vavasour Mining Association	" Hull Tp.	Ottawa, Ont.
American Mica and Phosphate Co.	" "	Minneapolis, 242 Temple Court.
Brown Bros	" "	Cantley.
R. J. McGlashan	" Wakefield Tp.	Wilson Corners.
Henry T. Flynn	" Hull and Cameron Tps	Hull.
Kent Bros	" Hull and Wright Tps.	Kingston, Ont.
R. McConnell	" "	Ottawa, Ont.
O'Brien and Fowler (B. Winning)	" E. Portland Tp.	Cummings Bridge, Ont.
John Stewart	" Portland W. Tp.	East Templeton
Mine Products, Ltd	" "	Toronto, Ont. 4 Richmond E.
W. Baillie	" Onslow Tp.	Aylmer, East.
Blackburn Bros	" Templeton Tp.	Ottawa, Ont.
Wallingford Mica and Mining Co	" "	"
Laurentide Mica Co., Ltd	" Templeton and Hull Tps	"

Operator.	Location of mine.	Address.
Quebec—Con.		
The Capital Mica Co., Ltd.....	Ottawa Co., Wakefield and Hull Tps.....	Ottawa, Ont.
Thos. J. Waters	" Templeton Tp.	Buckingham, Box 226.
J. B. Gauthier	" Villeneuve Tp.....	" " 166.
J. B. Gorman.....	" "	Cascades.
Wilson and Cross.....	" Thorne Tp.....	
British Columbia :—		
Big Bend Mica Mines, Ltd.....	12 miles N. of Donald, B.C.....	Calgary, Alta., 318 7th Ave., W.
Canadian Muscovite Mica Co....	Near Tête Jaune Cache	Vancouver, 503 Bower Bldg.

MINERAL PIGMENTS.

Under this heading is included a record of the production of ochres and barytes.

OCHRES.

The total production of ochres and iron oxide in 1912 was 7,654 tons, valued at $32,410, as compared with a total production in 1911 of 3,622 tons, valued at $28,333. The 1912 production included 2,054 tons of ochres, valued at $24,010, or an average of about $11.69 per ton, used for paint manufacture; and 5,600 tons, valued at $8,400, shipped to gas works; while the 1911 production included 1,622 tons, valued at $24,333, or an average of about $15 per ton, used for paint manufacture, and 2,000 tons, valued at $4,000, shipped for use in gas works.

The ochre or oxide used for the manufacture of paints is calcined and ground at the place of production, while that used for the purification of illuminating gas is shipped crude to gas companies.

Statistics of production since 1886 are shown in Table 1.

MINERAL PIGMENTS.—TABLE 1.

Annual Production of Ochres and Iron Oxides.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1886	350	2,350	1900	1,966	15,398
1887	485	3,733	1901	2,233	16,735
1888	397	7,900	1902	4,955	30,495
1889	794	15,280	1903	6,266	32,760
1890	275	5,125	1904	3,925	24,995
1891	900	17,750	1905	5,105	34,675
1892	390	5,800	1906	6,758	36,125
1893	1,070	17,710	1907	5,828	35,570
1894	611	8,690	1908	4,746	30,440
1895	1,339	14,600	1909	3,940	28,093
1896	2,362	16,045	1910	4,813	33,185
1897	3,905	23,560	1911	3,622	28,333
1898	2,226	17,450	1912	7,654	32,410
1899	3,919	20,000			

The working of ochre deposits in Canada has been chiefly confined to those deposits found between Champlain and Three Rivers in the Province of Quebec, a short distance from the shore of the St. Lawrence river. In 1912, however, there was an additional production from St. Joseph de Nicolet in this Province.

In Ontario, small quantities of ochre have occasionally been obtained from a deposit near Campbellville, but no production was reported from this source in 1912.

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Following is a list of firms mining ochres:—

The Canada Paint Company, Ltd., Montreal, Que.
The Champlain Oxide Company, Three Rivers, Que.
Thos. H. Argall, Three Rivers, Que.
François Ouelette, St. Joseph de Nicolet, Que.
Ontario Mineral Paint Company, Campbellville, Ont.

The exports of iron oxides, or mineral pigments, in 1912 are reported as 3,016 tons, valued at $34,513, as against 2,000 tons, valued at $27,070, in 1911. The imports of pigments during the calendar year 1912 were: ochres and ochrey earth, raw siennas, 1,737 tons, valued at $40,165; oxides, dry fillers, fireproof umbers, and burnt siennas, 762 tons, valued at $29,456, or a total value of $69,621. During 1911 the imports of the above classes were respectively valued at $32,032, and $21,060, or a total of $53,092.

MINERAL PIGMENTS.—TABLE 2.

Imports of Ochres and Pigments.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$
1880	571,454	6,544	1897	1,504,044	18,504
1881	677,115	8,972	1898	2,126,592	26,307
1882	731,526	8,202	1899	2,444,698	31,092
1883	898,376	10,375	1900	2,474,537	32,017
1884	533,416	6,398	1901	2,092,067	27,267
1885	1,119,177	12,782	1902	2,530,743	33,909
1886	1,100,243	12,267	1903	3,215,346	42,243
1887	1,460,128	17,067	1904	2,767,580	36,636
1888	1,725,460	17,664	1905	3,122,690	35,887
1889	1,342,783	12,994	1906	4,321,530	57,397
1890	1,394,811	14,066	1907 (9 mos.)	2,926,528	39,675
1891	1,528,696	20,550	1908	3,749,132	39,923
1892	1,708,645	22,908	1909	2,122,781	27,540
1893	1,968,645	23,134	1910	3,683,344	44,190
1894	1,358,326	18,951	1911	4,160,769	54,022
1895	793,258	12,048	1912	4,469,929	56,257
1896	1,159,494	16,954			

	Duty.	1911.		1912.	
		Lbs.	$	Lbs.	$
Ochres and ochrey earths and raw siennas	20 %	2,576,261	31,736	2,940,260	31,909
Oxides, dry fillers, fireproofs, umbers and burnt siennas N.E.S.	25 %	1,584,508	22,286	1,529,669	24,348
Total		4,160,769	54,022	4,469,929	56,257

MINERAL PIGMENTS.—TABLE 3.

Exports of Mineral Pigments, Iron Oxides, etc.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1897	512	7,706	1905	353	7,704
1898	283	4,227	1906	139	2,379
1899	308	5,408	1907	191	10,043
1900	651	7,154	1908	125	4,850
1901	401	8,233	1909	658	7,956
1902	352	6,182	1910	1,746	29,339
1903	676	12,770	1911	2,000	27,070
1904	416	7,260	1912	3,016	34,513

BARYTES.

The only barytes deposits worked in Canada during 1912 were those at Lake Ainslie, C.B., operated by Barytes, Limited, the shipments of ground barytes being reported as 464 tons, valued at $5,104.

Statistics of production since 1885 are shown in Table 4, and imports in Table 5. Statistics of imports of barytes have not been shown separately by the Customs Department since 1890, but the imports of blanc fixe (artificial sulphate of barium), and satin white during the twelve months ending March, 1911, amounted to 1,212 tons, valued at $26,797, and during the twelve months ending March, 1912, 1,923 tons, valued at $29,545.

MINERAL PIGMENTS.—TABLE 4.

Annual Production of Barytes.

Calendar Year.	Tons.	Value.	Average value.	Calendar Year.	Tons.	Value.	Average value.
		$	$ cts.			$	$ cts.
1885	300	1,500	5 00	1899	720	4,402	6 11
1886	3,864	19,270	4 98	1900	1,337	7,605	5 69
1887	400	2,400	6 00	1901	653	3,842	5 89
1888	1,100	3,850	3 50	1902	1,096	3,957	3 61
1889				1903	1,163	3,931	3 38
1890	1,842	7,543	4 09	1904	1,382	3,702	2 68
1891				1905	3,360	7,500	2 23
1892	315	1,260	4 00	1906	4,000	12,000	3 00
1893				1907	1,344	3,000	2 23
1894	1,081	2,830	2 62	1908	4,312	19,021	4 41
1895				1909	179	1,120	6 26
1896	145	715	4 93	1910			
1897	571	2,060	5 36	1911	50	400	8 00
1898	1,125	5,533	4 92	1912	464	5,104	11 00

Imports of Barytes.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		$			$
1880	2,230	1,525	1886	.....	62
1881	3,740	1,011	1887	379	676
1882	497	303	1888	236	214
1883	.....	185	1889	1,332	987
1884	.....	229	1890	1,322	978
1885	7	14			

Exports of Barytes.

Calendar Year.	Cwt.	Value.	Calendar Year.	Cwt.	Value.
		$			$
1901	208	3,820	1907	550	2,750
1902	.....	.....	1908	3,509	13,690
1903	406	368	1909	.....	.....
1904	13,080	5,178	1910	5	150
1905	34,488	14,343	1911	.....	.....
906	1,350	6,750	1912	68	114

MINERAL WATER.

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

The value of the production in 1912 was $173,462, as compared with $223,758 in 1911, and $199,563 in 1910.

The imports of mineral and aerated waters during the calendar year 1912 were valued at $273,698, as against a value of $229,367 in 1911, and $202,306 in 1910.

Statistics of production and imports are shown in tables following:—

MINERAL WATERS.—TABLE 1.

Annual Production.

Calendar Year.	Gals.	Value.	Calendar Year.	Gals.	Value.	Calendar Year.	Gals.	Value.
		$			$			$
1888	124,850	11,456	1896	706,372	111,736	1904		100,000
1889	424,600	37,360	1897	749,691	141,477	1905		100,000
1890	561,165	66,031	1898	555,000	100,000	1906		100,000
1891	427,485	54,268	1899		100,000	1907		136,020
1892	640,380	75,348	1900		75,000	1908		151,953
1893	725,096	108,347	1901		100,000	1909		175,173
1894	767,460	110,046	1902		100,000	1910		199,563
1895	739,382	126,048	1903		100,000	1911		223,758
						1912		175,462

MINERAL WATERS.—TABLE 2.

Imports.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1880	41,797	1891	15,721	1902	91,871
1881	55,763	1892	17,913	1903	108,130
1882	57,953	1893	27,909	1904	137,304
1883	49,546	1894	28,130	1905	161,790
1884	48,613	1895	27,879	1906	178,639
1885	55,864	1896	32,674	1907 (9 months)	143,416
1886	47,006	1897	22,142	1908	153,831
1887	52,989	1898	33,314	1909	159,221
1888	54,891	1899	38,046	1910	188,559
1889	66,331	1900	30,343	1911	202,659
1890	71,521	1901	40,802	1912	231,515

Following is a list of the producers of mineral water:—

Operator.	Location of spring.	Address.
The St. Leon Waters, Ltd	St. Leon, Que,	Toronto, 12 Wellington St.
*Radnor Water Co	Radnor Forges, Que	Montreal, Mark Fisher Bldg.
*Abenakis Mineral Springs Co., Ltd	Yamaska Co., Que	Abenakis Springs, Que.
*Louis L'Heureux	Nancy, Que	Quebec, 20 Mountain Hill.
Gurd & Co., Ltd	Varennes, Que	Montreal; Que.
*Caledonia Springs Co., Ltd	Caledonia Springs, Ont	"
*Lyall, Trenholme & MacDonell	" "	Montreal West, Que.
*Gurd & Co., Ltd	Caledonia, Ont	Montreal, Que., 74 Bleury.
*Robert Allan	" "	" 86 Dorchester.
*Thos. L. Boyd	Carlsbad, Ont	Carlsbad Springs, Ont.
Canada Mineral Waters, Ltd	Bourget, Ont	Toronto, 65 Bellwood Ave.
*Arthur Belanger	Prescott, Ont	Papineauville, Que.
*Becker & Frank	Southampton, Ont	Southampton, Ont.
*Sanitaris Ltd	Pakenham, Ont	Arnprior, Ont.
*St. Davids Mountain Spring Water Co., Ltd	Niagara Falls South, Ont	Niagara Falls South, Ont.
*Stanley Mineral Springs Co., Ltd	Stanley, Ont	Winnipeg, Man., 410 Builders Exchange.
*Halcyon Bottling Co	Arrow lake	Halcyon, B.C.
St. Leon Hot Springs	Upper Arrow lake	St. Leon Hot Springs, B.C.

* Reported sales 1912.

NATURAL GAS.

The total value of the production of natural gas in Canada in 1912 was, according to returns received, $2,362,700, as compared with a value of $1,907,678 in 1911, and $1,346,471 in 1910.

The quantity of gas produced in 1912 was about 15,286,803 M feet, as compared with 11,644,000 M feet in 1911, and 8,000,000 M feet in 1910.

The value of the production in Ontario in 1912 was returned as $2,036,245; Alberta, $289,906; and New Brunswick, $36,549. In 1911 the Ontario production was valued at $1,807,513, and that in Alberta, $110,165.

The value of the gas, as reported by the producers, varies from 5 cents to 30 cents per M feet, but these prices do not represent what the consumer has to pay. In some cases the producer also owns the distribution pipe line and receives the full price paid by the consumer. In other cases the producer may sell to a pipe line company who either sells directly to consumers or may in turn re-sell to other pipe line companies for retail distribution; in such cases as these the producer only receives a fraction of the amount paid by the consumer, but he is saved the expense of distribution. The statistics given herewith represent, as far as possible, the value received by the producer or owner of the gas wells, whether such producer be the owner of the distribution line or not.

Statistics of the production of natural gas in 1912, and of the annual production since 1892, are shown in the tables following:—

Gas Production, 1912.

Province.	No. men.	Wages.	No. wells, 1912.				Production.		
			(a)	(b)	(c)	(d)	M. cub. ft.	Value.	Average.
								$	cts.
New Brunswick	.....	.....	19	2	4	2	173,903	36,549	21
Ontario	.....	.....	1,478	247	67	16	12,529,463	2,036,245	16¼
Saskatchewan	.. .	....	. .	.....	.....	2	.....	.....	.....
Alberta	.....	.....	35	15	1	6	2,583,437	289,906	11¼
Total	433	302,012	1,532	264	72	26	15,286,803	2,362,700	15½

(a) Total number of producing wells at end of year.
(b) Number of producing wells drilled during the year.
(c) Number of non-producing wells drilled during the year.
(d) Number of incomplete wells at end of the year.

NATURAL GAS—TABLE 1.

Annual Production Since 1892.

Calendar Year.	Value.	Calendar Year.	Value.
	$		$
1892	150,000	1903	202,210
1893	376,233	1904	328,376
1894	313,754	1905	379,561
1895	423,032	1906	583,523
1896	276,301	1907	815,032
1897	325,873	1908	1,012,660
1898	322,123	1909	1,207,029
1899	387,271	1910	1,346,471
1900	417,094	1911	1,907,678
1901	339,476	1912	2,362,709
1902	195,992		

Returns received showed 1,532 producing wells in Canada, of which 264 were completed during the year. Seventy-two non-producing wells were also drilled during 1912, while 26 others were not completed at the end of the year.

In New Brunswick, the Maritime Oil Fields has now 19 producing wells in Albert county, and during 1912 gas was delivered to the Moncton Tramways Electricity and Gas Co., Ltd., for distribution in Moncton and Hillsborough.

Since beginning operations this Company has put down 25 wells, which show a total daily capacity of nearly sixty million cubic feet of gas.

Returns received from Ontario natural gas producers showed 1,478 producing wells in that Province at the close of 1912, of which 247 were completed during the year. Sixty-seven non-producing wells were also drilled, while 16 others were not completed at the end of the year.

In this Province the three principal producing fields are known as the Welland county, the Haldimand-Norfolk, and the Essex-Kent. The gas is used for lighting, heating, and manufacturing quite generally throughout the district in which it is available. Formerly, considerable quantities of gas were exported to Detroit and Buffalo, adjacent respectively to the Essex and Welland fields, but this export has now ceased. Under the provisions of Chapter 16, 6-7 Edward VII, entitled, "An Act to regulate the exportation of electric power and certain liquids and gases," assented to April 27, 1907, the export of natural gas is prohibited except under special license issued by the Governor in Council

In order to conserve the supply of natural gas, and as far as possible prevent its waste, the Ontario Legislature, in 1908, passed an "Act to prevent the wasting of natural gas and to provide for the plugging of all abandoned wells" (Edward VII, Chapter 47), by which power was conferred upon inspectors appointed under the Act, to enforce the stopping of waste. The Supplementary Revenue Act, 1907 (Ontario Statutes), also contained provisions which have been even more effective than those of the first-mentioned Act, and the enforcement of these laws has, according to the Bureau of Mines, reduced the waste of gas to a minimum.

Gas is supplied in over sixty different towns and villages, as well as generally to consumers in a number of townships.

In Alberta, the completion of the pipe line from Bow Island to Lethbridge and Calgary and intermediate points has resulted in a large increase in the utilization of natural gas, the total production in 1912 being reported as approximately 2,583 million cubic feet, valued at $289,906. In 1911, the production was approximately 780 million feet, valued at $110,165.

The production of gas in the Province has been obtained altogether from the two fields known as the Medicine Hat field, which has been producing since 1891, and the Bow Island district, the gas from which was commercially utilized for the first time in 1912. There were thirty-five producing wells at the close of the year, of which fifteen had been drilled during 1912, while six wells were in process of drilling at December 31.

In a summary report[1] for the Mines Branch, Mr. F. S. Clapp states that:—

> 'Gas is sold for domestic consumption in the city of Medicine Hat for fifteen cents per 1,000 cubic feet, and for manufacturing purposes at five cents per 1,000 cubic feet. The city has, however, made a number of contracts for supplying gas to manufacturing plants free of cost for a five-year period. This appears to be a very short-sighted policy, in view of what is now known regarding the length of life of gas producing territory when drawn upon freely. Moreover, the value of natural gas as a fuel is too great to justify its waste by being given away. The rates for natural gas in the cities of Calgary, High River, Lethbridge, Macleod, and other towns situated on the Western Canada pipe line, are fixed at twenty cents per 1,000 for manufacturing and thirty-five cents for domestic purposes.'

Natural gas rights in Manitoba, Saskatchewan, Alberta, the North West Territories, the Yukon, etc., are the property of the Crown, and their disposal is now subject to the regulations approved by Order in Council dated the 11th day of March, 1910.

These regulations provide for a rental of 25 cents an acre for the first year and 50 cents an acre each subsequent year, lease to be for twenty-one years, renewable on conditions, and no applicant to be allowed to lease the gas rights under an area of more than 1,920 acres.

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[1] Summary Report of the Mines Branch, Department of Mines, 1912, page 50.

The following is a list of the principal firms operating natural gas wells:—

Operator and address.	Location of wells.	No. producing wells, Dec. 31.
New Brunswick.		
Maritime Oil Fields, Ltd., Moncton, Box 196	Albert Co., Stony Creek Dist	19
Ontario.		
Provincial Natural Gas and Fuel Co., Niagara Falls	Welland Co	183
Bertie Natural Gas Co., Ltd., Ridgeway	" Bertie Tp	8
Empire Limestone Co., Buffalo, 4th and Virginia Sts	" Humberstone Tp	16
Niagara Natural Gas Fuel Co., Ltd., Sherkston	" "	2
Humberstone Mutual Natural Gas and Fuel Co., Humberstone	" "	3
Miner and Melenbacker, Humberstone	" "	1
Industrial Natural Gas Co., Port Robinson	" " and Crowland Tps.	46
The United Gas Co., Ltd., St. Catharines, 45 King	" Wainfleet Tp	40
Welland County Lime Works Co., Ltd., Port Colborne	" "	30
Sterling Gas Co., Ltd., Port Colborne	" "	52
J. A. Coleman, Wellandport	" "	3
Dominion Natural Gas Co., Ltd., 1334 Marine Nat. Bk. Bldg., Buffalo	Haldimand, Lincoln, Wentworth, Norfolk, and Elgin counties	343
F. R. Lalor, Dunnville	Haldimand Co., Moncton Tp	5
J. J. Lawson, Stromness	" "	3
Canboro Natural Gas Co., Canboro	" Canboro Tp	2
Ricker and Mower, Canboro	" "	2
Melick, Moote, and Lymburner, Canboro	" "	10
Koehler and Aikins, Cayuga	" "	17
Lint and Emmerson, Attercliff	" "	3
Melvin G. Hart, Attercliff Station	" "	2
Port Maitland Natural Gas Co., Ltd., Port Maitland	" Dunn Tp	1
The Dunn Natural Gas Co., Ltd., Dunnville	" "	23
Aikens, Lalor, and Smith, Dunnville	" " and Sherbrooke Tps.	10
Aikens, Lalor, and Beck, South Cayuga	" " and S. Cayuga Tps.	21
South Cayuga Natural Gas Co., South Cayuga	" " "	1
The Midfield Natural Gas Co., Hamilton, 32 Stinson	" N. Cayuga Tp	10
Canfield Natural Gas Co., Canfield	" "	3
The Waines and Root Gas Co., Ltd., Dunnville	" S. Cayuga, Dunn, Caribou, Rainham, and Walpole Tps.	102
Selkirk Gas and Oil Co., Ltd., Selkirk	" Rainham Tp	10
The Aldrich Gas and Oil Co., Ltd., Selkirk	" "	12
The North Shore Gas Co., Ltd., Selkirk	" "	15
D. Kindy & Sons, Selkirk	" "	7
Fisherville Gas Co., Ltd., Fisherville	" "	2
The Producers Natural Gas Co., Ltd., Hamilton	" " and Walpole Tps.	98
The Holmes Gas Co., Ltd., Selkirk	" " "	32
David E. Hoover, Selkirk	" " "	5
D. E., A. E. and Menno Hoover, Selkirk	" " "	
Jas. E. Hoover, Selkirk	" "	6
Lalor and Voakes, Dunnville	" Walpole Tp	11
The Nanticoke Natural Gas Co., Ltd., Nanticoke	" "	2
Regal Gas Co., Hagersville	" "	4
The Cheapside Gas Co., Cheapside	" "	3
Alfred Lamb, Selkirk	" "	8
Walter B. Lamb, Nanticoke	" "	11
The National (Utor) Gas Co., Ltd., Rainham Centre	" Rainham and Seneca Tps.	38
F. L. Snively, Dunnville	" " Cayuga Tps.	18
Ralston and Bennett, Dunnville	"	2

Operator and address.	Location of wells.	No. producing wells, Dec. 31.
Ontario—Concluded.		
Port Colborne-Welland Natural Gas Co., Ltd., Port Colborne	Haldimand Co., Oneida and Seneca Tps.	24
Jas. Marshall, Hamilton, Lime Works	" Seneca Tp.	18
The Home Natural Gas Co., Ltd., Hamilton, 372 Queen St	" Oneida Tp.	4
The Natural Gas Co. of Ontario, Ltd., Oil City, Pa.	"	2
Enterprise Gas Co., Delhi	Norfolk Co.	7
Norfolk Gas Co., Port Dover	"	11
The Port Rowan Natural Gas Co., Buffalo, Marine Bk. Building	"	11
North Western Gas Co., Ltd., Erie, Pa., 15 Scott Block	" and Brant counties.	5
Standard Natural Gas Co., Ltd., Dunnville	Brant, Onondaga Tp.	28
The Onondaga Oil and Gas Co., Ltd., Brantford, 54½ Market	" "	6
Telephone City Oil and Gas Co., Ltd., Brantford	" "	4
Commonwealth Oil and Gas Co., Ltd., Hamilton, 240 King E.	" "	3
Crystal Oil and Gas Co., Paris, River St.	" "	3
Grand River Oil and Gas Co., Brantford, 116 Dalhousie	" "	5
D. Danskin, Cainsville	" "	1
A. W. VanSickle, Onondaga	" "	3
Wentworth Natural Gas Co., Ltd., Hamilton, 18 Leeming	" "	2
Thos. Walker, Tuscarora	" Tuscarora Tp.	1
Oxford Oil and Gas Co., Ltd., Brantford	Oxford, East Zorra Tp.	2
The Medina Natural Gas Co., Ltd., Chatham	Elgin Co., Bayham Tp.	14
The Union Natural Gas Co. of Canada, Ltd., Niagara Falls	Kent, Raleigh, Tilbury E., Ramsay Tps.	69
The Canadian Gas Co., Ltd., Detroit, 1317 Ford Bldg.	"	17
Beaver Oil and Gas Co., Ltd., Brantford, 66½ Market	" Romney Tp.	7
The Maple City Oil and Gas Co., Chatham	" " and Tilbury Tps.	3
Brandons Oil and Gas Co., Ltd., Milton	Halton Co.	2
Total, Ontario		1,478
Alberta.		
City of Medicine Hat Gas Commission, Medicine Hat	Medicine Hat	8
Canadian Pacific railway, Medicine Hat	" and Carlstadt	2
Medicine Hat Brick and Fire Proofing Co., Medicine Hat	" Section 28.	1
Alberta Rolling Mills Co., Ltd., Medicine Hat	"	1
The Canadian Western Natural Gas, Light, Heat and Power Co., Ltd., Calgary	Dunmore Junction and Brooks.	2
Redcliff Brick and Coal Co., Ltd., Redcliff	Redcliff.	2
The Redcliff Realty Co. "	"	4
Redcliff Rolling Mill and Bolt Co., Redcliff	"	1
The Canadian Western Natural Gas, Light, Heat and Power Co., Ltd., Calgary	Bow Island.	14
City of Wetaskiwin, Wetaskiwin	Wetaskiwin	1
Total, Alberta		35

PEAT.

During 1912 operations for the production of peat fuel were carried on at three different bogs, and consisted chiefly in experimental and development work.

The operating firms and bogs were:—

Peat Industries, Ltd., operating a bog at Ste. Brigide, near Farnham, Que.

J. M. Shuttleworth, operating a bog at Alfred, Ont.

The Dorchester Peat Fuel Co., operating a bog at Dorchester, near London, Ont.

The total shipments of peat fuel were reported as 700 tons, valued at $2,900, as compared with shipments in 1911 of 1,463 tons, valued at $3,817, and 841 tons, valued at $2,604, in 1910.

The annual production of peat during the past thirteen years is shown below:—

Annual Production of Peat.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1900	400	$1,200	1907	50	200
1901	220	600	1908	60	180
1902	475	1,663	1909	60	240
1903	1,100	3,300	1910	841	2,604
1904	800	2,400	1911	1,463	3,817
1905	80	260	1912	700	2,900
1906	474	1,422			

[1] Results of the testing of this peat are shown in the 'Report on the Utilization of Peat Fuel for the Production of Power' by B. F. Haanel, B. Sc., Mines Branch publication, No. 154.

A number of publications on peat issued by the Mines Branch are out of print, but the following are still available:—

Report No. 30.—Investigation of the Peat Bogs and Peat Fuel Industry of Canada, 1908. Bulletin No. 1, by Erik Nystrom and A. Anrep, Peat Expert.

Report No. 89.—Reprint of Presidential address delivered before the American Peat Society, of Ottawa, July 25, 1910, by Dr. Haanel.

Report No. 151.—Investigation of the Peat Bogs and Peat Industry of Canada, 1910-1911. Bulletin No. 8, by A. Anrep.

Report No. 154.—The Utilization of Peat Fuel for the Production of Power, being a record of experiments conducted at the Fuel Testing Station, Ottawa, 1910-1911. Report on, by B. F. Haanel, B. Sc.

PETROLEUM.

The total production of crude petroleum in Canada in 1912 was 243,336 barrels of 35 imperial gallons each, valued at $345,050, or an average of $1·418 per barrel, as compared with a production of 291,092 barrels, valued at $357,073, or an average of $1.22½ per barrel, in 1911, and 315,895 barrels, valued at $388,550, or an average of $1.23 per barrel, in 1910. With the exception of 93,765 gallons in 1912, 86,139 gallons in 1911, and 51,975 gallons in 1910, produced in New Brunswick, the output was entirely from Ontario oil fields. The production has steadily declined during the past five years, and the output in 1912 was less than one-third that of 1907.

The statistics of production as given herewith since 1904 are based on claims made for the bounty paid by the Dominion Government, which was first provided for in 1904 by an Act passed by the Dominion Government authorizing the payment of a bounty of 1½ cents per gallon on crude petroleum produced from wells in Canada. The bounty has been continued under the 'Petroleum Bounty Act, 1909,' which provides for the payment of bounty on crude petroleum produced from oil-shales mined in Canada, as well as on oil from wells in Canada. Payments are made on claims submitted by the producers of crude oil to the Minister of Trade and Commerce. These claims have to be substantiated as to quantity by the certificate of the receiving stations, tanking companies, refiners or other purchasers, as well as by the supervising officers of the Department of Trade and Commerce.

The bounty paid on the crude petroleum produced gives, therefore, as accurate a basis as is available for a reliable statement of the annual production.

Table 1 following, shows the production of crude oil in Canada since 1901, in barrels of 35 gallons, together with the total value and average price per barrel.

PETROLEUM.—TABLE 1.

Annual Production of Crude Petroleum since 1901.

Year.	Barrels of 35 gallons.	Value.	Average price per barrel.
		$	$ cts.
1901	622,392	1,008,275	1 620
1902	530,624	951,190	1 792
1903	486,637	1,048,974	2 155
1904	503,474	935,895	1 858
1905	634,095	856,028	1 350
1906	569,753	761,760	1 337
1907	788,872	1,057,088	1 340
1908	527,987	747,102	1 415
1909	420,755	559,604	1 33
1910	315,895	388,550	1 23
1911	291,092	357,073	1 225
1912	243,336	345,050	1 418

Statistics of the production of crude petroleum for the years 1901 to 1904 were based on direct returns received from refineries and producers. The record of production during these years is shown in the following table:—

Production of Crude Oil, 1901 to 1904, Based on Direct Returns.

Crude oil.	1901.	1902.	1903.	1904.
	Bls.	Bls.	Bls.	Bls.
Received at refineries	508,677	443,333	410,280	455,074
Direct sales for industrial purposes	113,715	87,291	76,357	48,400
Total sales of crude oil	622,392	530,624	486,637	503,474
Total sales in gallons	21,783,720	18,571,840	17,032,295	17,621,590

Production of Crude Petroleum Estimated on the Basis of the Bounty of 1½ Cents per Gallon Paid by the Dominion Government, 1905 to 1912.

Year.	Bounty paid.	Production of crude oil represented.	
	$	In gallons	In barrels.
1905	332,900	22,193,336	634,095
1906	299,120	19,941,357	569,753
1907	414,158	27,610,526	788,872
1908	277,193	18,479,547	527,987
1909	220,897	14,726,433	420,755
1910	165,845	11,056,337	315,895
1911	152,823	10,188,219	291,092
1912	127,751	8,516,762	243,336

The record of production of crude oil for the years previous to 1901, as shown in Table 2, was deduced from Government inspection returns by assuming a ratio of crude to refined oil.

PETROLEUM.—TABLE 2.

Canadian Oils and Naphtha Inspected, and Corresponding Quantities of Crude Oil.

Calendar Year.	Refined oils inspected.	Crude equivalent calculated.	Ratio of crude to refined.	Equivalent in barrels of 35 gallons.	Average price per barrel of crude.	Value of crude oil.
	Gals.	Gals.			$ cts.	$
1881	6,457,270	12,914,540	100:50	368,987	.. ..	....
1882	6,135,782	13,635,071	100:45	389,573	.....	.....
1883	7,447,648	16,550,328	100:45	472,866	....	.....
1884	7,993,995	19,984,987	100:40	571,000	.. ..	.....
1885	8,225,882	20,564,705	100:40	587,563	.....	.....
1886	7,768,006	20,442,121	100:38	584,061	0 90	525,655
1887	9,492,588	24,980,494	100:38	713,728	0 78	556,708
1888	9,246,176	24,332,042	100:38	695,203	1 02⅜	713,695
1889	9,472,476	24,664,144	100:38	704,690	0 92¾	653,600
1890	10,174,894	26,776,037	100:38	795,030	1 13	902,734
1891	10,065,463	26,435,430	100:38	755,298	1 33¾	1,010,211
1892	10,370,707	27,291,334	100:38	779,753	1 26½	984,438
1893	10,618,804	27,944,221	100:38	798,406	1 09½	874,255
1894	11,027,082	29,018,637	100:38	829,104	1 00¾	835,322
1895	10,674,232	25,414,838	100:42	726,138	1 49⅜	1,086,738
1896	10,684,284	25,438,771	100:42	726,822	1 59	1,155,647
1897	10,434,878	24,841,995	100:42	709,857	1 42½	1,011,546
1898	11,148,348	26,543,685	100:42	758,391	1 40	1,061,747
1899	11,927,981	28,399,955	100:42	808,570	1 48⅜	1,202,020
1900	13,428,422	24,867,449	100:54	710,498	1 62	1,151,007

The production in the Province of Ontario has been obtained altogether from pools situated in the southwestern peninsula of the Province.

Mr. Frederick G. Clapp, in a summary report[1] on the oil and gas fields of Canada, states:—

> 'The oil production in the vicinity of Leamington in Essex county was abandoned in 1907, the district having been flooded by salt water. The prolific pools at Petrolia and Oil Springs in Lambton county continue to produce, showing a steady annual decline, as no new wells are being drilled. The same applies to the Bothwell field in Kent county, which exhibits the same characteristics as the pools in Lambton county. Careful methods of production, combined with very favourable underground conditions, have made the production of these pools a remarkable one, considering the small average production per well. In 1910 a new oil field was discovered and is being developed in Onondaga township, Brant county. The field also produces some gas; but owing to the character of the productive formations, the composition of the oil, and the rapid decline of the gas pressure, the pool does not promise as long a life as that of the older fields.'

An estimate of the production of the various Ontario oil fields during the past five years, as kindly furnished by the Imperial Oil Company, is shown in the next table. The record for 1912 includes only the amounts purchased by this Company.

[1] Summary Report of the Mines Branch, Department of Mines, 1912, page 56.

The falling off in production during the past four years, it will be observed, has been common to all the important fields, although the decrease in Tilbury and Raleigh has perhaps been most pronounced.

While the figures do not agree in totals with the statistics of production published in previous tables, they will nevertheless serve to show the relative importance of the several fields.

Production of Ontario Oil Fields. 1909, 1910, 1911, and 1912.

District.	1909.	1910.	1911.	1912.
	Bls.	Bls.	Bls.	Bls.
Dutton	10,052	7,860	3,598	2,455
Leamington (Staples, Comber, and Blytheswood)	9,367	248	.....	.....
Bothwell	38,707	36,615	35,094	33,257
Richardson (Chatham) including Blakely	2,923	1,698	1,776	712
Thamesville	710	141	.....	.....
Moore township	18,033	14,614	.....	.....
Oil Springs	60,868	55,508	56,248	41,532
East Tilbury and Raleigh (including Pardo Siding and Sandison)	115,862	60,416	49,027	43,376
Romney*	1,082	1,070*	12,602	.....
Petrolia (including all districts not enumerated)	156,581	129,372	126,089	95,968
	414,185	307,533	284,434	217,300

* Denotes production from Onondaga in 1910 and 1911.

Another statement of production by districts is furnished by the supervisor of petroleum bounties, and is as follows, the classification being somewhat different from that shown above, but the tables agreeing more closely with those given in Table 1.

Production by Districts.

Field.	1908.	1909.	1910.	1911.	1912.
	Bls.	Bls.	Bls.	Bls.	Bls.
Lambton	265,368	243,123	205,456	184,450	150,272
Tilbury and Romney	201,286	124,003	63,058	48,707	44,727
Bothwell	39,228	38,092	36,998	35,244	34,486
Leamington	9,334	5,929	141	.....	.....
Dutton	13,743	9,513	7,752	6,732	4,335
Onondaga (Brant co.)	.....	.....	1,005	13,501	7,115
Total	528,959	420,660	314,410	288,634	240,935

The oil refineries of Canada, of which there are four, viz.: the Imperial Oil Company, with works and chief office at Sarnia, Ont., the Canadian Oil Company, works at Petrolia, head office, Toronto; the British American Oil Company, works and office at Toronto; The Empire Refining Company, Ltd., works at Wallaceburg, used considerable quantities of imported crude oils. There is also a rapidly increasing use of imported crude fuel oils on the Pacific coast. The im-

ports of crude oil in 1912 were 120,082,405 gallons, valued at $3,996,842, as against 71,637,533 gallons, valued at $2,187,952, in 1911, and 53,603,778 gallons, valued at $1,639,320, in 1910.

All refined illuminating oils, and naphtha manufactured and shipped from Canadian refineries, are inspected by the Inland Revenue Department. The total quantities of these oils inspected during the fiscal year ending March 31, 1913, were 29,366,199·19 gallons, as compared with 26,463,664·05 gallons inspected during the previous fiscal year.

There are three inspection districts, known respectively as the London, Toronto, and Windsor districts, the first mentioned covering the refinery plant at Sarnia and Petrolia, the second the Toronto refinery, the third the Wallaceburg refinery.

The following tables showing the quantities of refined illuminating oils and naphtha inspection in the several districts are quoted from the annual report of the Department of Inland Revenue.

INSPECTION OF PETROLEUM.

Return of Inspected Petroleum and Naphtha Shipped from Refineries During the Fiscal Year Ending March 31, 1913.

Divisions.	Petroleum.	Naphtha.	Total.
	Gals.	Gals.	Gals.
London, Ont.	21,024,455·47	4,658,721·74	25,683,177·21
Toronto, Ont.	1,346,590·37	2,175,267·21	3,521,857·58
Windsor, Ont.	114,391·50	46,772·90	161,164·40
	22,485,437·34	6,880,761·85	29,366,199·19

Comparative Statement of Inspected Petroleum and Naphtha Shipped from Ontario Refineries During the Fiscal Years ending March 31, 1910-1913.

—	Petroleum.	Naphtha.	Total.
1910	19,100,424·16	4,113,149·46	23,213,573·62
1911	21,017,628·45	6,517,655·41	27,535,283·86
1912	20,886,072·43	5,577,591·62	26,463,664·05
1913	22,485,437·34	6,880,761·85	29,366,199·19

The exports of oil from Canada are comparatively small, the available statistics being shown in Table 3. During 1912, the exports as published by the Customs Department, included: crude oil 18,500 gallons, valued at $3,964; refined oils, 36,945 gallons, valued at $6,147; and naphtha and gasoline, 25,791 gallons,

valued at $4,261; or a total of 81,236 gallons, valued at $14,372. There was also an export of 397,039 gallons, valued at $119,686, of 'other oils N.E.S. 2,' which probably included products of petroleum.

PETROLEUM—TABLE 3.

Exports of Crude and Refined Petroleum, 1881-1912.

Calendar Year.	Crude oil.		Refined oil.		Total.	
	Gals.	Value.	Gals.	Value.	Gals.	Value.
		$		$		$
1881					501	99
1882					1,119	286
1883					13,283	710
1884					1,098,090	30,168
1885					337,967	10,562
1886					241,716	9,855
1887					473,559	13,831
1888					196,602	74,542
1889					235,855	10,777
1890					420,492	18,154
1891	446,770	18,471	585	104	447,355	18,575
1892	310,387	12,945	1,146	100	311,533	13,045
1893	107,719	3,696	2,196	394	109,915	4,090
1894	53,985	2,773	5,297	513	59,282	3,286
1895	22,831	1,044	10,237	2,023	33,068	3,067
1896	601	101	7,489	999	8,090	1,100
1897			342	49	342	49
1898	96	4	12,735	3,001	12,831	3,005
1899			8,559	859	3,425	859
1900	40	2	8,559	394	8,559	2,396
1901	14,168	691	375	66	14,543	757
1902	400	40	626	146	1,026	186
1903	350	15	1,013	190	1,363	205
1904	4,207	213	2,126	470	6,333	683
1905	35	2	7,228	2,078	7,263	2,080
1906	900	141	8,938	1,401	9,838	1,542
1907	1,125	102	3,132	575	4,257	677
1908			296	71	296	71
1909			7,768	934	7,768	934
1910			2,818	462	2,818	462
1911*			24,448	4,500	24,448	4,500
1912			81,236	14,372	81,236	14,372

*Includes naphtha and gasoline.

The imports of petroleum and petroleum products into Canada have been rapidly increasing, while the domestic production has been decreasing. The imports during the calendar year 1912 totalled 186,787,484 gallons of petroleum oil, crude and refined, valued at $11,858,533, in addition to 2,144,006 pounds of wax and wax candles, valued at $119,520. The oil imports included: crude oil, 120,082,405 gallons, valued at $3,996,842; refined and illuminating oils, 14,748,218 gallons, valued at $1,012,735; gasoline, 40,904,598 gallons, valued at $5,347,767; lubricating oils, 6,763,800 gallons, valued at $1,077,712; and other petroleum products, 4,288,463 gallons, valued at $423,477.

The total imports in 1911 were 116,892,689 gallons of petroleum oil, crude and refined, valued at $6,009,730, and 1,959,787 pounds of wax and wax candles, valued at $106,424.

There was an increase in the imports of crude oil in 1912 of 48,429,154 gallons, or over 67 per cent, an increase in the imports of refined illuminating oils of 1,057,256 gallons, or nearly 7¾ per cent, an increase in the imports of lubricating oils of 1,454,883 gallons, or over 27 per cent, and an increase in the imports of gasoline of 17,565,825 gallons, or over 75 per cent.

Details of the imports of oils during 1911 and 1912, are shown in Table 4.

PETROLEUM.—TABLE 4.

Imports of Petroleum and Products Thereof, During the Calendar Years 1911 and 1912.

Products.	1911.		1912.	
	Gals.	Value.	Gals.	Value.
		$		$
(*a*) Petroleum crude, fuel and gas oils (0·8235 specific gravity or heavier)	71,637,533	2,187,952	120,064,953	3,595,502
(*b*) Crude petroleum, gas oils (other than benzine naphtha and gasoline)	15,718	918	17,452	1,340
(*c*) Coal and kerosene, distilled, purified, or refined	13,527,816	658,035	14,543,186	933,513
(*d*) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale, or lignite, costing more than 30 cents per gallon	163,146	64,368	205,032	79,222
(*e*) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon	4,326,871	523,558	5,654,773	723,574
(*f*) Products of petroleum, N.O.P.	2,900,786	315,973	4,288,463	423,477
(*g*) Lubricating oils, N.O.P.	982,046	282,894	1,109,027	354,138
(*h*) Gasoline	23,338,773	1,976,032	40,904,598	5,347,767
Total	116,892,689	6,009,730	186,787,484	11,858,533

(*a*) Free. (*b*) Duty 1½c. per gal. (*c*), (*e*), and (*f*) Duty 2½c. per gal. (*d*) 20 per cent.
(*g*) Duty 20 per cent. (*h*) Free.

The total annual imports during the fiscal years of petroleum oils and products, including the imports of paraffin wax and candles, are shown in Table 5. The imports of paraffin wax are shown in Table 7 and of wax candles in Table 8, while the total imports of crude and manufactured oils other than illuminating, are shown in Table 6.

PETROLEUM.—TABLE 5.

Imports of Petroleum and Products Thereof, Years 1880-1912.

Fiscal Year.	Gals.	Value.	Fiscal Year.	Gals.	Value.
		$			$
1880	687,641	131,359	1896	8,005,891	735,913
1881	1,437,475	262,168	1897	8 415,302	697,169
1882	3,007,702	398,031	1898	9,074,311	724,519
1883	3,086,316	353,546	1899	10,394,208	763,303
1884	3,160,282	380,082	1900	9,633,647	864,833
1885	3,767,441	415,195	1901	11,082,822	982,640
1886	3,819,146	421,836	1902	13,220,005	1,107,207
1887	4,290,003	467,003	1903	18,799,312	1,643,371
1888	4,523,056	408,025	1904	24,521,115	2,152,623
1889	4,650,274	484,462	1905	35,296,332	2,151,514
1890	5,075,650	515,852	1906	32,624,410	1,908,177
1891	5,071,386	498,330	1907 (9 mos.)	23,645,861	1,480.261
1892	5,649,145	475,732	1908	40,213,542	2,577,059
1893	6,002,141	446,389	1909	51,700,476	3,219,243
1894	6,597,108	439,988	1910	60,017,066	3,442,604
1895	7,577,674	525,372	1911	87,245,133	4,901,608
			1912	117,784,092	6,104,428

PETROLEUM.—TABLE 6.

Imports of Crude and Manufactured Oils, Other Than Illuminating, 1881-1912.

Fiscal Year.	Gals.	Fiscal Year.	Gals.
1881	960,691	1897	802,286
1882	1,656,290	1898	1,047,026
1883	1,895,488	1899	1,017,278
1884	2,017,707	1900	1,406,700
1885	2,489,326	1901	1,838,966
1886	2,491,530	1902	2,296,353
1887	2,624,399	1903	4,316,010
1888	2,701,714	1904	7,141,109
1889	2,882,462	1905	25,002,047
1890	3,054,908	1906	23,365,674
1891	3,049,384	1907 (9 mos.)	16,761,713
1892	3,047,199	1908	33,915,853
1893	1,481,749	1909	41,085,997
1894	1,860,829	1910	51,354,396
1895	1,106,993	1911	77,966,543
1896	1,079,965	1912	104,329,688

PETROLEUM.- TABLE 7.

Imports of Paraffin Wax, 1883-1912.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$
1883	43,716	5,166	1898	103,570	5,987
1884	39,010	6,079	1899	92,242	4,025
1885	59,967	8,123	1900	47,400	3,529
1886	62,035	7,953	1901	118,848	9,639
1887	61,132	6,796	1902	225,885	12,750
1888	53,862	4,930	1903	592,642	28,674
1889	63,229	5,250	1904	418,967	18,440
1890	239,229	15,844	1905	81,992	7,795
1891	753,854	50,275	1906	112,612	9,721
1892	733,873	48,776	1907 (9 mos.)	55,021	5,922
1893	452,916	38,935	1908	62,308	8,041
1894	208,099	15,704	1909	129,631	12,795
1895	163,817	11,579	1910	429,801	27,296
1896	150,287	10,042	1911	1,856,049	81,189
1897	138,703	7,945	1912	1,482,465	67,965

PETROLEUM.—TABLE 8.

Imports of Paraffin Wax Candles, 1880-1912.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		$			$
1880	10,445	2,269	1896	25,787	4,072
1881	7,494	1,683	1897	25,114	2,929
1882	5,818	1,428	1898	60,802	4,427
1883	7,149	1,734	1899	62,331	5,856
1884	8,755	2,229	1900	27,663	3,671
1885	9,247	2,449	1901	44,562	3,588
1886	12,242	2,587	1902	51,120	5,752
1887	21,364	3,611	1903	83,377	9,025
1888	22,054	2,829	1904	83,471	9,078
1889	8,038	1,337	1905	137,353	15,293
1890	7,233	1,186	1906	148,808	15,804
1891	10,598	2,116	1907 (9 mos.)	38,900	5,088
1892	9,259	1,952	1908	156,934	20,035
1893	8,351	1,735	1909	110,848	14,806
1894	10,818	1,685	1910	164,822	20,842
1895	19,448	2,541	1911	181,541	22,426
			1912	290,505	35,974

Regulations have been adopted by the Dominion Government for the disposal of petroleum and natural gas rights. These are outlined as follows:—

Petroleum Regulations.

'Regulations for the disposal of petroleum and natural gas rights, the property of the Crown, in Manitoba, Saskatchewan, Alberta, and Northwest Territories, the Yukon Territory, and within the tract containing

three and one-half (3½) million acres of land acquired by the Dominion Government from the Province of British Columbia, and referred to in sub-section (*b*) of section 3 of the Dominion Lands Act, approved by Order in Council, dated the 11th day of March, 1910.'

These regulations provide for the leasing of petroleum and gas rights under an area of not more than 1,920 acres to one applicant for a period of twenty-one years, subject to a rental of twenty-five (25) cents an acre for the first year, and fifty (50) cents an acre for each subsequent year.

The lessee is required to have upon the lands leased, within one year of the date of the lease, such machinery as the Minister may consider necessary for the carrying on of prospecting operations, and is required to begin boring operations within fifteen months of the date of the lease, which shall be continued with reasonable diligence, with a view to the discovery of oil or natural gas.

PHOSPHATE.

The small production of phosphate or apatite, which has been obtained in Canada during the past fifteen years, has been obtained almost altogether as a by-product in connexion with the mining of mica. The shipments during 1912 were 164 tons, valued at $1,640, shipped from the Little Rapids mine, township of Portland East, Quebec.

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

For a number of years previous to 1892, there was a considerable production of apatite from the district north of Buckingham, the annual output varying from 20,000 tons to 30,000 tons. The introduction of the cheaply-mined phosphates of the southern states, however, resulted in the collapse of the Canadian industry, though it was claimed at the time of closing down that there was no diminution in the available supply of mineral.

Statistics of production and exports are shown in tables following:—

PHOSPHATE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.	Calendar Year.	Tons.	Value.	Average value per ton.
		$	$ cts.			$	$ cts.
1886	20,495	304,338	14 85	1899	3,000	18,000	6 00
1887	23,690	319,815	13 50	1900	1,415	7,105	5 02
1888	22,485	242,285	10 77	1901	1,033	6,280	6 07
1889	30,988	316,662	10 21	1902	856	4,953	5 79
1890	31,753	361,045	11 37	1903	1,329	8,214	6 18
1891	23,588	241,603	10 24	1904	817	4,590	5 62
1892	11,932	157,424	13 20	1905	1,300	8,425	6 48
1893	8,198	70,942	8 65	1906	850	6,375	7 50
1894	6,861	41,166	6 00	1907	824	6,018	7 30
1895	1,822	9,565	5 25	1908	1,596	14,794	9 26
1896	570	3,420	6 00	1909	998	8,054	8 07
1897	908	3,984	4 39	1910	1,478	12,578	8 51
1898	733	3,665	5 00	1911	621	5,206	8 38
				1912	164	1,640	10 00

PHOSPHATE.—TABLE 2.

Exports.

Calendar Year.	Ontario.		Quebec.		Total.	
	Tons.	*Value.	Tons.	*Value.	Tons.	*Value.
		$		$		$
1878	824	12,278	9,919	195,831	10,743	208,109
1879	1,842	20,565	6,604	101,470	8,446	122,035
1880	1,387	14,422	11,673	175,664	13,060	190,086
1881	2,471	36,117	9,497	182,339	11,968	218,456
1882	568	6,338	16,585	302,019	17,153	308,357
1883	50	500	19,666	427,168	19,716	427,668
1884	763	8,890	20,946	415,350	21,709	424,240
1885	434	5,962	28,535	490,331	28,969	496,293
1886	644	5,816	19,796	337,191	20,440	343,007
1887	705	8,277	22,447	424,940	23,152	433,217
1888	2,643	30,247	16,133	268,362	18,776	298,609
1889	3,547	38,833	26,440	355,935	29,987	394,768
1890	1,866	21,329	26,591	478,040	28,457	499,369
1891	1,551	16,646	15,720	368,015	17,271	384,661
1892	1,501	12,544	9,981	141,221	11,482	153,765
1893	1,990	11,550	5,748	56,402	7,738	67,952
1894	1,980	10,560	3,470	29,610	5,450	40,170
1895	.....	.....	250	2,500	250	2,500
1896	1	5	299	2,990	300	2,995
1897	70	450	165	400	235	850
1898	21	240	702	8,000	723	8,240
1899	215	1,850	93	1,725	308	3,575
1900	.....	.....	.....	.....	Nil	Nil
1901	.....	.....	.....	.....	6	120
1902	.....	.....	.....	.....	70	1,880
1903	.....	.....	.....	.....	1	20
1904	.....	.....	.....	.....	191	5,348
1905	.....	.....	.....	.....	40	1,253
1906	.....	.....	.....	.....	.....	.....
1907	.....	.....	.....	.....	.....	.....
1908	.....	.....	.....	.....	1	30
1909	.....	.....	.....	.....	895	15,735
1910	.....	.....	.....	.....	0	0
1911	.....	.....	.....	.....	3	100
1912	.....	.....	.....	.....	.....	.....

* These values do not compare with those in Table 1 ; the spot value is adopted for the production, while the exports are valued upon quite a different basis.

The imports of phosphate rock (fertilizer) in 1912 were valued at $24,586; phosphorus, 13,807 pounds, valued at $4,012; and manufactured fertilizers, valued at $580,351. The imports in 1911 included phosphate rock (fertilizer), valued at $46,217; phosphorus, 14,818 pounds, valued at $4,384; and manufactured fertilizers, valued at $386,645.

Phosphorus is manufactured at Buckingham by the Electric Reduction Company. The exports of phosphorus during the twelve months ending December 31, 1912, were 543,620 pounds, valued at $66,806, as compared with 524,370 pounds valued at $76,608 in 1911.

PYRITES.

The total shipments of pyrites in 1912 were reported as 81,526 tons, valued at $314,085. The shipments include: 60,849 tons of copper pyrites from Quebec mines, valued at $243,396; and 20,677 tons of iron pyrites, valued at $70,689, from Ontario properties. In 1911 the total shipments were reported as 82,666 tons, comprising 39,122 tons of copper pyrites from mines in Quebec, and 43,544 tons of iron pyrites from Ontario mines.

The total exports of pyrites from Canada in 1912 were reported by the Customs Department as 5,938 tons, valued at $11,935, as compared with exports in 1911 of 32,102 tons, valued at $120,585, and in 1910, 30,434 tons, valued at $110,071.

The imports of brimstone and crude sulphur during the calendar year 1912 were 38,647 tons, valued at $806,690, as against 21,831 tons, valued at $446,491, in 1911, and 22,835 tons, valued at $474,619, in 1910.

No record is available of the quantity of sulphuric acid manufactured in Canadian acid plants. The imports of sulphuric acid during the calendar year 1912, according to Customs returns, were 4,971,446 pounds, valued at $35,325, as compared with imports in 1911 of 1,031,803 pounds, valued at $9,281, and 2,474,802 pounds, valued at $21,702, imported in 1910.

Statistics of production and exports of pyrites, of imports of brimstone and crude sulphur, and of imports of sulphuric acid, are shown in the following tables:—

PYRITES.—TABLE 1.

Annual Production of Pyrites.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1886	42,906	193,077	1900	40,031	155,164
1887	38,043	171,194	1901	35,261	130,544
1888	63,479	285,656	1902	35,616	138,939
1889	72.225	307,292	1903	33,982	127,713
1890	49,227	123,067	1904	37,180	134,033
1891	67,731	203,193	1905	33,339	125,486
1892	59,770	179,310	1906	42,743	169,990
1893	58,542	175,626	1907	46,243	212,491
1894	40,527	121,581	1908	47,336	224,824
1895	34,198	102,594	1909	64,644	222,812
1896	33,715	101,155	1910	53,870	187,064
1897	38,910	116,730	1911	82,666	365,820
1898	32,218	128,872	1912	81,526	314,085
1899	27,687	110,748			

PYRITES.—TABLE 2.

Imports:—Brimstone* and Crude Sulphur.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		$			$
1880	1,775,489	27,401	1897	8,672,751	87,719
1881	2,118,720	36,956	1898	38,026,798	373,786
1882	2,375,821	40,329	1899	24,517,026	265,799
1883	2,336,085	36,737	1900	21,128,656	215,433
1884	2,195,735	37,463	1901	23,856,651	270,608
1885	2,248,986	35,043	1902	24,640,735	325,307
1886	2,922,043	43,651	1903	24,412,737	259,123
1887	3,103,644	38,750	1904	19,364,730	204,663
1888	2,048,812	25,318	1905	23,435,140	242,251
1889	2,427,510	34,006	1906	43,047,672	436,156
1890	4,440,799	44,276	1907 (9 mos.)	25,854,615	277,439
1891	3,601,748	46,351	1908	51,806,739	517,249
1892	4,769,759	67,095	1909	44,049,172	426,569
1893	6,381,203	77,216	1910	42,943,340	430,632
1894	5,845,463	61,558	1911	50,562,547	524,473
1895	4,900,225	56,965	1912	45,039,790	465,926
1896	6,934,190	63,973			

*Brimstone, crude or in roll or flour, or sulphur in roll or flour.

PYRITES.—TABLE 3.

Exports of Pyrites.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1894	8,532	33,205	1904	18,279	49,911
1895	7,705	38,298	1905	19,755	55,767
1896	15,002	33,837	1906	26,050	65,349
1897	15,096	30,812	1907	25,056	80,139
1898	9,804	26,387	1908	17,283	96,600
1899	15,599	34,084	1909	35,798	156,644
1900	17,620	41,182	1910	30,434	110,071
1901	24,971	57,263	1911	32,102	120,585
1902	18,584	50,178	1912	6,938	11,935
1903	21,067	59,604			

PYRITES.—TABLE 4.

Imports of Sulphuric Acid.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		$			$
1885	774,764	10,791	1899	165,637	2,427
1886	507,927	7,930	1900	740,858	7,066
1887	678,603	8,468	1901	448,608	5,272
1888	2,494,648	35,415	1902	420,731	4,626
1889	181,652	2,606	1903	102,314	2,332
1890	211,871	2,927	1904	113,407	2,563
1891	177,627	2,466	1905	920,804	8,227
1892	222,628	2,837	1906	822,585	8,558
1893	172,422	2,367	1907	733,151	6,901
1894	107,520	1,648	1908	650,095	7,582
1895	174,605	2,481	1909	241,388	3,298
1896	114,137	1,430	1910	914,058	8,466
1897	977,446	8,033	1911	2,486,992	21,855
1898	665,344	5,536	1912	1,615,180	15,027

Following is a list of operating pyrites mines:—

The Eustis Mining Company, Eustis, Que.
East Canada Smelting Company, Ltd., Weedon, Que.
The Nichols Chemical Company of Canada, Ltd., Sulphide, Que.
The Canadian Sulphur Ore Company, Ltd., Madoc, Ont.
The Northern Pyrites Company, Dinorwic, Ont.
Lake Superior Power Company, Sault Ste. Marie, Ont.

SALT.

The production of salt in Canada has for a number of years been obtained from salt fields in southwestern Ontario, although there was at one time a very small production in New Brunswick and Manitoba.

The total sales of salt in 1912, including salt used in the manufacture of caustic soda, etc., were 95,053 tons, valued at $459,582 exclusive of packages, as compared with sales of 91,582 tons, valued at $443,004, in 1911, showing a continued increase in production.

The average number of men employed during the year was reported as 231, and the amount paid in wages, $155,648. The value of the packages used during the year was $224,696, and stock of salt in manufacturers' hands at the close of the year was reported as 3,256 tons.

Detailed statistics of the production during the past six years showing the total sales of salt, the value of the sales, exclusive of packages, the value of the packages used, stock in manufacturers' hands at the end of each year, number of men employed and wages paid, are given in Table 1, while the total annual production since 1886 is given in Table 2.

SALT.—TABLE 1.

Detailed Statistics of Production, 1907-1912.

—		1907.	1908.	1909.	1910.	1911.	1912.
Sales of salt	Tons	72,697	79,975	84,037	84,092	91,582	95,053
Value of salt (exclusive of packages)	$	342,315	378,798	415,219	409,624	443,004	459,582
Value of packages	$	149,823	168,019	175,612	173,446	198,789	224,696
Stock in manufacturers' hands at end of year	Tons	3,923	5,631	2,671	2,474	1,422	3,256
Men employed	No.	215	207	185	208	225	231
Wages paid	$	95,667	95,575	96,116	112,909	123,040	155,648

SALT.—TABLE 2.

Annual Production, 1886-1912.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1886	62,359	227,195	1900	62,055	279,458
1887	60,173	166,394	1901	59,428	262,328
1888	59,070	185,460	1902	64,456	292,581
1889	32,832	129,547	1903	62,452	297,517
1890	43,754	198,857	1904	69,477	321,778
1891	45,021	161,179	1905	67,340	320,858
1892	45,486	162,041	1906	76,720	329,130
1893	62,324	195,926	1907	72,697	342,315
1894	57,199	170,687	1908	79,975	378,798
1895	52,376	160,455	1909	84,037	415,219
1896	43,960	169,693	1910	84,092	409,624
1897	51,348	225,730	1911	91,582	443,004
1898	57,142	248,639	1912	95,053	459,582
1899	59,339	254,390			

As will be seen by the above table, the salt industry is slowly but steadily developing, the figures of production for 1912 being the highest yet recorded.

The salt fields of western Ontario are very extensive. The salt beds form part of the Onondaga formation, of Silurian age, and the saliferous horizons underlie a territory extending from Kincardine to Lake Erie, bordering Lake Huron and the Detroit river. This basin measures an extreme length of 150 miles, with a maximum width of 40 miles at the centre, and tapering towards the ends. This would cover an area of 2,500 square miles. An idea of the immense deposits of salt contained in this area may be gathered from the fact that a bore-hole sunk at Goderich, in Huron county, to a depth of 1,517 feet, went through six beds of salt, ranging in thickness from 6 feet to 35 feet, whereas, at Windsor, in a well 1,672 feet deep, four beds were traversed, one of which is said to measure 250 feet in thickness.

So far, the salt industry of western Ontario is confined to the production of salt for the trade, but the Canadian Salt Company, at their Sandwich branch, in 1911 installed a plant for the manufacture of caustic soda and bleaching powder. This plant commenced operations during the last week of that year, and was operated throughout 1912. The imports of some of the soda products during the calendar years 1911 and 1912 are shown in the accompanying table.

	1911.		1912.	
	Lbs. imported.	Value.	Lbs. imported.	Value.
		$		$
Soda, ash, or barilla	44,682,937	375,132	52,167,811	421,959
Soda bichromate	327,307	19,193	584,424	33,744
Caustic soda in packages, 25 lbs. or more	13,708,922	253,612	14,544,545	278,579
Sal soda	10,202,422	64,107	9,996,562	64,020
Sulphate of soda	13,782,241	88,761	19,243,823	97,768
		800,805		896,070

As at present carried on in western Ontario, the salt industry consists essentially in the production of table, dairy, and coarse salt, and a small quantity of land salt. These are manufactured by forcing water down bore-holes sunk to the rock salt bed, through a casing inside of which is a pipe of smaller diameter. A powerful pump forces water down the outer tube; this dissolves the salt, eventually forming large cavities at the bottom of the well, which offer a great surface of salt to the action of the water.

The water forced downwards is charged to saturation in the salt cavity, and, as the rock is not fissured or porous, this brine is forced upwards through the inner tube. After a process of purification and settling, this brine is evaporated either in vacuum pans or in large open air vats, and after passing through mechanical dryers or over drying floors, the salt is ready for the market.

The following are analyses of brines obtained from wells in these salt fields. The figures are for 1,000 parts by weight:—

Analyses of Brines.[1]

—	Sodium chloride.	Calcium chloride.	Magnesium chloride.	Sulphate of lime.	Specific gravity.	Degrees of salometer.
Goderich, sample taken August 19, 1866	259·000	0·432	0·254	1·882	1·205	100
Goderich, same well as above. November 5, 1868	236·410	0·190	0·410	4·858	1·187	92
Clinton well	204·070	0·470	0·184	5·583	1·157	80
Kincardine	241·350	0·840	0·230	3·264	1·191	94

[1] Analyses by Dr. T. Sterry Hunt, laboratory, Geological Survey of Canada.

EXPORTS AND IMPORTS.

Comparatively small quantities of salt are now exported from Canada, the exports in 1912 being 289,150 pounds, valued at $3,723.

The imports of salt, on the other hand, are quite considerable, and in total value greatly exceed the domestic production. For the calendar year 1912 the imports of salt subject to duty, included: salt in bulk dutiable at 5 cents per 100 pounds, 20,909 tons, valued at $60,574; and salt in bags, barrels, or other packages, dutiable at 7½ cents per 100 pounds, 9,158 tons, valued at $73,295. Salt imported from the United Kingdom or any British possession, or imported for the use of the sea or gulf fisheries, duty free, was imported to the extent of 109,639 tons, valued at $352,081, giving total imports of 139,733 tons, valued at $485,950.

Tables 3, 4, and 5, following, give the statistics of exports and imports of salt, since 1880.

SALT.—TABLE 3.

Exports.

Calendar Year.	Bushels.	Value.	Calendar Year.	Bushels.	Value.
		$			$
1880	467,641	46,211	1898	5,202	1,252
1881	343,208	44,627	1899	11,205	2,773
1882	181,758	18,350	1900	37,653	8,997
1883	199,733	19,492	1901	39,224	6,510
1884	167,029	15,291	1902	9,331	3,798
1885	246,794	18,756		Lbs.	
1886	224,943	16,886			
1887	154,045	11,526	1903	1,915,648	5,927
1888	15,251	3,987	1904	1,006,036	4,186
1889	8,557	2,390	1905	1,447,728	6,112
1890	6,605	1,166	1906	618,707	3,437
1891	5,290	1,277	1907	2,222,542	7,709
1892	2,000	504	1908	529,229	3,840
1893	4,940	1,267	1909	276,765	2,488
1894	4,639	1,120	1910	275,200	2,618
1895	4,865	959	1911	454,600	5,055
1896	3,842	899	1912	289,150	3,723
1897	5,383	1,193			

SALT.—TABLE 4.

Imports:—Salt Paying Duty.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		$			$
1880	726,640	3,916	1897	11,911,766	33,470
1881	2,588,465	6,355	1898	11,068,785	32,792
1882	3,679,415	12,318	1899	11,781,453	32,839
1883	12,136,968	36,223	1900	11,028,337	30,180
1884	12,770,950	38,949	1901	11,625,688	34,087
1885	10,397,761	31,726	1902	13,892,849	39,605
1886	12,266,021	39,181	1903	14,554,693	41,785
1887	10,413,258	35,670	1904	29,779,183	73,826
1888	10,509,799	32,136	1905	18,473,868	58,056
1889	11,190,088	38,968	1906	21,366,064	59,805
1890	15,135,109	57,549	1907 (9 mos.)	21,834,435	58,553
1891	15,140,227	59,311	1908	31,019,400	79,341
1892	18,648,191	65,963	1909	31,653,900	83,660
1893	21,377,339	79,838	1910	35,230,000	83,043
1894	15,867,825	53,336	1911	39,251,300	94,461
1895	8,498,404	29,881	1912	50,038,300	116,097
1896	7,665,257	24,550			

	1911.		1912.	
	Pounds.	Value.	Pounds.	Value.
		$		$
Salt, fine, in bulk, N.E.S. (a)	27,970,500	45,178	35,436,700	55,039
Salt, N.E.S., in bags, barrels or other packages (b)	11,280,800	49,283	14,601,600	61,008
Total	39,251,300	94,461	50,038,300	116,097

(a) Duty 5c per 100 lbs. (b) Duty 7½c per 100 lbs.

SALT.—TABLE 5.

Imports:—Salt Not Paying Duty.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		$			$
1880	212,714,747	400,167	1897	215,844,484	312,117
1881	231,640,610	488,278	1898	202,634,927	293,410
1882	166,183,962	311,489	1899	183,046,365	267,520
1883	246,747,113	336,144	1900	193,554,550	295,253
1884	225,390,121	321,243	1901	216,271,603	339,887
1885	171,571,209	255,719	1902	238,648,737	385,629
1886	180,205,949	255,359	1903	232,708,675	361,185
1887	203,042,332	285,455	1904	198,634,047	338,082
1888	184,166,986	220,975	1905	196,907,500	340,954
1889	180,847,800	253,009	1906	203,080,000	352,214
1890	158,490,075	252,291	1907 (9 mos)	139,459,900	240,841
1891	195,491,410	321,239	1908	200,944,800	350,878
1892	201,831,217	314,995	1909	232,237,700	376,961
1893	191,595,530	281,462	1910	232,559,900	382,210
1894	196,668,730	328,300	1911*	205,784,700	330,251
1895	201,691,248	332,711	1912	212,552,200	332,554
1896	205,005,100	338,888			

* Salt imported from the United Kingdom, or any British possession, or imported for the use of the sea or gulf fisheries.

Consumption of Salt in Canada in 1911 and 1912.

—	1911.		1912.	
	Pounds.	Value.	Pounds.	Value.
		$		$
Canadian salt production	183,164,000	443,004	190,106,000	459,582
Less exports	454,600	5,055	289,150	3,723
	182,709,400	437,949	189,816,850	455,859
Imports of salt paying duty	39,251,300	94,461	60,134,500	133,869
" " free of duty	205,784,700	330,251	219,278,900	352,081
	427,745,400	862,661	469,230,250	941,809

The following is a list of operators:—

Operator.	Address.
The Canadian Salt Co., Ltd	Windsor, Ont.
" " " (Sandwich Branch)	" "
The Western Salt Co., Ltd	Mooretown, Ont.
Dominion Salt Co., Ltd	Sarnia, Ont.
Carter and Kiddermaster	" "
The Elarton Salt Works, Co., Ltd	Hyde Park Corner, Ont.
Parkhill Salt Co	Parkhill, Ont.
Exeter Salt Works Co	Exeter, Ont.
Western Canada Flour Mills Co., Ltd	Goderich, Ont.
North American Chemical Co. (J. Ransford)	"
Stapleton Salt Works (Jno. Ransford)	Clinton, Ont.
Grey, Young & Sparling Co., of Ont., Ltd	Wingham, Ont.
Ontario People's Salt & Soda Co., Ltd	Kincardine, Ont.

ACTINOLITE.

During the past two years shipments of actinolite were made from Actinolite, Ontario, amounting to 92 tons, valued at $1,000, in 1912, and 67 tons, valued at $736, in 1911. These shipments were apparently made from stock on hand. No actual mining operations have been undertaken on these actinolite deposits for some years.

ARSENIC.

The only production of arsenic in Canada during the past two years was that recovered by the smelters at Copper Cliff, Deloro, Thorold and Orillia, in Ontario, from the ores of the Cobalt district treated at these plants.

The total production of arsenious oxide, or white arsenic, in 1912, was 2,045 tons, valued at $89,262, as compared with 2,097 tons, valued at $76,237, in 1911. In 1910 the production of white arsenic was 1,502 tons, valued at $75,328, in addition to which 547 tons of arsenical ore concentrates, valued at $5,716, were shipped from Goldboro, Nova Scotia, by the New England Mining Company.

The exports of white arsenic in 1912 were, according to Customs reports, 3,847,906 pounds (1,924 tons), valued at $101,310, as compared with 4,125,558 pounds (2,062 tons), valued at $81,761, exported in 1911.

The imports of arsenious oxide in 1912 were 76,528 pounds, valued at $1,722, and of sulphide of arsenic, 451,928 pounds, valued at $19,431. There was also an import during 1912 of arseniate, bi-arseniate and stannate of soda, amounting to 41,977 pounds, valued at $1,595.

Under the terms of "An Act to encourage the refining of metals in Ontario," passed in 1907, and an amendment Act passed in 1912, a bounty of one-half cent per pound is offered by the Ontario Government on white arsenic, otherwise known as arsenious acid, produced from mispickel ores and not from ores carrying smaltite or niccolite or cobaltite, the total bounty paid not to exceed $15,000 in any one year—this bounty is available until the year 1917. The full text of the Act will be found reproduced in the chapter on cobalt.

It will be observed that under the terms of this Act, the bounty is not payable on the present production of arsenic which is entirely from the Cobalt district.

In the following tables the production of arsenical ore and white arsenic, and the imports and exports of arsenic are shown.

Annual Production of Arsenic.

Calendar Year.	Arsenical ore.		White arsenic.	
	Tons.	Value.	Tons.	Value.
		$		$
1885			440	17,600
1886			120	5,460
1887			30	1,200
1888			30	1,200
1889			Nil.	Nil.
1890			25	1,500
1891			20	1,000
1892-3			Nil.	Nil
1894			7	420
1895-8			Nil.	Nil.
1899			57	4,872
1900			303	22,725
1901			695	41,676
1902			800	48,000
1903			257	15,420
1904-5				
1906			201	14,058
1907	656	11,094	330	36,209
1908	986	17,506	715½	41,060
1909	224	3,346	1,129	64,100
1910	547	5,716	1,502	75,328
1911			2,097	76,237
1912			2,045	89,262

Exports of White Arsenic.

Calendar Year.	Pounds.	Value.	Calendar Year.	Pounds.	Value.
		$			$
1902	547,698	16,192	1908	1,913,732	43,493
1903	395,573	10,583	1909	3,111,249	119,673
1904	146,000	6,900	1910	4,512,673	173,932
1905	108,000	5,400	1911	4,125,558	81,761
1906	271,063	5,981	1912	3,847,906	101,310
1907	613,504	10,850			

Annual Imports of Arsenic, 1880-1906.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
		$			$			$
1880	18,197	576	1889	69,269	2,434	1898	291,967	14,270
1881	31,417	1,070	1890	138,509	4,474	1899	582,383	24,203
1882	138,920	3,962	1891	115,248	4,027	1900	230,730	11,035
1883	51,953	1,812	1892	302,958	9,365	1901	159,263	8,361
1884	19,337	773	1893	447,079	12,907	1902	106,857	6,004
1885	49,080	1,566	1894	292,505	10,018	1903	298,375	11,824
1886	30,181	961	1895	1,115,697	31,932	1904	414,065	12,421
1887	32,436	1,116	1896	664,854	27,523	1905	268,274	7,661
1888	27,510	1,016	1897	152,275	8,378	1906 Duty free	446,975	19,169

Imports of Arsenious Oxide and Sulphide of Arsenic.

Fiscal Year.	Arsenious oxide.*		Arsenic, sulphide of.*		Total.
	Pounds.	Value.	Pounds.	Value.	
		$		$	$
1907 (9 mos.)	252,473	16,011	95,843	6,116	22,127
1908	378,174	26,804	125,322	7,531	34,335
1009	123,612	4,064	389,815	14,575	18,639
1910	27,066	1,410	301,563	11,485	12,895
1911	254,347	6,605	257,996	8,093	14,698
1912	76,528	1,722	451,928	19,431	21,153

* Duty free.

CHALK AND WHITING.

These materials are not produced in Canada, but statistics of their importation are given to show the market for them in Canada.

Annual Imports of Chalk and Whiting, 1880-1912.

Fiscal Year.	Chalk *(a)*	Whiting *(b)*		Fiscal Year.	Chalk *(a)*	Whiting *(b)*	
	Value.	Cwt.	Value.		Value.	Cwt.	Value.
	$		$		$		$
1880	2,117	84,115	26,092	1897	7,432	102,453	22,541
1881	2,768	47,480	16,637	1898	9,338	166,293	25,761
1882	2,882	36,270	16,318	1899	10,461	134,384	34,310
1883	5,067	76,012	29,334	1900	12,212	127,455	34,575
1884	2,589	76,268	28,230	1901	11,629	209,868	60,878
1885	3,003	67,441	23,492	1902	11,337	153,982	42,136
1886	6,583	65,124	25,533	1903	16,497	139,804	39,867
1887	5,635	47,246	15,191	1904	19,163	186,919	42,507
1888	5,865	76,619	20,503	1905	20,896	198,485	51,215
1889	5,336	84,658	22,735	1906	23,853	160,030	44,876
1890	7,221	96,243	27,471	1907 (9 mos.)	17,446	128,018	33,453
1891	8,193	84,679	27,504	1908	24,122	228,699	63,499
1892	9,558	102,985	26,867	1909	24,066	150,484	45,314
1893	9,966	88,835	25,563	1910	29,566	206,641	76,404
1894	11,308	103,633	26,649	1911	36,776	254,839	97,338
1895	7,730	102,751	25,441	1912	39,779	266,114	99,760
1896	6,467	113,791	27,322				

(a) Chalk prepared. Duty 20 per cent. *(b)* Whiting or whitening, gilders whiting, and Paris white. Duty free.

FLUORSPAR.

The occurrence of fluorspar has been noted at several points in the vicinity of Madoc, Hastings county, Ontario. In 1905, a deposit on lot 1, concession IV of Madoc township was opened by Mr. S. Wellington, of Madoc, and a shipment of twelve tons made to Port Hope. In 1910, some development was made on a deposit on lot 10, concession XIV, of the township of Huntingdon, by Messrs. Gillespie and Wellington, and about 200 tons of mineral taken out, of which two tons, valued at $15, were shipped during that year. Prospecting on this property has been continued during the past two years, and in 1911, 34 tons, valued at $238, were shipped to metallurgical works at Deloro, and the Canadian steel foundries at Welland. In 1912, 40 tons, valued at $240, were shipped to smelting works at Copper Cliff.

Imports of fluorspar are not separately shown in the reports of the Customs Department, but considerable quantities are used in steel furnaces, the quantity thus consumed in 1910 being reported as 7,461 tons; in 1911, 8,067 tons, and in 1912, 9,709 tons.

Hydro-fluo-silicic acid is used in the lead refinery at Trail, B.C., and the imports during the past four years have been as follows:—

	Pounds.	$
Fiscal year, 1910	433,680	22,622
" " 1911	234,380	12,324
" " 1912	167,112	9,137
" " 1913	320,844	26,358

MAGNESITE.

Magnesite is found in Canada in the Eastern Townships of the Province of Quebec, in the township of Grenville, Argenteuil county, of the same Province, and also in the town of Atlin, British Columbia.

The Grenville deposits are the only ones being operated, the shipments in 1912 being reported as 1,714 tons, valued at $9,645. The deposit is situated about 12 miles from Calumet, on the Canadian Pacific railway, and has for several years been operated by the Canadian Magnesite Company of Montreal. Mining operations are carried on on the north half of lot 18, range XI; north half of lot 15, range IX, township of Grenville.

A calcining mill, with a capacity of 15 tons of calcined rock per 24 hours, has been constructed, together with a grinding plant of equal capacity. About 34 tons of calcined rock were produced during 1912. The crude rock is sold to manufacturers of carbonic acid gas in Montreal, the calcined material to sulphite mills, and for making composition flooring.

Shipments of the crude mineral in 1911 were: 991 tons, valued at $5,531; in 1910, 323 tons, valued at $2,160; in 1909, 330 tons, valued at $2,508, and in 1908, 120 tons, valued at $840.

QUARTZ.

Considerable quantities of quartz are used by the smelters of nickel copper ores. It is also used in the manufacture of ferro-silicon, and ground quartz is used by the manufacturers of sanitary ware and enamelled ware.

The production in 1912 is reported as 100,242 tons, valued at $195,216, as compared with 60,526 tons, valued at $83,865 in 1911, and 88,205 tons, valued at $91,951 in 1910.

The imports of silex, or crystallized quartz, in 1912 were 629 tons, valued at $10,680, and the imports of flint during the same year were 2,802 tons, valued at $39,891. In 1911 the imports of silex were 394 tons, valued at $7,518, and of flint, 3,766 tons, valued at $49,106.

A production of flint has been reported in Canada during the past two years by the Canadian Pebble Company of Port Arthur, Ontario, and the statistics of production are included with those of quartz. Flint pebbles are obtained from near Jackfish, Ontario.

Statistics of the annual production of quartz, so far as these have been obtained, are shown in the next table.

Annual Production of Quartz.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1890	200	1,000	1906	48,376	65,765
1891-2			1907	56,585	124,148
1893	100	500	1908	44,741	52,830
1894-5-6	10	50	1909	56,924	71,285
1897			1910	88,205	91,951
1898	284	570	1911	60,526	83,865
1899	600	1,260	1912	100,242	195,216
1900-1905					

Imports of Silex:—Crystallized Quartz.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		$			$
1880	5,252	2,290	1897	2,564	3,415
1881	3,251	1,659	1898	3,104	2,773
1882	3,283	1,678	1899	3,951	2,595
1883	3,543	2,058	1900	4,021	2,876
1884	3,259	1,709	1901	3,562	2,106
1885	3,527	1,443	1902	4,388	3,858
1886	2,520	1,313	1903	3,514	2,762
1887	14,533	5,073	1904	5,547	4,409
1888	4,808	2,385	1905	8,931	4,475
1889	5,130	1,211	1906	7,465	8,347
1890	1,768	2,617	1907 (9 mos.)	11,964	12,969
1891	3,674	1,929	1908	24,938	19,166
1892	1,429	1,244	1909	6,206	6,909
1893	2,447	1,301	1910	11,460	9,531
1894	2,451	1,521	1911	11,348	10,634
1895	2,882	1,881	1912 Duty free	7,445	7,314
1896	3,289	2,174			

TALC.

Talc is being mined in the Province of Ontario only, two mines being operated during 1912 in the county of Hastings, at Madoc and Eldorado, respectively. Development operations were also in progress on a third property in the same district, during the year.

The operators are:—

Messrs. Cross and Wellington, Madoc, operating the Henderson mine, on lot 14, concession XIV, Huntingdon township.

The Canadian Talc and Silica Co., Eldorado, operating mine and small mill near Eldorado.

The Henderson mine has been operated for some years, the greater part of the output being sold to Geo. H. Gillespie and Company, who operate a grinding mill in Madoc.

During 1912 the total shipments from the Henderson and Eldorado properties were 8,270 tons, valued at $23,132.

The total quantity of talc mined was reported as 13,800 tons; 1,542 tons were shipped crude to the United States, and 6,724 tons sent to the grinding mills. The crude talc is valued at about $2 per ton at the mine, and the ground or refined talc at an average of from $9 to $10 per ton.

Annual Production of Soapstone and Talc.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1886	50	400	1900	1,420	6,365
1887	100	800	1901	259	842
1888	140	280	1902	689	1,804
1889	195	1,170	1903	990	2,739
1890	917	1,239	1904	840	1,875
1891	Nil	Nil	1905	500	1,800
1892	1,374	6,240	1906	1,234	3,030
1893	717	1,920	1907	1,534	4,602
1894	916	1,640	1908	1,016	3,048
1895	475	2,138	1909	4,350	10,300
1896	410	1,230	1910	7,112	22,308
1897	157	350	1911	7,300	22,100
1898	405	1,000	1912	8,270	23,132
1899	450	1,960			

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

INTRODUCTORY.

The subjects included under this heading comprise, in the order treated: cement; clay products of various kinds, such as brick, sewerpipe and tile, pottery, etc.; lime; sand-lime brick; sands and gravels; slate and stone for building and other purposes, including granite, marble, limestone, sandstone, etc. Previous to 1912 no attempt had been made to collect a record of the production of sands and gravels in Canada, and the only statistics available were those of exports and imports. An attempt has been made to obtain statistics of production covering the year 1912, but owing to the incompleteness of our list of producers, and the failure of many to answer correspondence, only a very partial record has been obtained. A beginning, however, has been made, and no doubt more complete statistics will be obtained in succeeding years. The statistics of stone production do not include the stone used in making cement or lime, but are as complete as possible for all other established stone quarries; nevertheless there is undoubtedly a large production of stone for foundation work, road-making, and railway construction of which no record is available.

The total value of the production of these structural products in 1912, according to the record obtained, was $28,794,869, as compared with a value of $22,709,612 in 1911, an increase of $6,085,258, or 26·8 per cent. The total production in 1910 was valued at $19,627,592, and in 1909, $16,533,349.

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

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

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

Structural Materials, Calendar Year, 1912.

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

Production of Structural Materials, 1907-1911.

—	1907.	1908.	1909.	1910.	1911.
	$	$	$	$	$
Cement	3,781,371	3,709,954	5,345,802	6,412,215	7,644,537
Clay products	5,772,117	4,500,702	6,450,840	7,629,956	8,359,933
Lime	974,595	712,947	1,132,756	1,137,079	1,517,599
Sand-lime brick	167,795	152,856	201,650	371,857	442,427
Sand and gravels (exports)	119,853	161,387	256,166	407,974	408,110
Slate	20,056	13,496	19,000	18,492	8,248
Stone	2,027,262	2,088,613	3,127,135	3,650,019	4,328,757
Total	12,863,049	11,339,955	16,533,349	19,627,592	22,709,611

An increased production is shown for each product.

The increase in the value of cement sales in 1912 over 1911 was 19 per cent; an increase of production of clay products 26·5 per cent; an increase in the production of stone quarries of 9 per cent, and an increase in the production of lime of 21.5 per cent. The production of sand-lime brick was over twice that of the previous year. The production of sand and gravel is shown as valued at $1,512,099 in 1912. As already explained this is a partial record only, but it is hoped that the figures obtained in following years will be more complete. The production of slate remained practically the same as in 1911 and forms but a small percentage of the Canadian consumption.

The exports of structural materials is apparently small, the total value reported for 1912 being $539,476, of which about 85 per cent is made up of sand and gravel. The imports of structural material products on the other hand are quite large, amounting in 1912 to nearly 27 per cent of the total consumption. The aggregate value of these imports was $10,883,117, as compared with a value of $7,710,552 in 1911, showing an increased import of $3,172,565, or about 41 per cent. The imports in 1912 included: Portland cement valued at $1,969,529; clay products, $6,592,540; lime, $207,481; sand and gravel, $445,781; slate, $200,643, and stone, $1,467,143. The corresponding imports of 1911 were: cemnet, $834,879; clay products, $5,156,544; lime, $161,985; sand and gravel, $246,613; slate, $169,685, and stone, $1,140,846.

CEMENT.

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

The total quantity of cement made in Canada in 1912 as per reports received from the manufacturers was 7,141,004 barrels, 350 lbs. net each (1,249,675 tons), as compared with 5,677,539 barrels (993,569 tons) made in 1911, an increase of 1,463,465 barrels, or over 25 per cent.

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

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

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

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

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

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

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

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

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

Annual Production of Cement.*

Calendar Year.	Natural rock cement.			Portland cement.			Totals.	
	Barrels.	Value.	Average value.	Barrels.	Value.	Average value.	Barrels.	Value.
		$	$ cts.		$	$ cts.		$
1887	.....	.....	.....	.....	.....	.....	69,843	81,909
1888	.....	.....	.....	.....	.....	.....	50,668	35,593
1889	90,474	69,790	0 77	Nil.	Nil.	.....	90,474	69,790
1890	87,521	74,822	0 85	14,695	17,583	1 20	102,216	92,405
1891	90,846	103,479	1 14	2,633	5,082	1 93	93,479	108,561
1892	88,187	94,912	1 08	29,221	52,751	1 81	117,408	147,663
1893	126,673	130,167	1 03	31,924	63,848	2 00	158,597	194,015
1894	72,965	74,842	1 03	35,177	69,795	1 98	108,142	144,637
1895	66,219	60,795	0 92	62,075	112,880	1 82	128,294	173,675
1896	70,705	60,500	0 86	78,385	141,151	1 80	149,090	201,651
1897	85,450	65,893	0 77	119,763	209,380	1 75	205,213	275,273
1898	87,125	73,412	0 84	163,084	324,168	1 99	250,209	397,580
1899	147,387	119,308	0 81	255,366	513,983	2 01	396,753	633,291
1900	125,428	99,994	0 80	292,124	562,916	1 93	417,552	662,910
1901	133,328	94,415	0 71	317,066	565,615	1 78	450,394	660,030
1902	127,931	98,932	0 77	594,594	1,028,618	1 73	722,525	1,127,550
1903	92,252	74,655	0 81	627,741	1,150,592	1 83	719,993	1,225,247
1904	56,814	50,247	0 88	910,358	1,287,992	1 41	967,172	1,338,239
1905	14,184	10,274	0 72	1,346,548	1,913,740	1 42	1,360,732	1,924,014
1906	8,610	6,052	0 70	2,119,764	3,164,807	1 49	2,128,374	3,170,859
1907	5,775	4,043	0 70	2,436,903	3,777,328	1 55	2,441,868	3,781,371
1908	1,044	815	0 78	2,665,289	3,709,139	1 39	2,666,333	3,709,954
1909	0	0	.....	4,067,709	5,345,802	1 31	4,067,709	5,345,802
1910	0	0	.....	4,753,975	6,412,215	1 35	4,753,975	6,412,215
1911	0	0	.....	5,692,915	7,644,537	1 34	5,692,915	7,644,537
1912	0	0	.....	7,132,732	9,106,556	1 28	7,173,732	9,106,556

* Quantities sold or shipped.

The production of cement in 1912 was derived from twenty-four operating plants in addition to which sales were made from two other plants not producing, the total daily capacity of these plants being 36,515 barrels. The producing plants were distributed as follows: one in Nova Scotia using blast furnace slag; one in Manitoba making a natural Portland cement; one in British Columbia; three in Alberta and three in Quebec using limestone and clay; fifteen in Ontario, of which ten use marl and five limestone.

A comparison of the principal statistics of 1911 and 1912 showing the increases or decreases as the case may be, is given in the next table.

Comparison of Production, Sales, and Imports of Portland Cement in 1911 and 1912.

——	1911.	1912.	Increase.	%	De-crease.	%
Cement sold.....Bls.	5,692,915	7,132,732	1,439,817	25·3	.....	.....
Cement manufactured, ... "	5,677,539	7,141,004	1,463,465	25·8	.....	.....
Stock on hand Jan. 1..... "	918,965	894,822	.....	.....	24,143	2·6
Stock on hand Dec. 31 ..... "	903,589	903,094	.....	.....	495	0·05
Value of cement sold..... $	7,644,537	9,106,556	1,462,019	19·13	.....	.....
Average price per barrel ..... "	1·34	1·28	.....	.....	0·06	4·5
Wages paid..... "	2,103,838	2,623,902	520,064	24·7	.....	.....
Men employed..... No.	3,010	3,461	451	15·0	.....	.....
Imports of Portland cement...Bls.	661,916	1,434,413	772,497	116·7	.....	.....
Value of cement..... $	834,879	1,969,529	1,134,650	135·9	.....	.....
Average price per barrel..... "	1.26	1.37	0·11	8·7	.....	.....
Total consumption of cement in Canada .....Bls.	6,354,831	8,567,145	2,212,314	34·8	.....	.....
No. of completed plants operated....	24	24	.....	.....	.....	.....
Total daily capacity of operating plants as on Dec. 31,.....Bls.	28,810	38,015	9,205	31·9	.....	.....

The large increase in output and sales has already been mentioned. Stocks on hand December 31, 1912, were practically the same as stocks at the end of the previous year, about 900,000 barrels. The average price per barrel at the mill for all plants showed a slight falling off in 1912, being reported as $1.27\frac{3}{4}$ as compared with $1.34 in 1911.

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

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

Of the total quantity of cement made in 1912, 1,420,155 barrels were made from marl, and 5,720,849 barrels from limestone and slag. In 1911, there were 1,626,857 barrels made from marl and 4,050,682 barrels from limestone and slag, while in 1910, 1,214,479 barrels were made from marl, and 3,181,803 barrels from limestone and slag. With the exception of the new plant at Marlboro, Alberta, practically all of the newer plants erected during the past few years have been

limestone plants. The proportion of cement made from marl in 1908 was about 45 per cent of the total output, as compared with 28 per cent in 1911 and 20 per cent in 1912.

Statistics of the annual production of Portland cement since 1887, showing the quantity made, quantity sold, stocks on hand at the end of the year, value of sales, etc., are shown in the next table.

Annual Production of Portland Cement.

Year.	Number of operating plants.	Quantity made.	Quantity sold.	On hand Dec. 31.	Value of sales.	Average per barrel.	Daily capacity.
		Barrels.	Barrels.	Barrels.	$	$ cts.	Barrels.
1897.....	.....	.....	119,763	.....	209,380	1 75	.....
1898	.....	.....	163,084	.....	324,168	1 99	.....
1899.....	.....	.....	255,366	.....	513,983	2 01	.....
1900.....	.....	.....	292,124	.....	562,916	1 91	.....
1901.....	4	360,160	317,066	58,094	565,615	1 78	.....
1902.	8	562,335	594,594	33,446	1,028,618	1 73	3,900
1903.....	9	714,136	627,741	128,386	1,150,592	1 83	4,850
1904.....	10	908,990	910,358	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
1912.....	24	7,141,004	7,132,732	903,094	9,106,556	1 28	38,015

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

The imports of cement previous to 1901 were larger than Canadian production, but gave way steadily to the increasing domestic output until 1909 during which year the imports amounted to 142,194 barrels, or about 3 per cent of the total Canadian consumption. During the past three years there has been a steady increase in the importation of cement, the imports for 1912 being 1,434,413 barrels, as compared with 661,916 barrels in 1911, and 349,310 barrels in 1910.

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

Imports of Cement, 1911 and 1912.

—	1911.				1912.			
	Cwt.	%	Value.	Average value.	Cwt.	%	Value.	Average value.
			$	cts.			$	cts.
Great Britain...	666,771	28·8	210,839	32	457,031	9·1	147,831	32
United States ..	1,544,612	66·7	575,768	37	4,483,353	89·3	1,789,621	40
Belgium.....	9,389	0·4	2,018	21	21,375	0·4	7,175	34
Other countries.	18,727	0·8	7,962	43	3,187	0·1	1,423	45
Hong Kong. ...	77,208	3·3	38,292	50	55,500	1·1	23,479	42
Totals. ..	2,316,707	100·0	834,879	36	5,020,446	100·0	1,969,529	39
Equivalent in barrels of 350 lbs.	661,916	.....	.....	.....	1,434,413	.....	.....	.....

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

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

The duty on cement alone is equivalent to 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.

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

—	British Preferential tariff.	Intermediate tariff.	General tariff.
Cement, Portland, and hydraulic or water lime, in barrels, bags, or casks, the weight of the package to be included in the weight for duty per hundred pounds.....	7 cents.....	10 cents	10 cents .....
Bags in which cement or lime mentioned in the next preceding item is imported.....	15 per cent....	20 per cent....	20 per cent....

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

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

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

Month.	Great Britain.			United States.			Other countries.		
	Cwt.	$	Average price. cts.	Cwt.	$	Average price. cts.	Cwt.	$	Average price. cts.
January	14,400	4,647	32	67,694	28,286	42	8	6	75
February	26,145	8,082	31	60,793	23,504	39	.....	.....	.....
March	38,664	13,144	34	133,994	53,312	40	.....	.....	.....
April	53,834	17,447	32	168,162	72,263	43	500	244	49
May	103,517	33,532	32	248,632	106,575	43	9,620	2,863	30
June	50,623	16,139	32	549,321	215,865	39	8,000	3,303	41
July	17,651	5,896	33	910,269	329,654	36	8,000	2,615	33
August	8,477	2,588	31	623,651	238,794	38	27,289	9,357	34
September	56,185	17,817	32	525,398	210,077	40	.....	.....	.....
October	57,175	19,429	34	606,196	249,839	41	18,200	10,867	60
November	26,495	7,930	30	551,611	243,969	44	8,445	2,822	33
December	3,865	1,180	31	37,452	17,483	47	.....	.....	.....
	457,031	147,831	32	4,483,353	1,789,621	40	80,062	32,071	40

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

Exports of Cement.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1891	2,881	1898	2,117	1905	3,143
1892	938	1899	2,733	1906	7,551
1893	1,172	1900	3,296	1907	9,618
1894	482	1901	1,514	1908	34,591
1895	957	1902	2,267	1909	113,362
1896	1,328	1903	2,851	1910	12,914
1897	644	1904	5,494	1911	4,067
				1912	2,436

Imports of Cement.

Fiscal Year.	Cement and Mfrs. of, N.E.S.*	Hydraulic cement.			Portland cement.		
		Barrels.	Value.	Average value.	Barrels.	Value.	Average value.
	$		$	$ cts.		$	$ cts.
1880	28	10,034	10,306	1 03	.....	55,774	.....
1881	298	7,812	7,821	1 00	.....	45,646	.....
1882	86	11,945	13,410	1 12	.....	66,579	.....
1883	548	11,659	13,755	1 18	.....	102,537	.....
1884	1,236	8,606	9,514	1 11	.....	102,857	.....
1885	1,315	5,613	5,396	0 96	.....	111,521	.....
1886	1,851	6,164	6,028	0 98	.....	120,398	.....
1887	1,419	6,160	8,784	1 43	102,750	148,054	1 44
1888	5,787	5,636	7,522	1 33	122,402	177,158	1 45
1889	10,668	5,835	7,467	1 28	122,273	179,406	1 47
1890	5,443	5,440	9,048	1 66	192,322	313,572	1 63
1891	2,890	3,515	6,152	1 75	183,728	304,648	1 66
1892	3,394	2,214	2,782	1 26	187,233	281,553	1 50
1893	2,909	4,896	8,060	1 65	229,492	316,179	1 38
1894	2,618	1,054	985	0 93	224,150	280,841	1 25
1895	2,112	5,333	7,001	1 31	196,281	242,813	1 24
1896	3,672	5,688	8,948	1 57	204,407	242,409	1 19
1897	4,318	2,494	3,937	1 58	210,871	252,587	1 20
		Cwt.			Cwt.		
1898	3,263	16,033	7,097	0 44	1,073,058	355,264	0 33
1899	8,929	1,678	694	0 41	1,300,424	467,994	0 36
1900	10,452	10,418	4,711	0 45	1,301,361	498,607	0 38
1901	4,890	17,784	6,865	0 39	1,612,432	654,595	0 41
1902	12,234	29,585	17,755	0 60	1,971,616	833,657	0 42
1903	16,281	13,690	6,333	0 46	2,316,853	868,131	0 37
1904	14,305	12,088	5,391	0 45	2,476,388	995,017	0 40
1905	18,489	16,961	10,690	0 63	4,228,394	1,234,649	0 29
1906	27,358	10,794	4,034	0 37	2,848,582	963,839	0 34
1907	16,201	1,192	685	0 57	1,551,493	523,120	0 34
1908	12,418	18,860	6,710	0 36	2,427,381	852,041	0 35
1909	5,733	438	466	1 06	1,460,850	475,676	0 33
1910	7,678	588	553	0 94	490,809	158,487	0 32
1911	6,275	389	365	0 94	1,288,121	494,081	39
1912	7,821	901	579	0 64	2,592,025	936,425	36

* Cement not elsewhere specified and manufactures of cement.

Consumption of Cement.—The consumption of cement is represented practically by the domestic production, together with the imports, the exports being so comparatively small as to be negligible. The total consumption of Portland cement in Canada in 1912 was 8,567,145 barrels (1,499,250 tons), made up of 7,132,732 barrels (1,248,228 tons) of Canadian cement, and 1,434,413 barrels (251,022 tons) of imported cement, the Canadian cement representing 83·3 per cent, and the imported cement 16·7 per cent of the total.

In 1911 the total consumption of cement was 6,354,831 barrels (1,112,095 tons), made up of 5,692,915 barrels (996,260 tons) of Canadian cement, and 661,916 barrels (115,835 tons) of imported cement, the Canadian cement representing 90 per cent, and the imported cement 10 per cent of the total.

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

Annual Consumption of Portland Cement.

Calendar Year.	Canadian.		Imported.		Total.
	Barrels.	%	Barrels.	%	Barrels.
1901	317,066	36	555,900	64	872,966
1902	594,594	52	544,954	48	1,139,548
1903	627,741	45	773,678	55	1,401,419
1904	910,358	54	784,630	46	1,694,988
1905	1,346,548	59	918,701	41	2,265,249
1906	2,119,764	76	665,845	24	2,785,609
1907	2,436,093	78	672,630	22	3,108,723
1908	2,665,289	85	469,049	15	3,134,338
1909	4,067,709	97	142,194	3	4,209,903
1910	4,753,975	93	349,310	7	5,103,285
1911	5,692,915	90	661,916	10	6,354,831
1912	7,132,732	83·3	1,434,413	16·7	8,567,145

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

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

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

Ontario.—Ontario is the most important cement producing province, having 15 mills, of which 6 with a total daily capacity of 11,400 barrels are operated by the Canada Cement Company, and 9 mills having a total daily capacity of 8,500 barrels, by independent companies. Five plants are operated on limestone and have a daily capacity of 9,600 barrels, while 10 plants with an aggregate daily capacity of 10,280 barrels are utilizing marl deposits. The names of the operating companies and location of plants, are shown in the list of cement producers following.

The total sales of cement in Ontario during 1912 were 3,044,713 barrels valued at $3,372,897, as compared with 3,090,786 barrels valued at $3,741,039 in 1911. There was thus a falling off of sales in Ontario during 1912 of 46,073 barrels, or about 1·5 per cent.

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

Cement Production in Ontario, 1911 and 1912.

—		1911.	1912.	Increase.	%	Decrease.	%
Cement sold	Bls.	3,090,786	3,044,713	.....	.....	46,073	1·5
Cement manufactured	"	2,973,958	2,961,185	.....	.....	12,773	0·4
Stock on hand Jan. 1	"	682,598	563,066	.....	.....	119,532	17·5
Stock on hand Dec. 31	"	565,770	479,538	.....	.....	86,232	15·2
Value of cement sold	$	3,741,039	3,372,897	.....	.....	368,132	9·8
Wages paid	"	945,971	921,553	.....	.....	24,418	2·6
Men employed	No.	1,464	1,559	95	6·5	.....	.....
Total daily capacity of operating plants	Bls.	15,750	19,900	3,150	20·0	.....	.....

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

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

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

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

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

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

Cement Production in Other Provinces, 1911 and 1912.

——		1911.	1912.	Increase.	%	Decrease.	%
Cement sold	Bls.	2,602,129	4,088,019	1,485,890	57·1	.....	.....
Cement manufactured	"	2,703,581	4,179,819	1,476,238	54·6	.....	.....
Stock on hand Jan. 1	"	236,367	331,756	95,389	40·4	.....	.....
Stock on hand Dec. 31	"	337,819	423,556	85,737	25·4	.....	.....
Value of cement sold	$	3,903,498	5,733,659	1,830,161	46·9	.....	.....
Wages paid	"	1,157,867	1,702,,349	544,482	21·3	.....	.....
Men employed	No.	1,546	1,902	356	23·0	.....	.....
Total daily capacity of operating plants	Bls.	13,060	18,115	5,055	38·7	.....	.....

Following is a list of cement manufacturing companies.

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

Not operated during 1912.

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

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

CLAYS AND CLAY PRODUCTS.

For a number of years a small quantity of fireclay has been produced and sold and in 1912 there was a small production of kaolin or china-clay from a deposit in the Province of Quebec. With these exceptions, practically all of the clay production in Canada is manufactrued by the producer, and this report, therefore, treats almost altogether of the manufactured product.

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

The total value of the production of clay products in 1912 was $10,575,869, as compared with a value of $8,359,933 in 1911, showing an increase of $2,215,936 or over 26·5 per cent.

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

Of the several provinces Ontario is by far the largest producer of clay products, being credited in 1912 with 46 per cent of the total value of the output, as compared with 47 per cent in 1911. Quebec contributed 16 per cent, Alberta about 12·5 per cent, and Manitoba 10 per cent of the total output in both years, and British Columbia 8 per cent in 1911, and 9·4 per cent in 1912.

Of the total value of the production in 1912, building and paving brick, including fireproofing, contributed $9,163,666, or about 86⅔ per cent; sewerpipe and tile production were valued at $1,242,503, or 11·7 per cent of the total. The total value of the production of pottery was reported as $426,589, of which $43,955 is estimated as attributable to Canadian clays, the balance to imported clays; the value of the production of fireclay and firebrick was $125,585. Compared with the previous year, the production of building, paving, and fireproofing brick, shows an increase of about 30 per cent, while the aggregate production of sewerpipe and drain tile shows a slight falling off.

The average price of common and building brick for the whole of Canada in 1912 is reported as $9.11, as compared with $8.37 in 1911; $8.13 in 1910, and $7.81 in 1909. The average price of pressed or front brick for the same years was respectively $12,86; $12.53; $11.89, and $11.01, thus showing a general increase in cost of building brick.

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

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

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

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

Production of Clay Products by Provinces, 1912.

Province.	No. of active firms reporting.	No. of men employed.	Wages.	Common brick.				Pressed brick.			
				No. manufactured.	No. sold.	Value of sales.	Per M.	No. manufactured.	No. sold.	Value of sales.	Per M.
			$			$	$ cts.			$	$ cts.
Nova Scotia	11	316	98,939	20,095,202	18,722,960	128,508	6 86	220,000	100,000	1,600	16 00
New Brunswick	7	148	45,536	6,179,000	5,730,000	52,850	9 22	50,000	50,000	500	10 00
Quebec	74	1,917	645,221	181,219,323	161,836,557	1,308,380	8 08	10,386,454	11,500,000	138,500	12 04
Ontario	271	4,696	2,060,542	356,964,931	350,461,874	3,045,840	8 69	75,231,791	73,208,310	761,355	10 40
Manitoba	21	1,088	405,926	83,556,437	83,681,237	959,854	11 47	3,450,000	3,497,700	52,947	15 13
Saskatchewan	14	383	152,654	24,603,771	25,338,771	246,443	9 73	5,950,000	5,200,000	86,500	16 63
Alberta	33	1,053	587,223	73,394,693	70,074,568	755,986	10 69	25,798,410	23,685,412	349,926	14 77
British Columbia	28	814	492,916	56,569,470	53,345,565	512,514	9 61	8,210,800	7,929,000	218,526	27 53
Totals	459	10,415	4,488,957	802,582,827	769,191,532	7,010,375	9 11	129,297,455	125,180,422	1,609,854	12 86

Province.	Paving brick.		Ornamental.		Firebrick and fireclay shapes. Value.	Fireproofing and terra-cotta, etc. Value.	Pottery. Value.	Sewerpipe. Value.	Tiles, drain. Value.	Kaolin. Value.	Total value. Clay products.
	No. sold.	Value.	No. sold.	Value.							
		$		$	$	$	$	$	$	$	$
Nova Scotia					15,375	1,270		115,000	10,300		272,053
New Brunswick									1,560		54,910
Quebec					25,000	42,530	500	165,000	390	160	1,680,460
Ontario	4,554,500	85,589	352,816	7,168		135,087	43,455	478,156	308,050		4,864,700
Manitoba									5,250		1,018,051
Saskatchewan											332,943
Alberta			10,000	1,000		248,712			560		1,356,184
British Columbia	25,000	400	8,540	427	85,210	21,254		126,485	31,752		996,568
Totals	4,579,500	85,989	371,356	8,595	b125,585	448,853	*43,955	884,641	357,862	160	10,575,869

* There was also a production of $383,134 from imported clays.
b Also a production of $25,000 from imported clays.

Production of Clay Products by Provinces, 1911.

Province.	No. of active firms reporting.	No. of men employed.	Wages.	Common brick.				Pressed brick.			
				No. 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	4,300,000	36,800	5·55	100,000	100,000	1,200	12·00
Quebec	60	1,402	417,882	129,256,700	110,701,580	849,654	7·67	14,577,000	11,340,000	183,616	16·20
Ontario	262	4,366	1,727,478	335,221,526	318,670,621	2,513,965	7·89	51,990,204	50,333,750	514,081	10·21
Manitoba	18	1,210	438,228	83,362,000	79,600,000	805,178	10·11	1,800,000	1,800,000	21,750	12·08
Saskatchewan	13	303	105,507	17,824,260	16,819,960	159,634	9·49	4,726,700	4,251,700	65,124	15·31
Alberta	28	782	324,868	58,064,710	56,943,955	574,243	10·10	14,752,734	14,828,975	204,758	13·81
British Columbia	19	606	388,491	37,816,308	35,834,401	347,876	9·70	5,373,647	3,846,114	95,953	24·94
Totals	419	9,131	3,524,058	688,656,974	645,550,517	5,420,890	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.
		$	$ cts.		$	$ cts.
Bricks—						
Common ... . No.	539,228,708	4,212,424	7 81	627,715,319	5,105,354	8 13
Pressed..... "	57,264,656	630,677	11 01	67,895,034	807,294	11 89
Paving..... "	3,759,803	67,408	17 93	4,214,917	78,980	18 74
Ornamental.....	.....	8,866	.....	703,345	16,092	22 89
Firebrick and fireclay shapes, etc.....	.....	78,132	.....	.....	50,215	.....
Fireproofing, and architectural terra-cotta, etc.....	....	113,886	.....	.....	176,979	.....
Pottery	.....	285,285	.....	....	250,924	.....
Sewerpipe.....	.....	645,722	.....	.....	774,110	..... .
Tiles, drain.....	27,571,097	408,440	14 81	24,562,648	370,008	....
Totals	.....	6,450,840	.....	.....	7,629,956	.....

Production of Clay Products by Provinces, 1907-1912.

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

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

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1899.....	2,988,099	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	1912.....	10,575,869
1903.....	4,034,289	1908.....	4,500,702		

Exports and Imports.—The only export of clay products recorded is that of building brick, of which the exports in 1912 were 694,000, valued at $8,493, and manufactures of clay valued at $256. In 1911 the exports were: building brick, 394,000 valued at $3,997, and manufactures of clay valued at $2,071.

The imports of clay products and of clay reached a total value during the calendar year 1912 of $6,592,540, equivalent to about 62 per cent of the domestic production. The total imports in 1911 were valued at $5,156,544, showing an increase in 1912 of $1,435,996 or nearly 28 per cent, as against an increase in 1911 over 1910 of 19 per cent. In both years the imports have increased at a higher rate than the domestic production. Clay imports are classified by the Department of Customs under three main subdivisions, including: brick and tile, earthenware and chinaware, and clays. The imports of clays in 1912 were valued at $288,394 and included chiefly china-clay and fireclay, with a small quantity of pipeclay and other clays not classified. The value of china-clay imports was $127,402 and of fireclay $140,500. In 1911 the total value of the imports of clays was $270,247, and included china-clay valued at $125,768 and fireclay valued at $125,199. The imports of these clays have varied considerably from year to year, and do not show the same general increase as do the imports of manufactured clays. A reference to the next table will show the changes since 1906. The imports classified under brick and tile were valued in 1912 at $3,209,190, of which about 28 per cent was firebrick, other important items being building brick, sewerpipe, and paving brick. There was also an importation under this class of manufactures of clay not specially designated, valued at $818,467. The value of the imports of brick and tile in 1911 was $2,369,761, of which about 34 per cent was firebrick. The imports during 1911 of manufactures of clay not specially designated, were valued at $523,998. The imports of these unclassified brick and tile have increased steadily year by year, the value of such imports in 1905 having been only $20,804. The increase in the imports of brick and tile in 1912, as compared with 1911, was a little over 35 per cent. The imports of earthenware and chinaware, of which the most important class is table-ware, were valued in 1912 at $3,094,956, as against $2,516,536 in 1911, or an increase of about 23 per cent.

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

Imports of Clay Products, 1906 to 1912.

Imports.	12 months ending June, 1906.	9 months ending March, 1907.	12 months ending March, 1908.	12 months ending March, 1909.	Calendar year 1909.	Calendar year 1910.	Calendar year 1911.	Calendar year 1912.
	$	$	$	$	$	$	$	$
Brick and tile :—								
Bath brick	1,466	1,076	1,834	4,432	1,495	2,290	2,623	1,927
Building brick	194,897	88,144	139,105	108,773	195,360	274,482	475,865	763,470
Paving brick	46,008	23,256	61,346	101,187	139,366	124,994	164,292	160,663
Firebrick, of a class or kind not made in Canada	*591,854	*506,801	639,347	350,457	485,994	811,927	814,414	953,621
Drain tile, not glazed	4,727	12,106	2,080	2,394	2,785	4,485	5,640	4,018
Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed	131,353	93,458	125,747	106,399	170,280	175,599	382,929	507,024
Manufactures of clay, N.O.P	30,067	45,845	110,097	141,391	254,170	361,996	523,998	818,467
Total	1,000,372	770,686	1,079,556	815,033	1,249,450	1,755,773	2,369,761	3,209,190
Earthenware and chinaware :—								
Brown or coloured earthenware and stoneware, and Rockingham ware	8,363	9,625	22,847	28,273	36,673	53,413	52,100	62,161
C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P	191,552	154,879	239,513	197,623	219,936	202,475	184,291	291,804
Demijohns, churns, or crocks	10,508	9,342	17,836	10,571	8,888	6,607	4,933	18,404
Tableware of china, porcelain, white granite or iron-stoneware	1,004,024	902,798	1,555,517	1,202,537	1,212,365	1,545,538	1,718,582	2,068,362
China and porcelain ware, N.O.P	214,013	134,675	109,446	87,798	87,467	95,509	62,025	71,751
Tiles or blocks of earthenware or stone prepared for mosaic flooring	.....	62,547	45,836	43,299	56,974	90,524	123,203	160,082
Earthenware tiles, N.O.P	78,247	67,027	116,480	79,854	81,393	125,772	154,351	239,391
Manufacture of earthenware, N.O.P	117,824	81,987	83,309	66,932	78,063	163,278	217,051	183,001
Total	1,624,531	1,422,880	2,190,784	1,716,887	1,781,759	2,283,116	2,516,536	3,094,956

Imports of Clay Products, 1906 to 1912—*Continued.*

Imports.	12 months ending June, 1906.	9 months ending March, 1907.	12 months ending March, 1908.	12 months ending March, 1909.	Calendar year 1909.	Calendar year 1910.	Calandar year 1911.	Calendar year. 1912.
	$	$	$	$	$	$	$	$
Clays:—								
China-clay, ground or unground	65,909	78,772	97,236	90,922	100,066	142,125	125,768	127,402
Fireclay, ground or unground	131,130	85,044	155,873	77,146	86,161	124,293	125,199	140,500
Pipeclay, ground or unground	1,333	307	319	887	310	114	1,786	234
Clays, all other, N.O.P	22,132	14,117	14,292	21,280	29,793	25,976	17,494	20,258
Total	220,504	178,240	267,720	190,235	216,330	292,508	270,247	288,394
Grand total	2,845,407	2,371,806	3,538,060	2,722,155	3,247,539	4,331,397	5,156,544	6,592,540
Baths, bath-tubs, basins, closets, lavatories, urinals, sinks and laundry tubs of any material	67,828	62,547	234,505	157,881	211,837	262,667	285,847	382,920
Chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite, ground or unground	9,053	7,376	72,467	81,675	96,747	121,959	147,640	167,99

* Includes stove linings, N. E. S.

In addition to the imports shown in the above table, there is also a considerable annual importation of 'chalk, china or cornwall stone, cliff stone and feldspar, fluorspar, magnesite ground or unground,' much of which is no doubt used in connexion with the manufacture of clay products. The value of these imports during the calendar year 1912 was $167,990; of which $131,694 was from the United States, $34,732 from Great Britain, and $1,564 from other countries. The value of the imports under this item during the calendar year 1911 was $147,640. There is also an annual importation of 'baths, bath tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material,' the value of such imports during 1912 being $382,920, as compared with $285,847 during the year 1911.

Imported clay products are derived chiefly from Great Britain and the United States, although considerable quantities of earthenware, china, and porcelain ware, white granite or iron-stoneware, etc., are brought from Germany, France, Austria-Hungary, and Japan. The imports during the fiscal year, showing the country of origin, are shown in the next table. Of the brick and tile imported 82 per cent was from the United States and 17.9 per cent from Great Britain; and only $2,045 worth from other countries. Of the earthenware and chinaware, 60 per cent was imported from Great Britain; 16 per cent from the United States; 12 per cent from Germany; 5 per cent from France, and considerable values also from Japan, Austria-Hungary, and other countries. The crude clays were imported principally from Great Britain and the United States.

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

Imports.	Great Britain.	United States.	Germany.	France.	Austria-Hungary.	Japan.	Other countries.	Total.
	$	$	$	$	$	$	$	$
Brick and tile:—								
Bath brick	2,428	542						2,970
Building brick	27,345	438,652						465,997
Paving brick	87,375	78,275						165,650
Firebrick, of a class or kind not made in Canada	105,904	754,202					657	860,763
Drain tile, not glazed	829	4,602		347				5,778
Drain pipe, sewerpipe, and earthenware fittings therefor, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed	55,000	350,961	30				7	405,998
Manufactures of clay, N.O.P	162,381	391,640	794	170			40	555,025
Total	441,262	2,018,874	824	517			704	2,462,181
Earthenware and chinaware:—								
Brown or coloured earthenware and stoneware, and Rockingham ware	13,300	41,189	48	196		461	37	55,231
C. C. or cream coloured ware, decorated, printed or sponged, and all earthenware, N.O.P	128,312	38,162	13,410	1,030	1,840	6,713	2,277	191,744
Demijohns, churns, or crocks	248	4,357					10	4,615
Tableware of china, porcelain, white granite or ironstone-ware	1,194,396	35,321	262,602	130,838	55,654	71,389	12,283	1,762,483
Chinaware, to be silver mounted, imported by manufacturers of silverware		217						217
China and porcelain ware, N.O.P	29,493	13,200	10,750	750	1,123	4,523	431	60,270
Tiles or blocks of earthenware or stone prepared for mosaic flooring	29,673	94,026	554	2,511			1,151	127,915
Earthenware tiles, N.O.P	82,574	74,659	176	103			9	157,521
Manufacture of earthenware, N.O.P	80,085	120,738	11,250	944	715	6,581	2,657	222,970
Total	1,558,081	421,869	298,790	136,372	59,332	89,667	18,855	2,582,966

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

Imports.	Great Britain.	United States.	Germany.	France.	Austria-Hungary.	Japan.	Other countries.	Total.
	$	$	$	$	$	$	$	$
Clays:—								
China-clay, ground or unground	90,125	25,537	...	...	290	....	4,310	120,262
Fireclay, ground or unground	31,454	86,269	803	...	...	...	377	118,863
Pipe-clay, ground or unground	46	1,596	...	...	...	...	...	1,642
Clays, all other, N.O.P.	2,763	13,655	468	...	...	18	...	16,904
Total	124,388	127,057	1,271	...	290	18	4,647	257,671
Grand total	2,123,731	2,567,800	300,885	136,889	59,622	89,685	24,206	5,302,818
Per cent of total	40·05	48·42	5·68	2·58	1·12	1·69	0·46	100·00
Baths, bath-tubs, basins, closets, lavatories, urinals, sinks, and laundry tubs of any material	80,466	220,458	7	7	...	...	...	300,938
Chalk, china or cornwall stone, cliff stone, and feldspar, fluorspar, magnesite, ground or unground	43, 171	98,289	...	...	295	...	1,575	143,330

A record of the total annual value of the imports of clay products since 1900 by fiscal years is shown in the following table. In thirteen years Canada has imported clay products to the value of $35,396,706. The increase in imports has been most pronounced in the case of brick and tile, the imports of which in 1900 amounted to $145,914, as compared with $2,462,181 in 1912. The imports of earthenware and chinaware have almost doubled in the same time.

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

Fiscal Year.	Brick and tile.**	Earthenware and chinaware.	Clays.	Total.
	$	$	$	$
1900	145,914	959,526	122,965	1,228,405
1901	133,343	1,114,677	141,251	1,389,271
1902	172,281	1,275,093	140,521	1,587,895
1903	157,783	1,406,610	176,416	1,740,809
1904	259,421	1,611,356	144,706	2,015,483
1905	761,756	1,636,214	176,805	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
1912	2,462,181	2,582,966	257,671	5,302,818
	10,944,837	21,867,070	2,534,799	35,396,706

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

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

Canadian Customs Duties on Clay Products.

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

Item.	——	British Preferential tariff.	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 four years in the following tables.

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

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

In 1910 the production was 627,715,319 common brick, valued at $5,105,354, or an average value per thousand of $8.13; and 67,895,034 pressed brick, valued at $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.

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

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

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

Province.	1911.				1912.			
	No. of active firms reporting.	No. sold.	Value.	Per cent of total value.	No. of active firms reporting.	No. sold.	Value.	Per cent of total value.
			$				$	
Nova Scotia	13	23,530,000	141,640	2·17	11	18,822,960	130,108	1·5
New Brunswick	6	4,400,000	38,000	0·58	7	5,780,000	53,350	0·6
Quebec	60	122,041,580	1,033,270	15·86	74	173,336,557	1,446,880	16·8
Ontario	262	369,004,371	3,028,046	46·48	271	423,670,184	3,807,195	44·2
Manitoba	18	81,400,000	826,928	12·69	21	87,178,937	1,012,801	11·7
Saskatchewan	13	21,071,660	224,758	3·45	14	30,538,771	332,943	3·9
Alberta	28	71,772,930	779,001	11·96	33	93,759,980	1,105,912	12·8
British Columbia	19	39,680,515	443,829	6·81	23	61,284,565	731,040	8·5
Totals	419	732,901,056	6,515,472	100·00	459	894,371,954	8,620,229	100·00

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

Province.	1909.			1910.		
	No. sold.	Value.	Per cent of total value.	No. sold.	Value.	Per cent of total value.
		$			$	
Nova Scotia	18,875,000	114,795	2·37	18,730,000	113,436	1·92
New Brunswick	6,170,000	44,330	0·91	3,950,000	31,350	0·53
Quebec	101,471,567	690,918	14·27	130,278,310	929,492	15·72
Ontario	322,524,414	2,557,068	52·80	342,119,078	2,785,361	47·11
Manitoba	59,110,000	544,548	11·24	75,834,550	746,704	12·63
Saskatchewan	14,416,770	144,316	2·98	14,733,340	160,850	2·72
Alberta	45,479,855	441,606	9·12	73,639,771	750,982	12·70
British Columbia	28,445,758	305,520	6·31	36,316,304	394,473	6·67
Totals	596,493,364	4,843,101	100·00	695,610,353	5,912,648	100

The exports and imports of building brick since 1891 and 1880 respectively, are shown in the two following tables. The exports have never been large, averaging for a number of years past about $6,000 per annum. The exports fell off somewhat in 1911 to a value of $3,977, but increased again in 1912 to a value of $8,493. The annual imports for a number of years previous to 1903 averaged only about $20,000 in value; during the past nine years, however, the imports have rapidly increased from $100,000 to nearly $800,000 per annum. During the calendar year 1912, the imports were 81,425,000 brick valued at $763,470, of which 3,071,000 valued at $32,731 or an average of $10.66 per thousand, were imported from Great Britain, and 78,350,000 valued at $730,739, or an average of $9.33 per thousand, from the United States. The imports during the calendar year 1911 were 51,102,000 brick valued at $475,865, of which 6,404,000, valued at $72,675 or an average of $11.35 per thousand, were imported from Great Britain, and 44,698,000 valued at $403,190 or an average of $9.02 per thousand, from the United States.

It will be observed that in 1912 there was a considerable falling off in the imports of brick from Great Britain and an increase of close to 100 per cent on the imports of brick from the United States.

Exports of Building Brick.

Calendar Year.	M.	Value.	Calendar Year.	M.	Value.	Calendar Year.	M.	Value.
		$			$			$
1891	246	1,163	1898	65	442	1905	754	5,888
1892	1,963	12,192	1899	172	1,351	1906	697	6,541
1893	6,073	44,110	1900	546	4,528	1907	802	6,193
1894	1,095	7,405	1901	646	5,189	1908	2,344	9,047
1895	1,655	8,665	1902	2,110	12,786	1909	365	2,255
1896	983	5,673	1903	891	5,699	1910	390	2,762
1897	573	2,679	1904	696	5,357	1911	394	3,977
						1912	694	8,493

Imports of Building Brick.

Fiscal Year.	M.	Value.	Fiscal Year.	M.	Value.	Fiscal Year.	M.	Value.
		$			$			$
1880	340	2,067	1891	589	9,744	1902	4,087	33,802
1881	415	4,281	1892	621	5,075	1903	2,881	28,493
1882	3,500	24,572	1893	1,489	14,108	1904	13,455	117,468
1883	1,448	14,234	1894	2,220	18,320	1905	25,515	168,122
1884	3,263	20,258	1895	575	4,705	1906	21,934	194,897
1885	3,108	14,632	1896	1,057	23,189	1907 (9 mos.)	8,495	88,144
1886	983	5,929	1897	2,094	10,336	1908	13,790	139,105
1887	276	2,440	1898	639	6,652	1909	10,894	103,773
1888	2,483	20,720	1899	2,611	21,306	1910	30,444	218,175
1889	2,590	24,585	1900	1,792	19,305	1911	32,748	309,553
1890	1,933	12,500	1901	2,800	20,677	1912	51,073	465,997

Prices.—The price of brick varies greatly with the quality, locality, market, or demand. The values as given in the table of production are those at the yard or kiln and do not include costs of delivery. They do not, therefore, represent the price to the consumer. The average price of common brick at the kiln in 1912 according to these returns was $9.11, as compared with $8.37 in 1911, and $8.13 in 1910; and of pressed brick $12.86, as compared with $12.53 in 1911 and $11.89 in 1910.

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

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

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

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

Average Prices per Thousand of Common and Pressed Brick.

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

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

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

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

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

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

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

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

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

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

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

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

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

County.	Common.			Pressed.			Total value.	Per cent.
	No.	Value.	Per M	No.	Value.	Per M		
		$	$ cts.		$	$ cts.	$	
York	159,650,579	1,458,741	9 14	8,813,700	108,855	12 35	1,567,596	41·17
Halton	.....	.....	.....	41,507,692	420,967	10 14	420,967	11·06
Wentworth	34,661,376	286,268	8 26	12,667,803	129,273	10 20	415,541	10·91
Peel	12,123,100	90,588	7 47	9,582,680	95,008	9 91	185,596	4·88
Carleton	17,810,000	170,150	9 55	.....	.....	....	170,150	4·47
Algoma	11,900,000	114,875	9 65	.....	.....	.....	114,875	3·02
Russell	15,125,000	103,150	6 82	.....	.....	.....	103,150	2·71
Middlesex	8,002,000	66,766	8 34	.....	.....	....	66,766	1·75
Nipissing	6,115,800	65,058	10 64	.....	.....	.....	65,058	1·71
Waterloo	7,666,778	59,107	7 71	.....	.....	.....	59,107	1·55
Simcoe	6,329,000	53,271	8 42	.....	.....	.....	53,271	1·40
Grey	6,090,000	47,540	7 81	.....	.....	.....	47,540	1·25
Kent	5,442,250	38,524	7 08	.....	.....	.....	38,524	1·02
Lincoln	3,209,200	27,345	8 52	598,935	6,915	11 54	34,260	0·90
Renfrew	4,110,000	33,615	8 18	.....	.....	.....	33,615	0·88
Peterborough	3,700,000	33,300	9 00	.....	.....	.....	33,300	0·87
Essex	4,502,587	32,690	7 26	.....	.....	.....	32,690	0·86
Total, 17 counties	306,437,670	2,680,988	8 75	73,170,810	761,018	10 40	3,442,006	90·41
Total, other counties	44,024,204	364,852	8 29	37,500	337	9 00	365,189	9·59
Total, Ontario	350,461,874	3,045,840	8 69	73,208,310	761,355	10 40	3,807,195	100·00

Sales of Common and Pressed Brick in Ontario by Principal Counties. 1911.

County.	Common.			Pressed.			Total value.	Per cent.
	No.	Value.	Per M.	No.	Value.	Per M.		
		$	$ c.		$	$ c.	$	%
York	163,102,300	1,353,096	8 30	14,146,000	162,865	11 51	1,515,961	50·06
Halton	200,000	1,600	8 00	26,948,400	259,659	9 64	261,259	8·63
Wentworth	26,754,286	168,479	6 30	6,612,314	63,706	9 63	232,185	7·67
Carleton	11,975,000	109,369	9 13	.....	.....	.....	109,369	3·61
Russell	15,850,500	96,353	6 08	.....	.....	.....	96,353	3·18
Algoma	9,096,000	74,189	8 16	.....	.....	.....	74,189	2·45
Waterloo	8,120,365	60,913	7 50	.....	.....	.....	60,913	2·01
Nipissing	6,100,000	57,500	9 43	.....	.....	.....	57,500	1·90
Middlesex	6,849,530	52,502	7 66	.....	.....	.....	52,502	1·73
Grey	6,099,490	48,952	8 03	.....	.....	.....	48,952	1·62
Simcoe	4,995,000	38,940	7 80	.....	.....	.....	38,940	1·29
Essex	5,255,200	35,497	6 75	120,000	1,200	10 00	36,697	1·21
Kent	4,997,500	33,453	6 69	.....	.....	.....	33,453	1·10
Total, 13 counties	269,395,171	2,130,843	7 91	47,826,714	487,430	10 19	2,618,273	86·46
Total, other counties	49,275,450	383,122	7 77	2,507,036	26,651	10 63	409,773	13·54
Total, Ontario	318,670,621	2,513,965	7 89	50,333,750	514,081	10 21	3,028,046	100·00

The annual production of common and pressed brick, 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	23,703	218,550	9.220
1904	200,000	1,430,000	7.150	26,857	226,750	8.443
1905	250,000	1,937,500	7.750	26,000	234,000	9.000
1906	300,000	2,157,000	7.190	39,860	337,795	8.475
1907	273,882	2,109,978	7.704	69,763	648,683	9.298
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	354,546	2,801,971	7.903	52,764	564,630	10.701
*1912	385,000	3,178,250	8.255	35,028	627,669	9.652

* Preliminary.

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

Manitoba.—The production of clay building brick in the Province in 1912, as reported by 21 firms, was 87,178,937, valued at $1,012,801, comprising 83,681,237 common brick valued at $957,854 or an average of $11.47 per thousand and 3,497,700 pressed brick valued at $52,947 or $15.13 per thousand. The production as reported by 18 firms in 1911 was 81,400,000 valued at $826,928 and included 79,600,000 common brick valued at $805,178 or $10.11 per thousand and 1,800,000 pressed brick valued at $21,750 or $12.08 per thousand.

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

Saskatchewan.—Returns from 14 operating firms show a production in 1912 of 30,538,771 brick, valued at $332,943, which includes 25,338,771 common brick valued at $246,443 or an average of $9.73 per thousand and 5,200,000 pressed brick valued at $86,500 or an average of $16.63 per thousand. The total production in 1911 by 13 firms was 21,071,660 brick valued at $224,758.

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

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

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

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

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

Clay Paving Brick.

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

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

The annual production has for a number of years varied from 3,000,000 to over 5,000,000 per season, and the output finds a market chiefly in Toronto.

Statistics of production since 1887 are shown in the next table:—

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

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

Annual Production of Paving Brick.*

Year.	M.	Value.	Average per M.	Year.	M.	Value.	Average per M.
		$	$ cts.			$	$ cts.
1897	4,568	45,670	10 00	1905	4,500	54,000	12 00
1898	.....	.....	.....	1906	3,000	45,000	15 00
1899	5,300	42,550	8 03	1907	3,618	72,354	20 00
1900	2,710	26,950	9 94	1908	3,720	59,456	15 98
1901	3,689	37,000	10 03	1909	3,760	67,408	17 93
1902	4,211	42,000	9 97	1910	4,215	78,980	18 74
1903	3,789	45,288	11 95	1911	5,220	79,444	15 22
1904	4,436	55,450	12 50	1912	4,580	85,989	18 78

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

Imports of Paving Brick.*

Fiscal Year.	M.	Value.	Average per M.	Fiscal Year.	M.	Value.	Average per M.
		$	$ cts.			$	$ cts.
1895	275	5,006	18 20	1904	1,986	29,753	14 98
1896	918	10,132	11 04	1905	3,350	32,578	13 86
1897	52	719	13 83	1906	4,104	46,008	11 21
1898	367	2,337	6 37	1907 (9 mos)	2,182	23,256	10 66
1899	1,583	23,648	14 94	1908	5,340	61,346	11 49
1900	2,175	35,644	16 39	1909	.....	101,187	†
1901	900	10,414	11 57	1910	.....	138,763	
1902	1,030	16,788	16 30	1911	10,836	130,861	12 08
1903	1,337	18,811	14 07	1912	11,538	165,650	14 36

* Duty 20 per cent.

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

Fireclay and Fireclay Products.

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

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

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

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

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

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

Production of Fireclay and Fireclay Products.

Year.	Firebrick.			Fireclay.			Other fireclay products.	Total value.
	No. sold.	Value.	Per M.	Tons.	Value.	Per Ton.	Value.	
		$	$ cts.		$	$ cts.	$	$
1907	4,323,179	113,322	26 21	.....	.....	.....	18,000	131,322
1908	2,415,871	70,429	29 16	1,984	8,121	4 09	31,752	110,302
1909	1,059,270	32,742	30 92	4,405	12,390	2 81	33,000	78,132
1910	1,375,400	29,352	21 34	1,425	5,863	4 11	15,000	50,215
1911	2,367,937	44,122	18 63	7,532	24,128	3 20	20,880	89,130
1912	3,429,594	67,192	19 59	6,307	24,343	3 86	34,050	125,585

Imports of Firebrick and Fireclay, 1900-12.

Fiscal Year.	Fireclay.	Firebrick.	Fiscal Year.	Fireclay.	Firebrick.
	$	$		$	$
1900	59,291	39,535	1906	131,130	51,892
1901	79,530	32,831	1907*	85,044	349,185
1902	64,541	45,608	1908	155,873	639,347
1903	94,509	34,522	1909	77,146	350,457
1904	52,716	38,335	1910	86,151	519,454
1905	73,837	44,746	1911	129,728	864,465
			1912	118,863	860,763

* 9 months ending March.

Sewerpipe and Drain Tile.

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

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

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

Ontario Sewerpipe Company, Mimico, Ont.

Dominion Sewerpipe Company, Waterdown, Ont.

Hamilton & Toronto Sewerpipe Company, Waterdown, Ont.

British Columbia Pottery Company, Victoria, B.C.

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

The total imports during 1911 were valued at $382,929, and included $338,644 from the United States, $44,278 from Great Britain, and $7 from other countries.

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

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

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

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

Production of Sewerpipe, etc.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1888	266,320	1897	164,250	1905	382,000
1889	Not available.	1898	181,717	1906	350,045
1890	348,000	1899	161,546	1907	667,100
1891	227,300	1900	231,525	1908	514,362
1892	367,660	1901	248,115	1909	645,722
1893	350,000	1902	301,965	1910	774,110
1894	250,325	1903	317,970	1911	812,716
1895	257,045	1904	440,894	1912	884,641
1896	153,875				

Production of Drain Tile in Ontario.

(As ascertained by the Ontario Bureau of Mines.)

Year.	No.	Value.	Year.	No.	Value.	Year.	No.	Value.
		$			$			$
1891...	7,500,000	90,000	1899...	21,027,400	240,246	1906...	17,700,000	252,500
1892...	10,000,000	100,000	1900...	19,544,000	209,738	1907...	15,578,000	250,122
1893...	17,300,000	190,000	1901...	21,592,000	231,374	1908...	24,800,000	338,658
1894...	25,000,000	280,000	1902...	17,510,000	199,000	1909...	27,418,000	363,550
1895...	14,330,000	157,000	1903...	18,200,000	227,000	1910...	21,028,000	318,456
1896...	13,200,000	144,000	1904...	16,000 000	210,000	1911...	21,630,000	349,545
1897...	*	*	1905...	15,000,000	220,000	1912**.	16,463,000	279,579
1898...	22,668,000	225,000						

* Not stated. ** Preliminary.

Imports of Drain Tile and Sewerpipe.

Fiscal Year.	Drain tile (*a*).	Sewerpipe (*b*).	Fiscal Year.	Drain tile (*a*).	Sewerpipe (*b*).
	$	$		$	$
1880.....	.....	33,796	1897.....	416	33,870
1881.....	.....	37,368	1898.....	157	29,454
1882.....	.....	70,061	1899.....	1,817	32,071
1883.....	.....	70,699	1900.....	1,383	37,766
1884.....	5,585	66,170	1901.....	1,264	54,819
1885..	2,911	66,678	1902	269	55,261
1886.....	1,905	56,048	1903.....	252	57,100
1887.....	2,183	69,020	1904.....	1,637	53,958
1888..... ...	4,290	96,967	1905.....	1,229	101,166
1889....	2,346	80,869	1906.....	4,727	131,353
1890.....	3,780	73,654	1907 (9 mos.)....	12,106	93,458
1891.....	673	86,522	1908.....	2,080	125,747
1892...	473	59,064	1909.....	2,394	106,399
1893.....	110	38,891	1910.....	2,739	196,002
1894.....	53	24,572	1911..	4,378	174,653
1895.....	695	20,358	1912.....	5,778	405,998
1896.....	339	18,957			

(*a*) Drain tile, not glazed.
(*b*) Drain pipes, sewerpipes, and earthenware fittings therefor, chimney linings, or vents, chimney tops and inverted blocks, glazed or unglazed.

Pottery and Earthenware.

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

Annual Production of Pottery.

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

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

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

The imports in 1911 comprised: brown or coloured earthenware, etc., $52,100; C. C. or cream coloured ware, decorated, printed, or sponged, etc., $184,291; demijohns, churns, or crocks, $4,933; tableware of china, porcelain, white granite, etc., $1,718,582; china and porcelain ware N. O. P., $62,025; tiles or blocks of earthenware or stone prepared for mosaic flooring, $123,203; earthenware tiles, N. O. P., $154,351; manufactures of earthenware N. O. P., $217,051.

It will be observed that there has been a general increase in almost all classes of earthenware and chinaware imported. Great Britain is the principal source of the imports of this class of products, but quite large supplies are also obtained from the United States, Germany, France, Austria-Hungary, Japan, Belgium, and other countries.

Imports of Earthenware and Chinaware.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1880	322,333	1891	634,907	1902	1,275,093
1881	439,029	1892	748,810	1903	1,406,610
1882	646,734	1893	709,737	1904	1,611,356
1883	657,886	1894	695,514	1905	1,636,214
1884	544,586	1895	547,935	1906	1,692,359
1885	511,853	1896	575,493	1907 (9 mos.)	1,422,880
1886	599,269	1897	595,822	1908	2,190,784
1887	750,691	1898	675,874	1909	1,716,887
1888	697,082	1899	916,727	1910	1,859,302
1889	697,949	1900	959,526	1911	2,398,416
1890	695,206	1901	1,114,677	1912	2,582,966

Kaolin.

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

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

The following description[1] of operations was published in last years' report:—

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

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

The imports of china-clay ground and unground, into Canada during the twelve months ending December 31, 1912, were 18,332 tons, valued at $127,402, or $6.95 per ton, as against an importation of 18,819 tons, valued at $125,768, or an average of $6.68 per ton in 1911. Imports of china-clay in 1910 were valued at $142,125, and in 1909, $100,066. These figures indicate to some extent at least the present actual demand for this product. The imports of earthenware and chinaware were, however, valued at $3,094,956 in 1912, and composed chiefly of tableware of china, porcelain, etc., showing the possibilities for the development of industries utilizing china-clays.

Kaolin or china-clay is also in considerable demand in the United States, the imports into that country in 1911 being valued at $1,461,068.

The kaolin deposits of Amherst were first brought to the attention of the Department in 1894, when samples were submitted to the Geological Survey Museum by Mr. R. Lanigan, of Calumet, Que. In 1896, samples were sent to porcelain works at Trenton, N.J., and were very favourably reported upon, but no serious attempt to develop the property was made until the season of 1911.

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

LIME.

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

The production in 1911 was reported as 7,533,525 bushels (263,673 tons), valued at $1,517,599, or an average of 20 cents per bushel, or $5.75 per ton. The increase in production in 1912 was, therefore, 942,314 bushels, or about 12·05 per cent. Owing to the increased value per bushel in 1912, however, the increase in total value of production was over 21 per cent.

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

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

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

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

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

Lime Production by Provinces, 1912.

Province.	No. of active firms reporting.	Men employed.	Wages paid.	Sales.			
				Bushels.	Value.	Average per bushel.	Per cent of total.
			$		$	cts.	%
P. E. Island*. . . .	4	10	844	24,971	8,191	33	0·44
Nova Scotia.	1	8	5,510	684,625	136,930	20	7·42
New Brunswick	5	96	53,536	616,335	133,742	22	7·25
Quebec.	21	334	157,909	1,729,614	474,595	27	25·73
Ontario	32	470	242,196	3,376,193	573,269	17	31·07
Manitoba	5	10	2,656	818,237	168,257	21	9·12
Saskatchewan.	1	6	450	4,000	1,440	36	0·08
Alberta	4	76	52,272	704,035	166,520	24	9·03
British Columbia. . . .	5	93	60,844	517,329	181,905	35	9·86
Total	78	1,103	576,217	8,475,839	1,844,849	22	100·00

* Production in previous years included in Nova Scotia figures.

Lime Production by Provinces, 1911.

Province.	No. of active firms reporting.	Men employed.	Wages paid.	Sales.			
				Bushels.	Value.	Average per bushel.	Per cent of total.
			$		$	cts.	%
P. E. Island*.	3	8	852	20,250	6,765	33	0·44
Nova Scotia.	1	10	3,964	618,950	123,790	20	8·16
New Brunswick	5	100	41,378	613,728	132,897	22	8·76
Quebec.	22	307	139,466	1,428,392	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	434,038	100,407	23	6 61
British Columbia. . . .	4	86	53,901	351,014	117,756	34	7·76
Total.	75	1,056	523,518	7,533,525	1,517,599	20	100·00

* Production in previous years included in Nova Scotia figures.

Lime Production by Provinces, 1909 and 1910.

Province.	1909.				1910.			
	Bushels.	Value.	Average per bushel.	Per cent.	Bushels.	Value.	Average per bushel.	Per cent of total.
		$	cts.	%		$	cts.	%
Nova Scotia. . . .	57,730	16,729	29	1·5	55,750	13,490	24	1·2
New Brunswick. .	697,466	154,151	22	13·6	470,050	105,593	22	9·3
Quebec.	1,281,827	315,633	25	27·9	1,227,555	299,126	23	26·3
Ontario.	2,619,553	434,147	17	38·3	2,988,020	476,137	16	41·9
Manitoba	423,954	69,670	16	6·2	606,679	100,808	17	8·8
Alberta.	231,125	67,350	24	5·9	303,214	69,268	23	6·1
British Columbia.	231,269	75,076	32	6·6	196,878	72,657	37	6·4
	5,592,924	1,132,756	20	100·0	5,848,146	1,137,079	19	100·0

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

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

Exports of Lime.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	$		$		$
1891	119,853	1899	73,565	1906	57,072
1892	121,535	1900	80,852	1907	55,903
1893	86,623	1901	99,194	1908	43,316
1894	83,670	1902	116,009	1909	48,821
1895	71,697	1903	131,412	1910	44,762
1896	76,820	1904	73,838	1911	39,536
1897	53,177	1905	85,723	1912	35,097
1898	49,594				

Imports of Lime.

Fiscal Year.	Barrels.	Value.	Average value.	Fiscal Year.	Barrels.	Value.	Average value.
		$	$ cts.			$	$ cts.
1880	6,100	6,013	0 99	1897	16,108	10,529	0 65
1881	5,796	4,177	0 72	1898	12,850	9,002	0 70
1882	5,064	5,365	1 06	1899	15,720	11,124	0 71
1883	7,623	9,224	1 21	1900	12,865	11,211	0 87
1884	10,804	11,200	1 04	1901	19,657	14,534	0 74
1885	12,072	11,503	0 95	1902	24,602	17,584	0 71
1886	11,021	9,347	0 85	1903	31,108	22,470	0 72
1887	10,335	8,524	0 79	1904	54,359	39,639	0 73
1888	10,142	7,537	0 74	1905	98,676	71,588	0 73
1889	13,079	9,363	0 72	1906	134,334	93,630	0 70
1890	8,149	5,360	0 66	1907 (9 mos.)	88,919	67,573	0 76
1891	6,259	4,273	0 68	1908	129,379	99,611	0 77
1892	6,132	4,241	0 69	1909	153,934	106,263	0 69
1893	6,879	4,917	0 71	1910	191,537	116,964	0 61
1894	6,766	4,907	0 73	1911	194,809	143,338	0 74
1895	12,008	5,743	0 48	1912 Duty 20 per cent	230,013	162,593	0 71
1896	10,239	7,331	0 72				

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

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

Annual Production of Lime in Ontario.

(As ascertained by the Ontario Bureau of Mines.)

Calendar Year.	Bushels.	Value.	Cents per bushel.	Calendar Year.	Bushels.	Value.	Cents per bushel.
		$				$	
1896	1,800,000	222,000	12	1905	3,100,000	424,700	14
1897	.....	.....	.....	1906	2,885,000	496,785	17
1898	2,620,000	308,000	12	1907	2,650,000	418,700	17
1899	4,342,500	535,000	12	1908	2,442,331	448,596	18
1900	3,893,000	544,000	14	1909	2,633,500	470,858	18
1901	4,100,000	550,000	13	1910	2,889,235	474,531	16
1902	4,300,000	617,000	14	1911	2,469,773	402,340	16
1903	3,400,000	520,000	15	*1912	2,297,525	381,672	17
1904	2,600,000	406,800	16				

* Provisional.

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

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

SAND-LIME BRICK.

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

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

Annual statistics of production since 1907 are shown below.

Annual Production of Sand-Lime Brick.

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

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

Completed plants:—

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

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

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

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

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

Calgary Silicate Pressed Brick Co., Calgary, Alta.

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

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

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

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

Plants under construction:—

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

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

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

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

SAND AND GRAVEL.

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

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

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

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

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

Annual Exports of Sand and Gravel.

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

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Annual Imports of Sand and Gravel.

Fiscal Year.	Tons.	Value.	Average value.	Fiscal Year.	Tons.	Value.	Average value.
		$	$ cts.			$	$ cts.
1893	26,065	31,739	1 22	1903	91,518	95,647	1 05
1894	41,573	33,506	0 81	1904	110,634	107,547	0 97
1895	19,609	24,779	1 26	1905	85,339	92,722	1 09
1896	18,953	24,604	1 30	1906	116,500	173,727	1 49
1897	21,308	25,222	1 18	1907 (9 mos)	171,700	177,412	1 03
1898	32,148	43,287	1 35	1908	266,704	223,043	0 84
1899	30,288	42,209	1 39	1909	132,158	136,011	1 03
1900	35,713	41,280	1 16	1910	151,982	155,012	1 02
1901	35,749	42,891	1 20	1911	241,375	246,613	1 02
1902	47,381	58,668	1 24	1912	263,971	258,438	0 98

SLATE.

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

Statistics of annual production are shown herewith.

Annual Production of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Squares.	Value.
		$			$
1886	5,345	64,675			
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
1899		33,406	1912	1,894	8,939

No exports of slate have been reported since 1901.

The imports of slate have ranged in value during the past seven years from $100,000 to $200,000 per annum. The total value of imports during the calendar year 1912 was $200,643, comprising: roofing slate, $88,911; school writing slate, $39,858; slate pencils, $6,978; other slates and manufactures of, $65,896. The total value of the imports during the calendar year 1911 was $169,685, and included: roofing slate, $83,075; school writing slate, $35,049; slate pencils, $6,036; other slates and manufactures of, $45,525. The imports of roofing slate, school writing slate, and manufactures of slate, N. O. P. are chiefly from the United States.

Some roofing slate is also imported from Great Britain, while slate pencils come chiefly from Germany and the United States. Imported roofing slate from Bangor, Maine, is quoted in Toronto f.o.b. cars, at $6.75 per square of 100 feet, and mottled and green slate at $8 per square.

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

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

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

Exports of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		$			$
1884	539	6,845	1893	178	3,168
1885	346	5,274	1894	187	3,610
1886	34	495	1895	36	574
1887	27	373	1896	301	8,913
1888	22	475	1897 to 1907	Nil.	Nil.
1889	26	3,303	1908		2,539
1890	12	153	1909	134	612
1891	15	195	1910 to 1912	Nil.	Nil.
1892	87	2,038			

Imports of Slate.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	$		$		$
1880	21,431	1891	46,104	1902	72,601
1881	22,184	1892	50,441	1903	84,437
1882	24,543	1893	51,179	1904	86,057
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 mos.)	95,520
1886	27,852	1897	21,615	1908	131,069
1887	27,845	1898	24,907	1909	124,065
1888	23,151	1899	33,100	1910	136,401
1889	41,370	1900	53,707	1911	147,172
1890	22,871	1901	72,187	1912	173,566

STONE.

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

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

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

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

The total value of the production of stone in 1912, according to returns received, was $4,726,171, as compared with a value of $4,328,757 in 1911, showing an increased production of $397,414, or 9·2 per cent.

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

Of the total value of the 1912 production, limestone contributed $2,762,936 or 58·5 per cent; granite, $1,373,119, or nearly 29 per cent; sandstone, $329,352, or 7·0 per cent; and marble, $260,764, or 5·5 per cent.

Stone was used for building purposes to the value of $1,452,157 or 30·7 per cent of the total, monumental and ornamental stone, a value of $190,359 or 4 per cent; curb, paving, and flagstone, $268,390, or 5·7 per cent; rubble, $353,871, or 7·5 per cent; crushed stone, $1,987,073, or 42·1 per cent; and furnace flux, 904,528 tons, valued at $474,321, or 10·0 per cent.

By provinces, Quebec again shows the largest output, having a value of $1,957,703, or 41:4 per cent of the total, being made up of limestone to the value of $1,187,751, granite valued at $522,114, marble, $247,838. Ontario takes second place with a production of $1,109,164, or 23·5 per cent of the total, of which limestone is credited with $862,052; granite, $174,946; sand-

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

Production of Stone by Provinces, 1912.

Province.	Granite.	Limestone.	Marble.	Sandstone.	Total.	%	Labour.	
							No. men employed.	Wages.
	$	$	$	$	$			$
Nova Scotia	28,041	275,944	.....	20,645	324,630	6·9	788	220,501
New Brunswick	22,317	.....	.....	68,260	90,577	1·9	210	65,807
Quebec	522,114	1,187,751	247,838	.....	1,957,703	41·4	2,216	1,140,715
Ontario	174,946	552,052	12,926	59,240	1,109,164	23·5	1,281	614,171
Manitoba	1,523	381,572	.....	.....	383,095	8·1	544	274,548
Alberta	.....	.....	.....	81,391	81,391	1·7	107	70,276
British Columbia	624,178	55,617	.....	99,816	779,611	16·5	564	532,098
Total	1,373,119	2,762,936	260,764	329,352	4,726,171	...	5,710	2,918,116
Per cent	29·0	58·5	5·5	7·0	.....	100·0	.....	.....

Production of Stone by Provinces, 1911.

Province.	Granite.	Limestone.	Marble.	Sandstone.	Total.	%
	$	$	$	$	$	
Nova Scotia	24,258	245,216	.....	23,440	292,914	6·8
New Brunswick	37,994	110	.....	35,337	73,441	1·7
Quebec	462,678	1,296,577	135,187	450	1,894,892	43·8
Ontario	131,816	680,461	25,996	54,032	892,305	20·6
Manitoba	2,268	315,782	.....	.....	318,050	7·3
Alberta	.....	.....	.....	158,344	158,344	3·7
British Columbia	460,851	56,780	1,600	179,580	698,811	16·1
Total	1,119,865	2,594,926	162,783	451,183	4,328,757	.....
Per cent	25·9	59·9	3·8	10·4	.....	100·0

Value of Stone Sold for Various Purposes in 1912.

Kind.	Building.	Ornamental and monumental.	Paving and curbstone.	Rubble.	Crushed.	Furnace flux.	Total.
	$	$	$	$	$	$	$
Granite	296,715	101,837	227,071	59,824	687,672	.....	1,373,119
Limestone	671,383	72,296	13,561	256,798	1,274,577	474,321	2,762,936
Marble	237,415	2,641	6,535	.....	14,173	.....	260,764
Sandstone	246,644	12,585	21,223	37,249	10,651	.....	329,352
Total	1,452,157	190,359	268,390	353,871	1,987,073	474,321	4,726,171

Value of Stone Sold for Various Purposes in 1911.

Kind.	Building.	Ornamental and monumental.	Paving and curbstone.	Rubble.	Crushed.	Furnace flux.	Total.
	$	$	$	$	$	$	$
Granite	324,011	129,017	172,246	51,952	442,639	.....	1,119,865
Limestone	625,402	38,746	36,902	374,327	1,066,559	452,990	2,594,926
Marble	27,596	135,187	.....	.....	.....	.....	162,783
Sandstone	391,684	100	24,575	34,524	300	.....	451,183
Total	1,368,693	353,050	233,723	460,803	1,509,498	452,990	4,328,757

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

Province.	Building.	Ornamental and monumental.	Paving and curbstone.	Rubble.	Crushed.	Furnace flux.	Total.
	$	$	$	$	$	$	$
Nova Scotia	24,150	15,911	8,625	.....	.....	275,944	324,630
New Brunswick	73,759	4,602	8,928	3,288	.....	.....	90,577
Quebec	814,380	149,584	97,749	95,170	800,026	794	1,957,703
Ontario	185,969	6,848	56,543	107,300	610,561	141,943	1,109,164
Manitoba	97,096	.....	.....	119,142	166,834	23	383,095
Alberta	52,771	13,414	5,145	10,061	.....	.....	81,391
British Columbia	204,032	.....	91,400	18,910	409,652	55,617	779,611
Total	1,452,157	190,359	268,390	353,871	1,987,073	474,321	4,726,171
Per cent	30·7	4·0	5·7	7·5	42·1	10·0	100·0

Production of Stone by Provinces and for Purposes Used, 1911.

Province.	Building.	Ornamental and monumental.	Paving and curbstone.	Rubble.	Crushed.	Furnace flux.	Total.
	$	$	$	$	$	$	$
Nova Scotia	26,710	17,118	1,400	3,717	2,422	241,517	292,914
New Brunswick	45,348	22,986	.....	5,077	.....	30	73,441
Quebec	599,758	242,269	151,242	200,243	700,787	593	1,894,892
Ontario	168,012	8,647	54,091	98,615	408,870	154,070	892,305
Manitoba	74,424	.....	.....	105,782	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

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

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

Exports of Stone During the Calendar Years 1910, 1911, 1912.

	1910.		1911.		1912.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		$		$		$
Stone—						
Ornamental, granite, marble, etc., unwrought	446	3,352	168	1,796	2,339	1,826
Building, freestone, limestone, etc., unwrought	63,407	18,867	83,767	25,103	108,516	28,795
Ornamental, granite, marble, etc., dressed	.....	5,272	.....	980	.....	2,458
Building, freestone, limestone, etc., dressed	.....	80	.....	456	.....	163
	.....	27,571	.....	28,335	.....	33,242

The annual exports of stone since 1880 are shown in the following table:—

Exports of Stone and Marble, Wrought and Unwrought.

Calendar Year.	Wrought.	Unwrought.	Calendar Year.	Wrought.	Unwrought.
	$	$		$	$
1890	21,725	43,611	1902	8,632	124,829
1891	13,398	46,162	1903	7,684	46,295
1892	7,698	47,424	1904	4,760	17,802
1893	9,102	12,532	1905	3,545	13,089
1894	22,576	34,130	1906	23,097	4,675
1895	8,587	51,616	1907	4,233	3,087
1896	4,934	32,897	1908	15,194	36,820
1897	9,415	42,034	1909	32,598	24,087
1898	2,526	65,370	1910	5,352	22,219
1899	5,092	101,931	1911	1,436	26,899
1900	5,933	115,711	1912	2,621	30,621
1901	5,917	157,739			

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

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

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

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

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

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

Imports of Stone, Showing Country of Origin, Calendar Year 1912.

Imports.	Great Britain.		United States.		Italy.	Other countries.
	Tons.	Value.	Tons.	Value.	Value.	Value.
		$		$	$	$
Building stone, rough [1]	.....	3,258	.....	111,885	.....	1,894
" " dressed [2]	.....	2,070	.....	449,549	.....	16
Refuse "	.....	.....	265,270	113,159	.....	.....
Granite, sawn only	.....	802	.....	18,797	.....	1,107
" manufactures of	.....	157,428	.....	22,918	.....	.....
Paving blocks	.....	.....	.....	64,053	.....	.....
Manufactures of stone, N.O.P.	.....	5,489	.....	36,236	.....	2,556
Marble and manufactures of :—						
Marble, sawn or sand rubbed, not polished	.....	1,705	.....	177,549	18,616	12,120
Marble, rough, not hammered or chiselled	.....	.....	.....	48,176	.....	1,450
Marble, manufactures of, N.O.P.	.....	11,744	.....	197,942	.....	6,624
	.....	182,496	.....	1,240,264	18,616	25,767

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

Imports of Stone, Fiscal Years 1911 and 1912.

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

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

Annual Imports of Stone.

Fiscal Year.	Building stone.		Manufactures of granite, etc.	Marble.	Flagstone.	Total value
	Rough.	Dressed.				
	$	$	$	$	$	$
1880	32,824	3,146	29,408	63,015	.....	128,393
1881	7,823	50,326	36,877	85,977	241	181,244
1882	32,848	775	37,267	109,505	848	181,243
1883	33.429	1,632	45,636	128,520	99	209,316
1884	46,232	4,856	45,290	108,771	1,158	206,307
1885	28,433	2,058	39,867	102,835	1,756	174,949
1886	36,776	4,899	41,984	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	39,479	106,268	15,048	256,345
1893	47,609	8,901	49,323	96,177	8,500	210,510
1894	48,097	4,811	49,510	94,657	2,429	199,504
1895	37,732	6,550	51,050	83,422	84	178,838
1896	42,737	11,393	51,499	90,065	Nil	195,694
1897	27,442	11,272	34,026	77,150	227	150,117
1898	25,322	3,173	41,240	95,894	1,540	167,129
1899	43,494	4,546	60,148	104,879	Nil	210,067
1900	63,376	1,157	57,039	94,017	63	215,652
1901	45,039	1,039	66,639	96,159	116	208,992
1902	69,972	29,102	72,397	130,424	1,231	303,126
1903	71,202	16,664	78,629	153,481	Nil	319,976
1904	59,864	33,914	141,165	181,511	Nil	416,454
1905	49,004	53,813	150,160	145,466	Nil	398,443
1906	66,994	65,134	178,435	189,589	Nil	500,152
1907*	58,398	78,967	136,779	176,450	Nil	450,594
1908	80,960	90,740	192,248	287,587	Nil	651,525
1909	63,984	72,961	193,949	200,928	Nil	531,822
1910	110,997	184,620	223,462	184,798	Nil	703,877
1911	126,386	206,224	271,594	307,428	Nil	911,632
1912	81,260	300,378	**377,986	400,735	Nil	1,160,359

* 9 months ending March 1907. ** Including refuse stone.

GRANITE.

The production of granite, including trap-rock, syenite, etc., in 1912, according to returns received from 57 active firms reporting, is valued at $1,373,119, as compared with a production in 1911 by 47 firms, valued at $1,119,865, showing an increased production in 1912 valued at $253,254, or 52·6 per cent. There was a falling off in the production of granite for building and ornamental purposes, but an increased production of paving stone, rubble, and crushed stone.

The largest production is reported from British Columbia in 1912, the value from this Province being $624,178, as against $460,851 in 1911. The value of the production in Quebec in 1912 was $522,114, as against $462,678 in 1911. Ontario produced granite to the extent of $174,946 in 1912, as compared with $131,816 in 1911. There was apparently little change in the Maritime Provinces. Much of the rough stone quarried in New Brunswick as well as stone imported from Redbeach, Maine, and Mt. Johnston, Quebec, is worked up into finished ornamental and monumental stone at mills at St. George, N.B. The value of the finished stone produced at St. George in 1912 was $82,935, as against a value of $86,658 produced in 1911.

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

Value of Granite Production by Provinces, 1912.

Province.	Building.	Monumental or ornamental.	Curb, or paving.	Rubble.	Crushed.	Total.
	$	$	$	$	$	$
Nova Scotia	3,601	15,815	8,625	.....	.....	28,041
New Brunswick	8,862	*4,527	8,928	.....	.....	22,317
Quebec	180,036	31,180	79,368	13,912	167,618	522,114
Ontario	.....	315	38,750	27,002	108,879	174,946
Manitoba	.....	.....	.....	.....	1,523	1,523
British Columbia	104,216	.....	91,400	18,910	409,652	624,178
Total	296,715	101,837	227,071	59,824	687,672	1,373,119

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

Value of Granite Production by Provinces, 1911.

Province.	Building.	Monumental or ornamental.	Curb, or paving.	Rubble.	Crushed.	Total.
	$	$	$	$	$	$
Nova Scotia	5,670	17,048	1,400	140	.....	24,258
New Brunswick	15,008	*22,986	.....	.....	.....	37,994
Quebec	168,759	74,687	116,256	.....	102,976	462,678
Ontario	13,100	2,296	27,600	12,000	76,820	131,816
Manitoba	.....	.....	.....	.....	2,268	2,268
British Columbia	121,474	12,000	26,990	39,812	260,575	460,851
Total	324,011	129,017	172,246	51,952	442,639	1,119,865

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

Annual Production of Granite.

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

LIMESTONE.

The statistics given herewith do not include the value of the stone burned into lime by the quarry operators, nor that of the stone used in the manufacture of cement, a record of lime and cement production being separately given. With this exception the total value of limestone in Canada in 1912 was $2,762,936, as compared with a value of $2,594,926 in 1911, or an increase of about 7 per cent.

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

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

Value of Limestone Production by Provinces, 1912.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
	$	$	$	$	Tons.	$	$
Nova Scotia	.....	.....	.....	.....	538,730	275,944	275,944
New Brunswick	.....	.....	.....	.....	.....	.....	.....
Quebec	472,192	621,661	11,846	81,258	529	794	1,187,751
Ontario	174,391	487,605	1,715	56,398	272,544	141,943	862,052
Manitoba	97,096	165,311	.....	119,142	30	23	381,572
British Columbia	.....	.....	.....	.....	92,695	55,617	55,617
Total	743,679	1,274,577	13,561	256,798	904,528	474,321	2,762,936

Value of Limestone Production by Provinces, 1911.

Province.	Building and ornamental.	Crushed.	Curbstone and paving.	Rubble.	Furnace flux.		Total.
	$	$	$	$	Tons.	$	$
Nova Scotia	.....	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	406,394	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

MARBLE.

From 1886 to 1896 there was a small production of marble, aggregating, however, only $45,837 in value for the eleven years. During the next eleven years—1897 to 1907—there is no record of any production. But the opening up of the quarries at Philipsburg, Que., by the Missisquoi Marble Company, Limited, together with the development of quarries in Ontario and British Columbia, has resulted in a considerable production of marble during the past five years. The total value of the production in 1912 was returned as $260,764, as compared with $162,783 in 1911 and $158,779 in 1910.

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

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

Annual Production of Marble.

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

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

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

SANDSTONE.

The value of the production of sandstone in 1912 is reported as $329,352, as compared with a value of $451,183 reported for 1911. The greater part of the sandstone quarried is used for building purposes, though some quantities are used for rubble and paving purposes.

Of the production in 1912, building and ornamental stone was sold to the value of $260,229, or 79 per cent of the total value of production. There was included in this amount, rough stone valued at $96,877 and dressed stone valued at $163,352. Of the 1911 production the value of $391,784 was credited to building and ornamental stone, and included $86,503 in rough stone and $305,282 in dressed stone.

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

Value of Sandstone Production by Provinces, 1912.

Province.	Building and ornamental.	Crushed.	Paving.	Rubble.	Total.
	$	$	$	$	$
Nova Scotia	20,645	.....	.....	.....	20,645
New Brunswick	64,972	.....	.....	3,288	68,260
Ontario	8,611	10,651	16,078	23,900	59,240
Alberta	66,185	.....	5,145	10,061	81,391
British Columbia	99,816	.....	.....	.....	99,816
Total	260,229	10,651	21,223	37,249	329,352

Value of Sandstone Production by Provinces, 1911.

Province.	Building and ornamental.	Crushed.	Paving.	Rubble.	Total.
	$	$	$	$	$
Nova Scotia	21,140	300	.....	2,000	23,440
New Brunswick	30,260	.....	.....	5,077	35,337
Quebec	450	.....	.....	.....	450
Ontario	8,567	.....	24,575	20,890	54,032
Alberta	151,787	.....	.....	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	502,14