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CANADA  
DEPARTMENT OF MINES  
MINES BRANCH

HON. LOUIS CODERRE, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;  
EUGENE HAANEL, PH.D., DIRECTOR.

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PRELIMINARY REPORT

ON THE

MINERAL PRODUCTION OF  
CANADA

DURING THE CALENDAR YEAR  
1912.

PREPARED BY

JOHN McLEISH, B.A.,

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

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OTTAWA  
GOVERNMENT PRINTING BUREAU  
1913.

EUGENE HAANEL, Ph.D.,  
Director of Mines.

SIR,—I beg to submit herewith, the annual preliminary report on the mineral production of Canada in 1912.

The figures of production for 1912 while subject to revision, are based upon direct returns from mine and smelter operators and are fairly complete.

Special acknowledgements are due to those operators who have promptly furnished reports of their operations during the year.

When complete returns shall have been received the usual annual report will be prepared containing in greater detail the final statistics as well as information relating to exploration, development, prices, markets, imports and exports, &c.

I am, sir, your obedient servant,

JOHN McLEISH.

Division of Mineral Resources and Statistics,  
February 27, 1913.

## PRELIMINARY REPORT ON THE MINERAL PRODUCTION OF CANADA, 1912.

*Statistics subject to revision.*

The total value of the mineral production in Canada in 1912 was \$133,127,489 according to the preliminary statistics published herewith, which are based upon direct returns from mine and smelter operators, but subject to final revision. Compared with the previous year this production shows an increase of \$29,906,495, or nearly 29 per cent. The mineral output in 1911, however, was somewhat restricted owing to long extended labour disputes and the largest previous production was in 1910 compared with which that of 1912 shows an increase of \$26,243,866, or over 24 per cent. The per capita production in 1910 was \$14.93, and this has increased in 1912 to over \$18. This record is a gratifying indication or confirmation 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 connection 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 total coal and gold production were 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.

The production of the more important metals and minerals is shown in the following tabulated statement in which the figures are given for the two years, 1911 and 1912, in comparative form, and the increase or decrease in value shown. Tabulated statements in greater detail, will be found on subsequent pages of this pamphlet:

	1911.		1912.		Increase (+) or decrease (-) in value.
	Quantity.	Value.	Quantity.	Value.	
		\$		\$	\$
Copper..... Lbs.	55,648,011	6,886,998	77,775,600	12,709,311	+ 5,822,313
Gold..... Ozs.	473,159	9,781,077	607,609	12,559,443	+ 2,778,366
Pig iron..... *Tons.	917,535	12,307,125	1,014,587	14,550,999	+ 2,243,874
Lead..... Lbs.	23,784,969	827,717	35,763,476	1,597,554	+ 769,837
Nickel..... "	34,098,744	10,229,623	44,841,542	13,452,463	+ 3,222,840
Silver..... Ozs.	32,559,044	17,355,272	31,931,710	19,425,656	+ 2,070,384
Other metallic products.....		411,332		982,676	+ 571,344
Total .....		57,799,144		75,278,102	+ 17,478,958
Less pig iron credited to imported ores..	875,349	11,693,721	978,232	14,100,113	+ 2,406,392
Total metallic.....		46,105,423		61,177,989	+ 15,072,566
Asbestos and asbestic..... Tons.	127,414	2,943,108	131,260	2,979,384	+ 36,276
Coal..... "	11,323,388	26,467,646	14,699,953	36,349,299	+ 9,881,653
Gypsum..... "	518,383	993,394	576,498	1,320,883	+ 327,489
Natural gas.....		1,917,678		2,311,126	+ 393,448
Petroleum..... Brls.	291,092	357,073	243,336	345,050	- 12,023
Salt..... Tons.	91,582	443,004	95,053	459,582	+ 16,578
Cement..... Brls.	5,692,915	7,644,537	7,120,787	9,083,216	+ 1,438,679
Clay products.....		8,359,933		9,343,321	+ 983,388
Lime..... Bush.	7,533,525	1,517,599	7,992,234	1,717,771	+ 200,172
Stone.....		4,328,757		4,675,851	+ 347,094
Miscellaneous non-metallic.....		2,142,842		3,364,017	+ 1,221,175
Total non-metallic.....		57,115,571		71,949,500	+ 14,833,929
Grand total .....		103,220,994		133,127,489	+ 29,906,495

\*Short tons throughout.

The subdivision of the mineral production in 1911 and 1912 by provinces was approximately as follows:—

Province.	1911.		1912.	
	Value of Production.	Per cent of Total.	Value of Production.	Per cent of Total.
	\$	%	\$	%
Nova Scotia .....	15,409,397	14.93	18,843,324	14.15
New Brunswick.....	612,830	0.59	806,584	0.61
Quebec.....	9,304,717	9.01	11,675,682	8.77
Ontario.....	42,796,162	41.46	51,023,134	38.33
Manitoba.....	1,791,772	1.74	2,314,922	1.74
Saskatchewan.....	636,706	0.62	909,934	0.68
Alberta.....	6,662,673	6.46	12,110,960	9.10
British Columbia.....	21,299,305	20.63	29,555,323	22.20
North West Territories.....	4,707,432	4.56	5,887,626	4.42
Dominion.....	103,220,994	100.00	133,127,489	100.00

Of the total production in 1912 a value of \$61,177,989 or nearly 46 per cent is credited to the metals, and \$71,949,500 or 54 per cent to non-metallic products. 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 among non-metallic products are in coal, gypsum and cement. Coal shows an increase of 30 per cent in tonnage, gypsum 11 per cent and cement 26 per cent.

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.

The record of production by Provinces given above, 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 again 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 per cent, or \$51,023,134; British Columbia comes second with 22 per cent, or \$29,555,323; Nova Scotia third with \$18,843,324 or 14 per cent; Alberta fourth with \$12,110,960 or over 9 per cent, and Quebec fifth with \$11,675,682 or a little under 9 per cent.

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 1912, 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 MINERAL PRODUCTION OF CANADA IN 1912.

Subject to Revision.

Product.	Quantity.	Value.
<b>METALLIC.</b>		\$
Copper, value at 16.341 cents per pound .....	Lbs. 77,775,600	12,709,311
Gold .....	Ozs. 607,609	12,559,443
Pig iron from Canadian ore .....	Tons. 36,355	450,886
Iron ore sold for export .....	" 118,129	382,005
Lead, value at 4.467 cents per pound .....	Lbs. 35,763,476	1,597,554
Nickel, value at 30 cents per pound .....	" 44,841,542	13,452,463
Silver, value at 60.835 cents per oz. ....	Ozs. 31,931,710	19,425,656
Cobalt and nickel oxides .....	"	319,785
Zinc ore .....	Tons. 6,723	280,886
Total .....		61,177,989
<b>NON-METALLIC.</b>		
Actinolite .....	Tons. 92	1,000
Arsenic, white .....	" 2,045	88,726
Asbestos .....	" 106,520	2,959,677
Asbestic .....	" 24,740	19,707
Coal .....	" 14,699,933	36,349,299
Corundum .....	" 1,960	239,091
Feldspar .....	" 12,233	25,416
Fluorspar .....	" 40	240
Graphite .....	" 2,060	117,122
Grindstones .....	" 2,912	44,290
Gypsum .....	" 576,498	1,320,883
Manganese .....	" 75	1,875
Magnesite .....	" 1,714	9,645
Mica .....	"	104,393
Mineral pigments—		
Barytes .....	" 464	5,104
Ochres .....	" 5,654	30,410
Mineral water .....		169,467
Natural gas .....		2,311,126
Peat .....	Tons. 700	2,900
Petroleum, value at \$1.418 per barrel ..	Brls. 243,336	345,050
Pyrites .....	Tons. 79,702	348,026
Quartz .....	" 100,242	195,216
Salt .....	" 95,053	459,582
Talc .....	" 8,270	23,132
Tripolite .....	" 38	230
Total .....		45,171,607
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS.</b>		
Cement, Portland .....	Brls. 7,120,787	9,083,216
Clay products—		
Brick, common, pressed, paving .....		7,601,380
Sewerpipe .....		887,641
Fireclay, drain tile, pottery, &c. ....		854,140
Kaolin .....	Tons. 20	160
Lime .....	Bush. 7,992,234	1,717,771
Sand and gravel (partial record only) ..		1,066,326
Sand-lime brick .....		882,469
Slate .....	Sq. 1,894	8,939
Stone—		
Granite .....		1,257,770
Limestone .....		2,820,832
Marble .....		272,236
Sandstone .....		325,013
Total structural materials and clay products ..		26,777,893
All other non-metallic .....		45,171,607
Total value, metallic .....		61,177,989
Grand total, 1912 .....		133,127,489

The average monthly prices of the metals in cents per pound for several years past are shown herewith:

	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, ".....	38·166	29·465	29·725	34·123	42·281	46·096

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

### SMELTER PRODUCTION.

General statistics showing the quantities of ores treated at smelters and the quantities of refined metals or smelter products obtained have been collected by this Branch since 1908. It should be explained that the accompanying statistics include the treatment of a small quantity of imported ores chiefly in the British Columbia smelters.

The total quantity of ores, concentrates, &c., treated in 1912, was 3,008,559 tons as compared with 2,193,553 tons in 1911.

The ores treated may be conveniently classified as follows:—

	1910.	1911.	1912.
	Tons.	Tons.	Tons.
Nickel copper ores.....	628,947	610,334	725,065
Silver-cobalt-nickel-arsenic ores.....	9,466	9,330	8,136
Lead and other ores treated in lead furnaces.....	57,549	55,408	63,042
Copper-gold-silver ores.....	1,987,752	1,517,981	2,212,316
Total.....	2,683,714	2,193,553	3,008,559

The products obtained in Canada from the treatment of these ores include: refined lead produced at Trail, B.C., and fine gold, fine silver, copper sulphate, and antimony produced from the residues of the lead refinery; silver bullion, white arsenic, nickel oxide, and cobalt oxide produced in Ontario, from the Cobalt District ores. 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.

		1911.		1912.	
		Refined products.	Metals contained in matte blister, base bullion and speiss.	Refined products.	Metals contained in matte blister, base bullion and speiss.
Gold.....	Ozs.	15,270	175,189	12,118	184,815
Silver.....	"	19,078,768	585,896	17,877,944	686,171
Lead.....	Lbs.	23,525,050		35,893,190	
Copper.....	"		29,855,868		53,405,910
Copper sulphate.....	"	197,187		37,110	
Nickel.....	"		34,098,744		44,841,542
*Nickel and cobalt oxides.....	"	1,415,006		1,634,087	
White arsenic.....	"	4,194,209		4,090,756	

\* Nickel oxide, cobalt oxide and cobalt material, &c., not all completely refined.

Smelter products shipped outside of Canada for refining were: blister copper carrying gold and silver values 17,069 tons in 1912, as compared with 10,710 tons in 1911; copper matte carrying gold and silver values 6,727 tons in 1912, as against 11,320 tons in 1911; Bessemer nickel-copper matte carrying small gold and silver values as well as metals of the platinum group 41,925 tons in 1912, as compared with 32,607 tons in 1911.

### Gold.

The gold production of 1912 is estimated at approximately \$12,559,443, which compared with the 1911 production \$9,781,077 shows an increase of \$2,778,366.

The Yukon placer production in 1912 is estimated at \$5,540,000 as against \$4,580,000 in 1911, the total exports on which royalty was paid during the calendar year, according to the records of the Department of Interior, being 335,015.67 ounces in 1912 and 277,430.97 ounces in 1911. The British Columbia production in 1912 was \$5,167,390, of which the placer production, as estimated by the Provincial Mineralogist, was \$500,000, smelter recoveries and bullion obtained from milling ores being valued at \$4,667,390. The main feature of the year was the large increase from Ontario due to the commencement of operations by several mills in the Porcupine district, the Province producing \$1,745,292 as against \$42,625 in 1911.

In Quebec there is a small amount credited to the pyritic ores as well as a small recovery from Beauce county and the Nova Scotia estimate shows a further decrease.

The exports of gold-bearing dust, nuggets, gold in ore, &c., in 1912, were valued at \$10,014,654.

Gold in bars, blocks, ingots, &c., was imported in 1912 to the value of \$1,096,546.

### Silver.

In quantity there was a slight decrease in the silver production in 1912, returns to date showing a production of 31,931,710 fine ounces, an apparent falling off of 627,334 ounces, but due to the increased price, the value shows an increase from \$17,355,272 in 1911 to \$19,425,656 in 1912 or \$2,078,384.

Of the 1912 production 29,190,122 ounces were from Ontario, 2,651,118 from British Columbia, the increases being from British Columbia and the Yukon.



For British Columbia the figures represent the recovery as mill bullion or silver contained in smelter products, while for Ontario the figures represent the total silver content of ore and concentrates shipped, less five per cent allowed for smelter losses, together with bullion shipments.

The total shipments of ore and concentrates from the Cobalt district and adjacent mines were about 29,116 tons, containing approximately 25,684,082 ounces, in addition to which 4,773,878 ounces were shipped as bullion.

There was also a small silver recovery from the gold ores of Ontario.

In Quebec the silver was derived from the pyritic ores of the eastern townships.

The exports of silver in ore, &c., as reported by the Customs Department were 34,911,922 ounces, valued at \$19,494,416. There was also an importation of silver in bars, blocks, sheets, &c., valued at \$822,020.

The price of silver in New York varied between a minimum of 54½ cents per ounce in January and a maximum of 64½ cents in October, the average monthly price being 60.835 cents, compared with an average of 53.304 cents in 1911.

### Copper.

There is practically no recovery of refined copper in Canada and the production is represented by the copper contents of smelter products, matte, blister-copper, &c., together with the amount of copper contained in ores exported, estimated as recoverable.

The total production on this basis in 1912 was 77,775,600 pounds, valued at \$12,709,311 as compared with 55,648,011 pounds valued at \$6,886,998 in 1911, an increase in quantity of 22,127,589 pounds and in value of \$5,822,313.

Quebec province is credited with a production of 3,225,523 pounds as against 2,436,190 pounds in 1911, the increase being due to the increased production from the pyritic ores of the Eastern Townships. Ontario's production in 1912 was 22,250,601 pounds, as compared with 17,932,263 pounds in 1911, being mainly derived from the nickel-copper ores of the Sudbury district.

Apart from the copper shipments from Dane, the most interesting occurrence was the payment made for copper in shipments from the Cobalt camp.

British Columbia had a record output of 50,526,816 pounds, having had a year of uninterrupted smelter operation free from strikes and other disturbances.

From the Yukon the Pueblo mine was a heavy shipper.

The New York price of electrolytic copper varied during the year between 13.75 cents per pound in February, to 17.60 in August, the average for the year being 16.341 cents as against an average monthly price of 12.376 cents in 1911.

The exports of copper in 1912 were: copper, fine in ore, &c, 76,542,643 pounds, valued at \$8,800,276 and copper black or coarse and in pigs, 1,945,921 pounds, valued at \$236,212.

The total imports of copper in 1912 were valued at \$7,052,534.

### Lead.

The total production of lead in 1912 was 35,763,476 pounds, valued at \$1,597,554, or an average of 4.467 cents per pound, the average wholesale or producers price of pig lead in Montreal for the year. In 1911 the production was 23,784,969 pounds, valued at \$827,717.

The shipments were practically all from British Columbia mines in 1912, a small shipment being made from Ontario mines, but not paid for. Towards the close of the year the North American smelter at Kingston, Ontario, started operations.

In British Columbia the resumption of active operations at the Blue Bell and the activity of the Consolidated Mining and Smelting Company and a number of the more important purely mining companies have been factors in the increase.

The exports of lead in ore, &c., in 1912 are reported as 299,240 pounds, valued at \$8,193. No pig lead was exported.

The total value of the imports of lead and lead products in 1912 was \$1,806,221, including pig lead, bars, sheets, tea lead, &c., valued at \$1,202,001; manufactures of lead valued at \$200,157; litharge and lead pigments, valued at \$404,063.

The total value of the imports of lead and lead products in 1911 was \$1,049,276, being pig lead, &c., \$706,020; manufactures, \$108,012, and litharge and lead pigments, \$235,244.

The average monthly price of lead in Montreal during 1912 was 4.467 cents per pound. This is the producers price for lead in car lots as per quotations kindly furnished by Messrs. Thos. Robertson & Co.

The average monthly price of lead in New York during the year was 4.471 cents and in London £17.929 per long ton, equivalent to 3.895 cents per pound.

The amount of bounty paid during the twelve months ending December 31, 1912, on account of lead production was \$118,425.74 as compared with \$219,557.70 in 1911.

### Nickel.

The mining and smelting of nickel-copper ores in the Sudbury District of Ontario, was carried on with greatly increased output during 1912. The same companies were in operation as in previous years, viz.: The Mond Nickel Company and the Canadian Copper Company operating mines and smelters, and the Dominion Nickel Company, developing and proving ore bodies. It is interesting to note that small shipments of nickel ore were also made from the Alexo Mine at Kelso, in the Nipissing district. This ore was smelted at Victoria Mines.

Considerable changes have been made in some of the details of smelting practice, although the general method remains the same, *i.e.*, the ore is roasted, smelted and converted to a Bessemer matte containing from 77 to 82 per cent of the combined metals, copper and nickel, the matte being shipped to the United States and Great Britain for refining. A portion of the matte made by the Canadian Copper Company is used for the direct production of monel metal, an alloy of nickel and copper, without the intermediate refining of either metal.

The total production of matte in 1912 was 41,925 tons valued by the producers, at the smelters at \$6,303,102, an increase of 9,318 tons, or nearly 20 per cent over the production of 1911. The metallic contents were copper 22,231,725 pounds, and nickel 44,841,542 pounds. The amount of ore smelted was 725,065 tons, which included 1,720 tons from the Alexo mine mentioned above.

The aggregate results of the operations on the nickel ores during the past four years were as follows in tons of 2,000 pounds:—

	1909.	1910.	1911.	1912.
	Tons of 2,000 lbs.	Tons of 2,000 lbs.	Tons of 2,000 lbs.	Tons of 2,000 lbs.
Ore mined.....	451,892	652,392	612,511	737,584
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
	Lbs.	Lbs.	Lbs.	Lbs.
Nickel contained in matte, etc.—				
Exported to Great Britain.....	3,843,763	5,335,331	5,023,393	5,072,867
" United States.....	21,772,635	30,679,451	27,596,578	39,148,993
	25,616,398	36,014,782	32,619,971	44,221,860

The price of refined nickel in New York remained practically constant throughout the year, quotations in the *Engineering and Mining Journal* being for large lots, contract business, 40 to 45 cents per pound except during the early part of May, when 40 to 50 cents was quoted. Retail spot from 50 cents for 500 pound lots up to 55 cents for 200 pound lots. The price for electrolytic is 5 cents higher.

### Iron.

*Iron Ore.*—Complete returns of iron ore production have not yet been received but shipments from Canadian mines in 1912 were probably about 175,000 tons.

The total shipments of iron ore from mines in 1911 were 210,344 short tons, valued at \$522,319 and included 137,399 tons classed as hematite and 72,945 tons as magnetite.

Exports of iron ore from Canada during 1912 were recorded by the Customs Department as 118,129 tons, valued at \$382,005. The exports were chiefly from Bathurst, New Brunswick and Torbrook, Nova Scotia.

Shipments from the Wabana Mines, Newfoundland, in 1912, by the two Canadian companies operating there, were 1,331,912 short tons, of which 956,459 tons were shipped to Sydney and 375,453 tons to the United States and Europe.

*Pig Iron.*—The total production of pig iron in Canadian blast furnaces in 1912 was 1,014,587 tons of 2,000 pounds, valued at approximately \$14,550,999 as compared with 917,535 tons, valued at \$12,307,125 in 1911.

Of the total output in 1912, 21,701 tons were made with charcoal as fuel and 992,886 tons with coke. The classification of the production according to the purpose for which it was intended was as follows: Bessemer 256,191 tons; basic 544,534 tons; foundry and miscellaneous 213,862 tons.

The amount of Canadian ore used during 1912 was 71,588 tons; imported ore 2,019,165 tons; mill cinder, &c., 36,901 tons. The amount of coke used during the year was 1,265,998 tons, comprising 609,183 tons from Canadian coal and 658,815 tons imported coke or coke made from imported coal. There were also used 1,886,748 bushels of charcoal. Limestone flux was used to the extent of 705,613 tons.

In connection with blast furnace operations there were employed 1,358 men and \$993,941 were paid in wages.

The production of pig iron by provinces in 1911 and 1912 was as follows:—

	1911.			1912.		
	Tons.	Value.	Value per Ton.	Tons.	Value.	Value per Ton.
		\$	\$		\$	\$
Nova Scotia .....	390,242	4,682,904	12 00	424,994	6,374,910	*15 00
Quebec.....	658	17,282	26 24			
Ontario .....	526,635	7,606,939	14 44	589,593	8,176,085	13 87
	917,535	12,307,125	13 41	1,014,587	14,550,999	14 34

\*The Nova Scotia producers do not place a selling value upon their pig iron production and the increased value used for Nova Scotia pig iron in 1912 does not mean that there has been an increase in the value as shown but that the value used in 1911 was probably too low.

There was also a production during 1912 in electric furnaces of 7,834 tons of ferro-alloys valued at \$465,225, as compared with 7,507 tons valued at \$376,404 in 1911.

The exports of pig iron during the year are reported as 6,976 tons, valued at \$310,702, an average of \$44.53 per ton. Probably the greater part of this is ferro-silicon and ferro-phosphorus produced respectively at Welland and Buckingham.

There were imported during the year 272,680 tons of pig iron, valued at \$3,512,969 and 19,810 tons of ferro-manganese, &c., valued at \$469,884.

### Asbestos.

The total shipments of asbestos in 1912 exceeded those of 1911 by at least 5 per cent, it being probable that complete returns will show a somewhat higher production and shipments than the figures given below. According to returns so far received, the total output of asbestos was 97,816 tons, the sales 106,520 tons, valued at \$2,959,677, or an average of \$27.79 and stock on hand at the end of the year amounting to 21,686 tons, valued at \$1,021,066. The record indicates an increase in sales and a reduction of stocks on hand.

Shipments were confined to the mines of the Black Lake and Thetford districts; those at East Broughton remaining idle. Operators report that they were handicapped by shortage of labour but since market prices and conditions have greatly improved, 1913 promises to be a very successful year.

The number of men employed in mines and mills during 1912, was 2,755, at a wage cost of \$1,296,655.

The total quantity of asbestos rock sent to mills is reported as 1,514,314 tons, which with a mill production of 97,815 tons, shows an average estimated recovery of about 6.45 per cent.

The following tabulated statement shows the output and sales during 1912, and the stock on hand at the end of the year.

	Output.		Sales.		Stock on hand Dec. 31.		
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
			\$	\$		\$	\$
Crude No. 1.....	1,447 $\frac{3}{4}$	1,928.9	507,904	263 31	864.8	220,789	255 31
" 2.....	3,224	3,669	372,357	101 49	2,719	293,263	107 86
Mill stock No. 1.....	19,072	18,758	843,559	44 97	7,490	383,069	45 13
" 2.....	35,389	43,359	855,902	19 74	6,278	132,349	21 08
" 3.....	38,083	38,805	379,955	9 79	4,334	36,596	8 44
Total asbestos.....	97,815 $\frac{3}{4}$	106,519.9	2,959,677	27. 79	21,685.8	1,021,066	47 08
Asbestic.....		24,740	19,707	0 80			

In the absence of a uniform classification of asbestos of different grades the above subdivisions have been adopted purely on a valuation basis; crude No. 1 comprising material valued at \$200 and upwards, and crude No. 2 under \$200; mill stock No. 1 includes stock valued at from \$30 to \$100; No. 2 from \$15 to \$30; No. 3 under \$15.

Output, sales and stocks in 1911 were as follows:—

	Output:		Sales.		Stock on hand Dec. 31.		
	Tons.	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
			\$	\$		\$	\$
Crude No. 1 ...	1,467.9	1,301.4	342,855	263 45	1,256	327,508	260 75
" 2 .....	3,594.5	3,562.7	402,107	112 87	3,222.7	404,198	125 42
Mill stock No. 1.....	20,379	18,315	916,678	50 05	8,471	380,570	44 93
" 2.....	39,289	47,826	991,370	20 73	17,794	365,458	20 54
" 3.....	31,572	30,388	269,052	8 85	3,823	31,367	8 20
Total asbestos.....	96,302.4	101,393.1	2,922,062	28 82	34,566.7	1,509,101	43 66
Asbestic.....		26,021	21,046	0 81			

Exports of asbestos during the twelve months ending December 31, 1912, are reported as 83,008 tons, valued at \$2,349,353 as against 75,120 tons, valued at \$2,067,259 exported in 1911.

### Coal and Coke.

With the exception of a partial interruption of work, on Vancouver Island during the last three months of the year due to a dispute of coal miners, coal mining was actively prosecuted in all important coal mining districts during 1912. Thus in contrast with 1911 when the output was seriously reduced by a long continued strike in Southern Alberta and British Columbia the production in 1912 shows a very large increase.

The total production of coal during the past year comprising sales and shipments, colliery consumption, and coal used in making coke, &c., was 14,699,953 short tons, valued at \$36,349,299 as against 11,323,388 tons valued at \$26,467,646 in 1911 and 12,909,152 tons valued at \$30,909,779 in 1910. The 1912 production exceeded all former outputs. Nova Scotia shows an increase of nearly 8 per cent, British Columbia an increase of over 26 per cent though not quite up to the 1910 production, Alberta an increase of about 128 per cent over 1911, and 19 per cent over 1910. The other provinces show comparatively little change. The figures for the Yukon represent the production from the Tantalus field, no record having been received of the output below Dawson.

The production by provinces during the past three years is given below:—

Province.	1910.		1911.		1912.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Nova Scotia.....	6,431,142	12,919,705	7,004,420	14,071,379	7,791,440	17,391,608
British Columbia.....	3,330,745	10,408,580	2,542,532	7,945,413	3,220,859	10,065,311
Alberta.....	2,894,499	7,065,736	1,511,036	3,979,264	*3,446,349	8,471,126
Saskatchewan.....	181,156	293,923	206,779	347,248	196,325	327,054
New Brunswick.....	55,455	110,910	55,781	111,562	42,730	85,560
Yukon Territory.....	16,185	110,925	2,840	12,780	2,160	8,640
Total.....	12,909,152	30,909,779	11,323,388	26,467,646	14,699,953	36,349,299

\* Statistics furnished by Mr. John Stirling, Inspector of Mines, Alberta.

The exports of coal in 1912 were 2,127,133 tons, valued at \$5,821,593 as compared with exports of 1,500,639 tons valued at \$4,357,074 in 1911, an increase in exports of 626,494 tons.

Imports of coal during the year included bituminous, round and run of mine 8,491,840 tons, valued at \$16,846,727; bituminous slack 1,919,953 tons, valued at \$2,550,922, and anthracite 4,184,017 tons, valued at \$20,080,388, or a total of 14,595,810 tons, valued at \$39,478,037.

The imports in 1911 were bituminous, run of mine, 8,905,815 tons; bituminous slack 1,632,500 tons, and anthracite 4,020,577 tons, or a total of 14,558,892 tons.

The apparent consumption of coal in 1912 was thus 27,168,630 tons as against an apparent consumption in 1911 of 24,381,641 tons.

*Coke.*—The total production of oven coke in 1912 was 1,411,219 tons, valued at \$5,352,520, as compared with a production of 935,651 tons, valued at \$3,630,410 in 1911. A considerable percentage of this is made from imported coal.

By provinces the production in 1912 was: Nova Scotia 625,908 tons, Ontario 379,354 tons, Alberta 105,684 tons, and British Columbia 299,773 tons, as against a production in 1911 of: Nova Scotia 557,554 tons, Ontario 259,554 tons, Alberta 36,216 tons, and British Columbia 82,327 tons.

The quantity of coke imported during the calendar year 1912 was 628,174 tons, valued at \$1,702,356, as compared with imports of 751,389 tons, valued at \$1,843,248 in 1911.

## Petroleum and Natural Gas.

The annual output of crude petroleum from Canadian oil wells still continues to decline, the production having steadily fallen off during the past five years. Twelve years ago Canada produced about 50 per cent. of the domestic consumption of petroleum and its products, while at the present time not over 5 per cent of our consumption is derived from Canadian oil wells. The output in 1912 was 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. The average price per barrel at Petrolea in 1912 was \$1,418 or considerably higher than the average price in 1911, which was \$122 $\frac{3}{4}$ .

The price of crude oil increased steadily through the year, rising from a minimum of \$1.24 in January to a maximum of \$1.65 in the latter part of December.

These statistics of production have been furnished by the Department of Trade and Commerce and represent the quantities of oil on which bounty was paid, the total bounty payments being \$127,751.39 in 1912 and \$152,823.29 in 1911.

The production in Ontario by districts as furnished by the supervisor of petroleum bounties, was in 1912 as follows in barrels: Lambton, 150,272; Tilbury and Romney, 44,727; Bothwell, 34,486; Dutton, 4,335, and Onondago, 7,115; or a total of 240,935 barrels. This agrees very closely indeed with the production in Ontario on which bounty was paid, viz., 240,657 barrels. In 1911 the production by districts was: Lambton, 184,450; Tilbury and Romney, 48,708; Bothwell, 35,244; Dutton, 6,732; and Onondago, 13,501.

The production in New Brunswick in 1912 was 2,679 barrels, as against 2,461 barrels in 1911 and 1,485 barrels in 1910.

Exports entered as crude mineral oil in 1912 were 18,500 gallons valued at \$3,964 and oil refined, 36,945 gallons, valued at \$6,147. There was also an export of naphtha and gasoline of 25,791 gallons, valued at \$4,261.

The decreased production has been accompanied, particularly during the past two or three years, by a very large increase in imports of petroleum and petroleum products. The total imports of petroleum oils crude and refined in 1912 was 186,787,484 gallons, valued at \$11,848,533 in addition to 2,144,006 pounds of wax and candles valued at \$119,520. The oil imports included crude oil, 120,082,405 gallons, valued at \$3,996,842; refined illuminating oils, 14,748,218 gallons, valued at \$1,022,735; 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 \$413,477.

The total imports in 1911 were 116,892,689 gallons of petroleum oils crude and refined, valued at \$6,009,730 and 1,959,737 pounds of wax and candles, valued at \$106,424. The oil imports comprised crude oil, 71,653,251 gallons, valued at \$2,188,870; refined and illuminating oils, 13,690,962 gallons, valued at \$722,403; gasoline, 23,338,779 gallons, valued at \$1,976,032; lubricating oils, 5,308,917 gallons, valued at \$806,452, and other petroleum products, 2,900,786 gallons, valued at \$315,973.

The principal increases in imports have been in crude oil now used so extensively in British Columbia by the railways and in gasoline.

*Natural gas.*—While the production of petroleum has been declining, the output and use of natural gas has been steadily increasing. The southern portion of Ontario has for many years been the principal source of gas, but the Albert county field in New Brunswick is now an important producer while large developments are taking place in Alberta with such a rapid increase in output of gas that this province may soon take first place as a producer.

The total production in Canada in 1912 was approximately 15,015 million feet, valued at \$2,311,126 and includes 12,534 million in Ontario, valued at \$2,045,488 and 2,481 million feet in Alberta, value at \$265,638. New Brunswick returns have not yet been received. The production in 1911 was reported as 11,644 million feet,

valued at \$1,907,678, including 10,864 million feet in Ontario, valued at \$1,807,513 and 780 million feet in Alberta, valued at \$110,165. These values represent as closely as can be ascertained the value received by the owners or operators of the wells for gas produced and sold or used. The values do not represent what consumers have to pay since in many cases the gas is resold once or twice by pipe line companies before reaching the consumer.

### Cement.

The statistics of production of cement given herewith, will be subject to but slight variation when complete returns shall have been received. Estimates have had to be made for two firms that had not yet reported but the totals given are probably within a half of one per cent of the final returns. The record for the past year is of particular interest, in view of the undoubted widespread demand for cement. Congestion of freight traffic no doubt militated somewhat against the eastern mills supplying western requirements and in order to relieve the situation the Federal government reduced the duty one-half on importations during the period from June 12 to October 31, inclusive. Statistically the important features of the industry during the year were an increase of over 26 per cent in the Canadian output, an increase of over 116 per cent in imports and an increase of over 34 per cent in total consumption. Canadian mills supplied 83.2 per cent of the consumption as against 90 per cent in 1911.

The total quantity of Portland cement, including slag cement and natural Portland, made in 1912, was 7,169,184 barrels. The quantity of Canadian cement sold or used was 7,120,787 barrels, valued at the mills at \$9,083,216, or an average of \$1.27½ per barrel. The total imports of cement were 5,020,446 cwt. equivalent to 1,434,413 barrels of 350 pounds each, and valued at \$1,969,529, or an average of \$1.37 per barrel. The total consumption of Portland cement therefore, neglecting a small export of Canadian cement, was approximately 8,555,200 barrels.

Detailed statistics of production during the past four years, are shown as follows:—

	1909.	1910.	1911.	1912.
	Brls.	Brls.	Brls.	Brls.
Portland Cement sold . . . . .	4,067,709	4,753,975	5,692,915	7,120,787
"    manufactured . . . . .	4,146,708	4,396,282	5,677,539	7,169,184
Stock on hand Jan. 1st . . . . .	1,098,239	1,189,731	918,965	904,165
"    Dec. 31 . . . . .	1,177,238	832,038	903,589	952,562
Value of cement sold . . . . .	\$5,345,802	\$6,412,215	\$7,644,537	\$9,083,216
Wages paid . . . . .	1,266,128	1,409,715	2,103,838	2,591,090
Men employed . . . . .	2,498	2,220	3,010	3,379

The average price per barrel at the works in 1912 was \$1.27½ as compared with \$1.34 in both 1911 and 1910.

The imports of cement already shown included 130,530 barrels from Great Britain, 1,280,958 barrels from the United States, 6,107 barrels from Belgium, 15,857 barrels from Hong Kong, and 911 barrels from other countries. The average price per barrel was \$1.37 as against an average value of \$1.26 on imports in 1911, in which year the total imports were 661,916 barrels valued at \$834,879. These included 190,506 barrels from the United Kingdom, 441,317 barrels from the United States, and 30,093 barrels from other countries.



The consumption of Portland cement in Canada during each of the past five years is shown as follows:—

ANNUAL CONSUMPTION OF PORTLAND CEMENT.

Calendar Year.	Canadian.		Imported.		Total.
	Brls.	%	Brls.	%	Brls.
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.....	7,120,787	83.2	1,434,413	16.8	8,555,200

Exports of Products of the Mine and Manufactures of Mine Products,  
Year 1912.

(Compiled from Trade and Navigation Monthly Statements.)

Products.	Quantity.	Value.
		\$
Arsenic.....	Lbs. 3,847,906	101,310
Asbestos.....	Tons. 83,008	2,349,353
Barytes.....	Cwt. 68	114
Coal.....	Tons. 2,127,133	5,821,593
Feldspar.....	" 12,779	44,114
Gold.....	"	10,014,654
Gypsum.....	Tons. 364,643	423,208
Copper, fine in ore, etc.....	Lbs. 76,542,643	8,800,267
" black or coarse and in pigs.....	" 1,945,921	236,212
Lead, in ore, etc.....	" 299,240	8,193
" pig, etc.....	"	
Nickel, in ore, etc.....	" 44,221,860	4,661,758
Platinum.....	Ozs. 92	3,821
Silver.....	" 34,911,922	19,494,416
Mica.....	Lbs. 895,338	334,054
Mineral Pigments.....	" 6,032,640	34,513
Mineral Water.....	Galls. 9,608	4,667
Oil, mineral, crude, etc.....	" 18,500	3,964
Oil, refined.....	" 36,945	6,147
Ores—		
Antimony.....	Tons.	
Corundum.....	" 1,928	205,819
Iron.....	" 118,129	382,005
Manganese.....	" 10	300
Other ores.....	" 15,573	530,270
Phosphate.....	"	
Plumbago.....	Cwt. 33,074	70,763
Pyrites.....	Tons. 5,938	11,935
Salt.....	Lbs. 289,150	3,723
Sand and gravel.....	Tons. 660,090	459,952
Stone, ornamental.....	" 2,339	1,826
" building.....	" 108,516	28,795
" for manufacture of grindstones.....	"	
Other products of the mine.....		311,851
Total mine products.....		54,349,597

Exports of the Products of the Mine and Manufactures of Mine Products,  
Year 1911—*Concluded*.

(Compiled from Trade and Navigation Monthly Statements.)

Products.	Quantity.	Value.
MANUFACTURES.		\$
Agricultural Implements—		
Mowing machines..... No.	16,213	562,502
Reapers..... "	3,288	195,156
Harvesters..... "	15,341	1,634,208
Ploughs..... "	13,580	412,460
Harrows..... "	4,734	100,579
Hay rakes..... "	6,646	199,092
Seeders..... "	70	7,040
Threshing machines..... "	761	214,499
Cultivators..... "	5,059	100,043
All other..... "		1,964,071
Parts of..... "		577,895
Bricks..... M.	694	8,493
Cement..... "		2,436
Clay, manufactures of..... "		256
Coke..... Tons	57,744	252,763
Acetate of lime..... Lbs.	14,691,678	312,262
Calcium carbide..... "	7,549,137	230,603
Phosphorus..... "	543,620	66,806
Earthenware and all manufactures of..... "		10,001
Grindstones, manufactured..... "		26,535
Gypsum and plaster ground..... "		6,495
Iron and steel—		
Stoves..... No.	1,078	15,214
Gas buoys and parts of..... "		83,583
Castings, N.E.S..... "		27,113
Pig iron..... Tons.	6,976	310,703
Machinery (Linotype Machines)..... "		6,555
" N.E.S..... "		474,996
Sewing machines..... No.	24,158	259,617
Typewriters..... "	4,025	277,583
Scrap iron and steel..... Cwt.	332,641	145,250
Hardware—Tools, &c..... "		91,731
" N.E.S..... "		48,474
Steel and manufactures of..... "		785,731
Lime..... "		35,097
Aluminum in bars..... Cwt.	182,857	2,002,363
" Manufactures of..... "		10,898
Metals, N.O.P..... "		261,752
Naptha and Gasoline..... Galls.	25,791	4,261
Oil, N.E.S..... "	397,039	119,686
Plumbago, manufactures of..... "		58,920
Stone, ornamental..... "		2,458
" Building..... "		163
Tar..... "		76,261
Tin, manufactures of..... "		69,692
Automobiles..... No.	3,028	2,013,784
" parts of..... "		105,330
Bicycles..... No.	101	9,058
" parts of..... "		54,322
Total manufactures.....		14,235,680
Grand total.....		68,585,286

## ANNUAL MINERAL PRODUCTION IN CANADA SINCE 1886.

Year.	Value of production.	Value per capita.	Year.	Value of production.	Value per capita.
	\$	\$ cts.		\$	\$ cts.
1886.....	10,221,255	2 23	1899.....	49,234,005	9 27
1887.....	10,321,331	2 23	1900.....	64,420,877	12 04
1888.....	12,518,894	2 67	1901.....	65,797,911	12 16
1889.....	14,013,113	2 96	1902.....	63,231,836	11 36
1890.....	16,763,353	3 50	1903.....	61,740,513	10 83
1891.....	18,976,616	3 92	1904.....	60,082,771	10 27
1892.....	16,623,415	3 39	1905.....	69,078,999	11 49
1893.....	20,035,082	4 04	1906.....	79,286,697	12 81
1894.....	19,931,158	3 98	1907.....	86,865,202	13 75
1895.....	20,505,917	4 05	1908.....	85,557,101	13 16
1896.....	22,474,256	4 35	1909.....	91,851,441	13 70
1897.....	28,485,023	5 49	1910.....	106,823,623	14 93
1898.....	38,412,431	7 32	1911.....	103,220,994	14 42
			1912.....	133,127,489	18 01