

CANADA
DEPARTMENT OF MINES
MINES BRANCH

HON. W. TEMPLEMAN, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;
EUGENE HAANEL, PH.D., DIRECTOR.

PRELIMINARY REPORT

ON THE

MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR

1909

Prepared by

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

SIR,—I beg to submit herewith, the annual preliminary report on the mineral production of Canada in 1909, including a table showing the revised statistics of production in 1908.

The figures of production given for 1909 are, of necessity, subject to revision, since at this time, in many instances, producers of metallic ores have not themselves received complete returns from smelters. For these and other reasons, estimates have to be made. It is hoped, however, that this preliminary statement may serve to give a general idea of the gross output of the mineral industry during the year.

When more complete information is available, the annual report will be prepared. It will contain the final statistics in greater detail, as well as information relating to exploration, development, prices, markets, imports, exports, etc.

Special acknowledgments are due to the many mining operators and managers or owners of smelting establishments who have promptly furnished statements of their production.

I am, Sir, your obedient servant,

JOHN McLEISH.

Division of Mineral Resources and Statistics,
February 24, 1910.

THE MINERAL PRODUCTION OF CANADA IN 1908.

(Revised).

Product.	Quantity. (a)	Value. (b)
METALLIC.		
Antimony ore (exports)	Tons. 148	5,443
Copper (c)	Lbs. 63,702,873	8,413,876
Gold	Ozs. 476,112	9,842,105
Pig iron from Canadian ore (d)	Tons. 99,420	1,664,302
Lead (e)	Lbs. 43,195,733	1,814,221
Nickel (f)	" 19,143,111	8,231,538
Cobalt	"	113,423
Silver (g)	Ozs. 22,106,233	11,686,239
Zinc ore	Tons. 452	3,215
Total		41,774,362
NON-METALLIC.		
Arsenic		58,566
Asbestos	Tons. 66,543	2,555,361
Asbestic	" 24,225	17,974
Calcium carbide	" 6,864	417,150
Chromite	" 7,225	82,008
Coal	" 10,886,311	25,194,573
Corundum	" 1,089	100,398
Feldspar	" 7,377	21,099
Graphite	" 251	5,565
" artificial	" 214	
Grindstones	" 3,843	48,128
Gypsum	" 340,964	575,701
Limestone for flux in iron furnaces	" 418,661	289,705
Magnesite	" 120	840
Mica	" 436	139,871
Mineral pigments—Barytes	" 4,312	19,021
" Ochres	" 4,746	30,440
Mineral water		151,953
Natural gas (h)		1,012,660
Peat	Tons. 60	180
Petroleum (i)	Brls. 527,987	747,102
Phosphate	Tons. 1,596	14,794
Pyrites	" 47,336	224,824
Quartz	" 44,741	52,330
Salt	" 79,975	378,798
Talc	" 1,016	3,043
Tripolite	" 30	195
Total		32,142,784

(a) Quantity of product sold or shipped.

(b) The metals, copper, lead, nickel and silver are for statistical and comparative purposes valued at the final average value of the refined metal in New York. Pig iron is valued at the furnace and non-metallic products at the mine or point of shipment.

(c) Copper contents of ore, matte, etc., at 13.208 cents per pound.

(d) The total production of pig iron in Canada in 1908 was 630,335 short tons valued at \$8,111,194, of which it is estimated about 99,420 tons valued at \$1,664,302 should be attributed to Canadian ore and 531,415 tons valued at \$6,446,892 to the ore imported.

(e) Lead contents of ore, matte, etc., at 4.200 cents per lb.

(f) Nickel contents of matte shipped at 43 cents per lb.

(g) Silver contents of ore, etc., at 52.864 cents per lb.

(h) Gross return from sale of gas.

(i) Deduced from the amount paid in bounties and valued at \$1.41½ per barrel.

THE MINERAL PRODUCTION OF CANADA IN 1908—*Concluded.*

(Revised.)

Product.	Quantity. (a)	Value. (b)
STRUCTURAL MATERIAL AND CLAY PRODUCTS.		\$
Cement, natural.....	Brls. 1,044	815
" Portland.....	" 2,665,289	3,709,139
Clay Products—		
Bricks, Common.....	No. 408,305,768	2,982,255
" Pressed.....	" 53,480,764	517,180
" Paving.....	" 3,719,961	59,456
" Moulded and ornamental.....		18,535
Fireclay and fireclay products.....		110,302
Fire-proofing and architectural terra-cotta.....		170,211
Pottery.....		200,541
Sewer pipe.....		514,362
Tiles, drain.....	No. 20,100,261	298,561
Lime.....	Bush. 3,601,468	712,947
Stone—		
Building stone.....		1,800,000
Flagstones.....	No. 61,200	6,293
Granite.....	Tons. 282,320	282,320
Slate.....	Squares. 2,950	13,496
Sand lime-brick.....	No. 17,288,260	152,856
Sand and gravel (exports).....	Tons. 298,954	161,387
Total, structural material, etc.....		11,710,656
" all other non-metallic.....		32,142,784
Total, non-metallic.....		43,853,440
" metallic.....		41,774,362
Estimated value of mineral products not reported.....		300,000
Total value, 1908.....		85,927,802

Annual Mineral Production in Canada since 1886.

1886.....	\$ 10,221,255	1898.....	\$ 38,412,431
1887.....	10,321,331	1899.....	49,234,005
1888.....	12,518,894	1900.....	64,420,983
1889.....	14,013,113	1901.....	65,804,611
1890.....	16,763,353	1902.....	63,211,634
1891.....	18,976,616	1903.....	61,740,513
1892.....	16,623,415	1904.....	60,073,897
1893.....	20,035,082	1905.....	69,525,170
1894.....	19,931,158	1906.....	79,057,308
1895.....	20,505,917	1907.....	86,865,202
1896.....	22,474,256	1908.....	85,927,802
1897.....	28,485,023		

PRELIMINARY REPORT ON THE MINERAL PRODUCTION OF CANADA
IN 1909.

(Subject to revision.)

Product.	Quantity. (a)	Value. (b)
METALLIC.		\$
Copper (c).....	Lbs. 54,061,106	7,018,213
Gold.....	.....	9,790,000
Pig iron from Canadian ore (d).....	Tons. 149,444	2,222,215
Iron ore (exports).....	" 21,956	61,965
Lead (e).....	Lbs. 45,857,424	1,959,488
Nickel (f).....	" 26,282,991	9,461,877
Cobalt.....	.....	* 66,319
Silver (g).....	Ozs. 27,878,590	14,358,310
Zinc.....	.....	250,000
Total value, metallic.....	.....	45,188,387
NON-METALLIC.		
Arsenic.....	Tons. 1,129	64,100
Asbestos.....	" 63,349	2,284,587
Asbestic and asbestic sand.....	" 23,951	17,188
Chromite (exports).....	" 1,794	20,858
Coal.....	" 10,411,955	24,431,351
Corundum.....	" 1,491	157,398
Feldspar.....	" 10,286	35,694
Graphite.....	" 730	37,624
Grindstones.....	" 3,965	50,944
Gypsum.....	" 468,551	667,816
Magnesite.....	" 330	2,508
Mica.....	"	154,106
Mineral pigments— Ochres and Barytes.....	" 4,119	29,213
Mineral waters.....	.....	177,304
Natural gas (h).....	.....	1,205,943
Petroleum (i).....	Brls. 420,755	559,604
Phosphate (apatite).....	Tons. 597	4,618
Pyrites.....	" 57,038	196,312
Quartz.....	" 50,541	63,032
Salt.....	" 84,037	415,219
Talc.....	" 4,506	12,172
Total value, non-metallic.....	.....	30,587,591

(a) Quantity of product sold or shipped.

(b) The metals, copper, lead, nickel and silver are for statistical and comparative purposes valued at the final average value of the refined metal in New York. Pig iron is valued at the furnace and non-metallic products at the mine or point of shipment.

(c) Copper contents of smelter products and ores exported, at 12.982 cents per pound.

(d) The total production of pig iron in Canada in 1909 was 757,162 tons valued at \$9,581,864, of which it is estimated 607,718 tons valued at \$7,359,649 should be credited to imported ores.

(e) Refined lead and lead contained in base bullion exported at 4.273 cents per pound.

(f) Nickel contents of matte produced, at 36 cents per pound (the lowest quotation for nickel in New York less 10 per cent). The value of the nickel contained in matte was, as returned by the operators, \$2,810,748 or an average per pound of 10.7 cents.

(g) Estimated recoverable silver at 51.503 cents per ounce.

(h) Gross returns for sale of gas.

(i) Quantity on which bounty was paid and valued at \$1.33 per barrel.

* Additional returns increase this item to \$90,950.

PRELIMINARY REPORT ON THE MINERAL PRODUCTION OF CANADA
IN 1909—*Concluded.*

(Subject to revision.)

Product.	Quantity. (a)	Value. (b)
STRUCTURAL MATERIAL AND CLAY PRODUCTS.		\$
Cement, Portland..... Brls.	4,010,180	5,266,008
Clay products—		
Brick.....		4,200,000
Sewer pipe, fireclay, drain tile, etc.....		1,300,000
Lime..... Bush.	5,163,874	1,049,473
Sand and gravel (exports)..... Tons.	481,584	256,166
Stone—		
Granite.....		340,047
Limestone for flux in blast furnaces.....		328,091
Marble, limestone and sandstone.....		1,600,000
Total structural material and clay products.....		14,339,785
All other non-metallic.....		30,587,591
Total value, non-metallic.....		44,927,376
Total value, metallic.....		45,188,387
Estimated value of mineral products not reported.....		300,000
Total value, 1909.....		90,415,763

REMARKS.

The preliminary table of mineral production in Canada given herewith, shows the total value of the production in 1909 to have been in excess of \$90,000,000. Compared with the total value for 1908, which was \$85,927,802, the production of 1909 shows an increase of a little over 5 per cent. The actual increase or betterment in the mining industry in 1909 was, however, somewhat greater than is indicated by this comparison. Owing to a slight change in the method of compiling statistics of the quantities of metals produced the values for 1909 are somewhat less than they would otherwise have been.

Of the total production in 1909, \$45,188,387—or 49·9 per cent of the total—is credited to the metals, and 44,927,376—or 49·7 per cent—to non-metallic products; a small allowance being made for mineral products not reported. Amongst the individual products coal is still the most important, its value constituting 27 per cent of the total; silver occupies second place with 15·9 per cent; gold and nickel come next with 10·8 and 10·5 per cent respectively; copper contributes 7·8 per cent; cement 5·8 per cent; clay products 6·1 per cent; asbestos 2·5 per cent.

The metals nearly all showed an increased output compared with 1908. The average prices remained fairly steady throughout the year, differing but slightly from those of the year before: copper, nickel and silver, being lower in price, while lead, spelter and tin, were higher.

A comparison of New York average monthly prices is shown herewith.

Average monthly prices of metals, 1906-09.

	1906.	1907.	1908.	1909.
	Cts.	Cts.	Cts.	Cts.
Copper.....	19·278	20·004	13·208	12·982
Lead.....	5·657	5·325	4·200	4·273
Nickel.....	41·64	45·000	43·000	40·000
Silver.....	66·791	65·327	52·864	51·503
Spelter.....	6·198	5·962	4·720	5·503
Tin.....	39·819	38·166	29·465	29·725

In the non-metallic class there is a larger number of products showing increases than those showing decreases. The coal production was seriously reduced by the labour troubles in Nova Scotia. The asbestos shipments were somewhat less and petroleum production shows a considerable falling off. In nearly all of the other items, however, there were important increases: particularly in corundum, gypsum, natural gas, salt, and in the structural materials, cement, clay products, lime and stone.

Smelter production.—General statistics of smelter production were collected by this Branch for the first time in 1908 and the aggregate results of these operations during the past two years are shown in the accompanying table. It should be explained also that the figures include the results of the treatment of a small quantity of imported ores. The results of the operations at the smelter at Northport, Wash.,—treating chiefly Canadian ores—have been included.

Smelter and Refinery Production in Canada, 1908 and 1909.

		1908.		1909.	
		Refined Products.	Metals contained in matte, blister, base bullion, and speiss exported.	Refined Products.	Metals contained in matte, blister, base bullion, and speiss exported.
Gold.....	Ozs.	15,436	203,300	18,241	200,129
Silver.....	"	11,168,689	3,271,899	14,242,545	4,845,920
Lead.....	Lbs.	36,549,274	1,116,792	41,883,614	3,973,810
Copper.....	"		51,965,289		53,328,583
Copper sulphate.....	"	203,379		51,405	
Nickel.....	"		19,506,251		27,041,857
Cobalt.....	"		692,170		1,721,083
White arsenic.....	"	1,431,052		2,253,087	
Arsenic.....	"		436,787		1,074,516

The total ore charged to the furnaces in 1909 was 2,377,780 tons, of which slightly over 40 000 tons were imported. The smelter products exported for refining included, in 1908,

copper matte 7,649 tons; blister copper 15,418 tons; Bessemer nickel-copper matte 21,210 tons and silver-cobalt-nickel speiss 1,326 tons. In 1909 these smelter products were base bullion 2,010 tons; copper matte 11,597 tons; blister copper 14,239 tons; Bessemer nickel-copper matte 25,845 tons; silver-cobalt-nickel speiss 2,660 tons.

Gold.—A preliminary estimate shows a slight decrease in gold production in 1909. The total production in 1908 was \$9,842,105, to which the Yukon district contributed \$3,600,000; British Columbia \$5,929,880; Nova Scotia \$244,799. In 1909 the Yukon shows a further increase, the value of the gold being estimated at \$3,960,000. The total gold exports on which royalty was paid, were, according to the records of the Interior Department, during the calendar year, 239,766·35 ounces.

Complete statistics are not yet available as to the gold production in British Columbia but the returns received appear to indicate a reduced output. The production in Nova Scotia will not differ much from that of the previous year.

Silver.—The rapid growth of Canada's silver production which has taken place during the past few years, continued during 1909. Increased production is reported from both British Columbia and Ontario. In the first mentioned Province the silver is recovered with the lead from the galena ores of that province, of which there was an increased production in 1909. The metal also constitutes an important value in the gold-copper-silver ores smelted.

In British Columbia silver is recovered as fine metal at Trail and is contained in the matte and blister exported. In Ontario, where the production is practically all from the Cobalt district, a portion of the ores (8,384 tons in 1909) is treated in Canadian metallurgical works producing silver bullion, white arsenic, and a speiss containing silver, cobalt, nickel, etc.; the balance of the ore being exported for treatment abroad. The total production of recoverable silver in Canada is estimated at 27,878,590 ounces valued at \$14,358,310, the average price of silver for the year being 51·503 cents.

The price of refined silver varied between a maximum of 53 $\frac{7}{8}$ cents per ounce on May 5, and a minimum of 50 $\frac{1}{4}$ on March 3.

The production from the Cobalt district again shows a considerable increase over the previous year, but not so large an advance as was made in 1908 over 1907. According to returns received from 31 shipping mines, there were shipped during 1909 about 28,042 tons of ore and 2,967 tons of concentrates, a total tonnage of 31,009. The silver contents of ore shipped are returned as 22,581,788 ounces or an average of 805·284 ounces per ton and for the concentrates shipped 3,639,475 ounces or an average of 1,226·651 ounces per ton. Bullion shipped from the mines contained 143,440 fine ounces of silver.

The total silver contents of ore, concentrates and bullion shipped from the mines was 26,364,703 ounces. The mine owners receive payment for only 93 to 98 per cent of the silver contents; and in 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 25,128,590 ounces, and valued at \$12,941,978. Payments for cobalt contents were reported as \$90,750, the total value of the year's output was a little over \$13,000,000 without deductions for freight and treatment charges.

The number of men employed in shipping mines was reported as 2,768, and wages paid \$2,396,742. Incomplete returns of concentration showed 127,271 tons of ore treated, producing 3,213 tons of concentrates.

In 1908 the shipments were 25,682 tons of ore and concentrates containing 19,398,545 ounces of silver, or an average of 755 ounces per ton.

The exports of silver in 1909, for the whole of Canada, as reported by the Customs Department, were 31,126,504 ounces valued at \$15,719,909.

Copper.—Although refined copper is not produced in Canada, the copper ores are mostly reduced to matte or blister copper carrying additional values in the precious and other metals. Some copper pyrites ore is mined in Quebec province, from which the copper is recovered after the ore has been used as a source of sulphur, and a small quantity of copper ore is exported from British Columbia coast mines to United States smelters for treatment.

Statistics are not available at the present time to show the total quantity of copper contained in ores shipped from the mines. The total production of copper, however, contained in blister and matte produced and estimated as recoverable from ores exported, was in 1909 approximately 54,061,106 pounds. In 1908 the production of copper estimated on the same basis was 52,928,386 pounds, an increased production of about 2 per cent being, therefore, shown in 1909.

Of the production in 1909, Ontario is credited with 15,746,699 pounds and British Columbia with 37,314,407 pounds. The latter figure may be subject to more or less variation as complete returns had not been received of all ore exported.

The New York price of electrolytic copper varied between the limits of 12 cents and 14½ cents per pound, the average monthly price being 12·982 as compared with an average monthly price of 13·208 cents in 1908.

The total exports of copper contained in ore matte and blister, according to Customs Department returns, were 54,447,750 pounds, valued at \$5,832,246.

Lead.—The total production in 1909 of pig and manufactured lead and lead contained in base bullion exported was 45,857,424 pounds valued at the average price of refined lead in New York at \$1,959,488.

It is possible that there was also some lead ore or lead concentrates exported, of which no record has yet been received. Custom Department statistics indicate such an export of upwards of 2,000,000 pounds.

The production of refined lead, and lead contained in base bullion exported in 1908, was 37,666,066.

Customs Department statistics in this year also indicate an export of lead ore or concentrates, and the total production in 1908, of lead available for consumption was estimated at 40,891,448 pounds, an increased production in 1909 is, therefore, shown of from 5,000,000 to 7,000,000 pounds. This production in both years was all from the province of British Columbia.

The total amount of bounty paid during the twelve months ending December 31, 1909, on account of lead production was \$346,527·98.

The exports of lead in ore, concentrates, base bullion, etc., during the year were 3,116 tons and of pig lead 5,650 tons or a total of 8,766 tons. From 14,000 tons to 15,000 tons of domestic production were, therefore, available for home consumption.

The price of lead in New York during 1909 averaged 4·273 cents per pound, varying between 3·95 cents in March and 4·70 cents in December. In 1908 the average was 4·200 cents per pound. The London price per long ton varied between £12 10s. and £13 16s., averaging £13·049.

Nickel.—The nickel industry was particularly active during 1909, the largest production on record being shown. Although important quantities of nickel are contained

in the cobalt silver ores of Coleman township, the Sudbury district continues to be the chief source of nickel production. The same companies are carrying on active operations: the Mond Nickel Co. at Victoria Mines and the Canadian Copper Co. at Copper Cliff. The ore is first roasted and then smelted 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.

The total production of matte in 1909 was 25,845 tons, valued at the furnaces at \$3,913,012. The metallic contents were copper 15,746,699 pounds, nickel 26,282,991 pounds.

The aggregate results of the operations on the Sudbury district nickel-copper ores during the past four years are as follows:—

	1906.	1907.	1908.	1909.
	Tons of 2,000 lbs.	Tons of 2,000 lbs.	Tons of 2,000 lbs.	Tons of 2,000 lbs.
Ore mined.....	343,814	351,916	409,551	451,892
Ore smelted.....	340,059	359,076	360,180	462,336
Bessemer matte produced.....	20,364	22,041	21,197	25,845
" shipped.....	20,310	22,025	21,210	.....
Copper contents of matte shipped.....	5,265	6,996	7,503	7,873
Nickel ".....	10,745	10,595	9,572	13,141
Spot value of matte shipped.....	\$4,628,011	\$3,239,382	\$2,930,989	\$3,913,012
Wages paid.....	1,117,420	1,278,694	1,286,265	1,234,903
Men employed.....	1,417	1,660	1,690	1,735

Exports of nickel contained in ore, matte, etc., as compiled from Customs reports, were for the twelve months ending December 31, as follows:—

	1906.	1907.	1908.	1909.
	Pounds.	Pounds.	Pounds.	Pounds.
To Great Britain.....	2,716,892	2,518,338	2,554,486	3,843,763
To United States.....	17,936,953	16,857,997	16,865,407	21,772,635
	20,653,845	19,376,335	19,419,893	25,616,398

Nickel contained in silver cobalt ores:—The mine owners received no payment for nickel contents and complete statistics are not available as to the total quantity of nickel contained in these ores of which about 31,009 tons were shipped during 1909. Of the total shipments, 8,384 tons were treated in Canadian metallurgical works at Copper Cliff, Deloro and Thorold, producing silver bullion and white arsenic, the remaining speiss or residues amounted to 2,660 tons and contained silver, cobalt, nickel and arsenic, the nickel contents totalling 758,966 pounds and the cobalt contents 1,721,083 pounds.

The price of refined nickel in New York was quoted at from 40 to 50 cents per pound, the quotations in December being "large lots, contract business 40 to 45 cents per pound; Retail spot from 50 cents for 2,000 pound lots up to 55 cents for 500 pound lots. The price for electrolytic is 5 cents higher."

Nickel is quoted on the London market at prices equivalent to, or slightly in excess of those in New York.

Iron ore.—The total shipments of iron ore from mines in Canada in 1909 were 268,043 short tons, valued at \$659,120, as compared with 238,082 tons valued at \$568,189 in 1908. The shipments in 1909 may be classified as magnetites 73,420 tons; hematite 190,473 tons; bog ore 3,330 tons; titaniferous magnetite (sand) for experimental purposes 820 tons. In 1908 the ores shipped included magnetite 49,946 tons; hematite 173,164 tons; carbonate ore 4,369 tons; bog ore 10,103 tons.

Exports of ore from Canada during 1909, as recorded by the Customs Department were 21,956 tons valued at \$61,965.

Although not a portion of the Dominion of Canada, it may be of interest to state the iron ore shipments from Newfoundland during 1909. The two Canadian companies operating the Wabana mines shipped during the year 991,115 gross tons or 1,110,049 short tons, of which 697,068 tons were shipped to Sydney and 412,981 tons to the United States and Europe.

Pig Iron.—An increase of 20 per cent is shown in the production of pig iron in Canada in 1909 as compared with 1908, despite the fact that the Londonderry furnace was out of commission during the whole year. The total production during 1909 was 757,162 short tons valued at \$9,581,864 as compared with 630,835 tons valued at \$8,111,194 in 1908. These figures do not include the output from electric furnace plants, making ferro products, which are situated at Welland and Sault Ste. Marie, Ontario, and Buckingham, Que.

Of the total output of pig iron during 1909, 17,003 tons valued at \$371,368 or \$21.84 per ton were made with charcoal as fuel and 740,159 tons valued at \$9,210,496 or \$12.44 per ton with coke. The amount of charcoal iron made in 1908 was 6,709 tons, and iron made with coke 624,126 tons. The classification of the production in 1909 according to the purpose for which it was intended was as follows: Bessemer 222,931 tons; basic 400,921 tons; foundry, including miscellaneous, 116,307 tons.

The amount of Canadian ore used during 1909 was 231,994 tons, imported ore 1,234,990 tons, mill cinder, etc., 25,508 tons. The amount of coke used during the year was 919,271 tons, comprising 412,016 tons from Canadian coal and 507,255 tons imported coke or coke made from imported coal. The consumption of charcoal was 1,782,258 bushels. Limestone flux was used to the extent of 526,076 tons. In connection with blast furnace operations there were employed 1,486 men and \$879,426 were paid in wages.

The total daily capacity of 16 completed furnaces was, according to returns received 2,735 tons. The number of furnaces in blast on December 31, 1909, was 11.

The production of pig iron by provinces in 1908 and 1909 was as follows:—

Province.	1908.			1909.		
	Tons.	Value.	Per ton.	Tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
Nova Scotia.....	352,642	3,554,540	10,08	345,380	3,453,800	10 00
Quebec.....	6,709	171,383	25 55	4,770	123,623	26 34
Ontario.....	271,484	4,385,271	16 15	407,012	6,002,441	14 75
Total.....	630,835	8,111,194	12 86	757,162	9,581,864	12 65

Steel. Returns were received from eight steel plants at which 2,073 men were employed and \$1,284,940 paid in wages during 1909. The total production of ingots and castings was 754,719 short tons with an estimated value of \$14,359,710 as compared with 588,763 tons valued at \$10,916,602 in 1908.

Details of production during the two years are as follows:—

	1908.		1909.	
	Tons.	\$	Tons.	\$
<i>Ingots</i> —Open hearth (basic).....	443,442	7,684,277	535,988	9,372,615
Bessemer (acid).....	135,557	2,535,287	203,715	3,829,012
<i>Castings</i> —Open hearth.....	9,051	617,126	14,013	1,043,370
Other steels.....	713	79,912	1,003	114,713
Total.....	588,763	10,916,602	754,719	14,359,710

Iron and Steel Bounties.—Following is a statement of the bounties paid on iron and steel during the calendar years 1908 and 1909, as kindly furnished by the Trade and Commerce Department. As no bounty is paid on iron made from mill cinder or ingredients other than ore, the figures do not show the total output of the furnaces but only those quantities on which bounty was paid.

	1908.		1909.	
	Quantity on which Bounty was paid.	Bounty.	Quantity on which Bounty was paid.	Bounty.
	Tons,	\$ cts.	Tons.	\$ cts.
Pig iron made from Canadian ore...	101,647	213,458 34	126,297 55	214,705 80
Pig iron made from imported ore...	517,427	569,166 93	607,718 09	425,402 64
Total, pig iron.....	619,074	782,628 27	734,015 64	640,108 44
Steel ingots.....	556,289	917,876 63	729,139 37	766,470 41
Steel wire rods.....	49,630	297,778 68	81,405 42	488,432 70
Total bounty paid on iron and steel.....		1,998,283 58		1,895,011 55

White arsenic.—The total output of white arsenic as reported by three firms making this product was 2,258,187 pounds valued at \$64,100. In addition the residues or speiss from these works exported contained 1,074,511 pounds of arsenic. This is all obtained from that portion of the Cobalt ores treated in Canada. No record is available of the total arsenical contents of these ores. The exports of arsenic are reported as 3,111,249 pounds valued at \$119,673. The production of white arsenic in 1908 was 1,431,000 pounds valued at \$41,060 and of arsenical ore and concentrates 986 tons valued at \$17,506.

Asbestos.—A feature of special interest in connection with the asbestos industry during 1909 has been the consolidation of interests amongst a number of the larger producers resulting in the formation of the Amalgamated Asbestos Corporation Ltd.

While the actual shipments of asbestos were somewhat less in 1909 than in 1908 the stocks on hand at the end of the year are reported considerably larger than on December 31, 1908.

The total shipments of crude and mill stock in 1909 were 63,349 tons valued at \$2,284,587 as compared with shipments of 66,548 tons valued at \$2,555,361 in 1908, the decrease being 3,199 tons or 4·8 per cent. The stocks on hand December 31, 1909, were about 20,920 tons, valued approximately at \$1,179,679 as compared with stocks on hand December 31, 1908, of 8,669 tons valued at \$596,095.

The total shipments, showing details of crude and mill stock were in 1908 and 1909, as follows:—

	1908.			1909.		
	Short Tons.	Value.	Per ton.	Short Tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
Crude, No. 1.....	857½	257,752	300 59	912·3	246,655	270 37
" 2.....	2,488	411,480	165 38	2,162	328,855	152 11
Mill Stock, No. 1.....	5,282½	425,448	80 54	14,776	785,731	53 18
" 2.....	45,545½	1,345,750	29 33	32,417	800,728	24 70
" 3.....	12,374½	114,931	9 29	13,082	122,618	9 37
Total asbestos.....	66,548	2,555,361	38 40	63,349·3	2,284,857	36 06
Total asbestic.....	24,225	17,974	0 74	23,951	17,188	0 72
Grand total.....	90,773	2,573,335	.....	87,300·3	2,301,775	.....

Exports of asbestos according to Customs returns were:—

	Tons.	Value.
		\$
Twelve months ending December, 1907.....	56,753	1,669,299
" " 1908.....	61,210	1,842,763
" " 1909.....	56,971	1,729,857

Corundum.—The quantity of corundum ore treated during the year was 35,894 tons, from which was produced 1,579 tons of grain corundum. The total shipments were 1,491 tons valued at \$157,398 or an average of a little over 5 cents per pound.

Coal and coke.—The total coal production in Canada in 1909, comprising sales and shipments, colliery consumption and coal used in making coke, is estimated at 10,411,955 short tons, valued at \$24,431,351. This is a smaller production than in either of the two preceding years though the total may be slightly increased when more complete returns are received. The western provinces each show an increased production of coal in 1909, but not sufficient to counteract the reduced output in Nova Scotia, which resulted from the coal miners' strike. The aggregate decrease for the whole of Canada was about 474,356

tons or 4.36 per cent while Nova Scotia alone showed a falling off of 968,789 short tons or 14.56 per cent; the aggregate increase in the western provinces being 505,404 tons or 12.11 per cent.

Of the total production Nova Scotia contributed 54.5 per cent, Saskatchewan and Alberta 20.5 per cent and British Columbia 24.3 per cent.

The production by provinces, was approximately as follows, the figures for 1907 and 1908 being also given.:-

Province.	1907.		1908.		1909.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Nova Scotia.....	6,354,133	\$ 12,764,999	6,652,539	\$ 13,364,476	5,683,750	\$ 11,418,249
British Columbia.....	2,364,898	7,390,306	2,333,708	7,292,838	2,538,004	7,931,263
Alberta.....	1,591,579	3,836,286	1,685,661	4,127,311	1,978,843	4,730,270
Saskatchewan.....	151,232	252,437	150,556	253,790	163,329	253,073
New Brunswick.....	34,584	77,814	60,000	135,000	49,029	98,496
Yukon Territory.....	15,000	60,000	3,847	21,158	.....	.....
Totals.....	10,511,426	24,381,842	10,886,311	25,194,573	10,411,955	24,431,351

The total production of oven coke in 1909 was about 875,080 short tons valued at \$3,557,147 being a slight increase over the production in 1908. At the ovens of the Dominion Iron and Steel Co. at Sydney a quantity of imported coal was used, the supply of domestic coal being insufficient on account of the strike. The Atikokan Iron Company at Port Arthur uses imported coal exclusively. At all other ovens Canadian coal is used. At the end of the year there were in Nova Scotia 670 ovens in operation, 64 idle and 120 building. In Alberta 226 were in operation and 40 idle and in British Columbia 767 in operation and 753 idle. The ovens of the Dominion Iron and Steel Co. are of the Otto Hoffman by-product type and there were recovered as by-products 4,016,824 gallons of tar and 3,351 short tons of sulphate of ammonia.

Feldspar.—Total shipments are reported as 10,286 tons valued at \$35,694. This includes a quantity of high grade "dental spar" shipped from the Villeneuve mine, Quebec, and valued at from \$16 to \$20 per ton at Buckingham.

Petroleum and Natural Gas.—The production of crude petroleum was as usual nearly all derived from the Ontario peninsula. Direct returns from the producers have not been obtained, but the production upon which bounty was paid, ascertained by the Trade and Commerce Department was 14,726,433 gallons of which 3,328 gallons were produced in New Brunswick. This is equivalent to 420,755 barrels and at an average price of \$1.33 per barrel was valued at \$559,604. The production in 1908 was 527,937 barrels valued at \$747,102, an average per barrel of \$1.34 showing a decrease of about 20 per cent in the quantity produced. The total bounty paid in 1909 was \$220,896.50 as compared with \$277,193.21 in 1908 and \$414,157.89 in 1907.

While the production of petroleum has been falling off the receipts from natural gas sold have been increasing. The producing gas wells are located in the counties of Welland, Haldimand, Norfolk, Kent, Essex, and Bruce in Ontario, and at Medicine Hat and vicinity

in Alberta. The total receipts from gas sold in 1909 were about \$1,205,943, the figures representing, with one or two exceptions, the total values paid by the consumers.

The quantity of gas sold or used during the year was over 6,000,000 M. feet. Of the total value about 95 per cent is to be credited to Ontario. The total receipts in 1908 were \$1,012,660.

Phosphate.—The price of this mineral has been increasing. There is a growing demand for it and a revival of phosphate mining appears to be imminent.

Salt.—Complete returns of salt production received show total sales of 84,037 tons, valued at \$415,219 for the salt alone. Packages used were valued at \$175,612; stock on hand at the end of the year was reported as 2,671 tons; 185 men were employed, and \$96,116 paid in wages.

Lime.—Fairly complete statistics of lime production have been received for 1909. The total sales and shipments are reported as 5,163,874 bushels valued at \$1,049,473 or by provinces as follows: Nova Scotia and New Brunswick 747,696 bushels, valued at \$179,380; Quebec 1,155,167 bushels, valued at \$277,253; Ontario 2,434,686 bushels, valued at \$404,782; Western Provinces 826,325 bushels, valued at \$188,058.

Portland Cement.—Complete statistics have been received from all but two cement manufacturers in 1909. These, however, will not increase the totals by more than 2 or 3 per cent. Subject to this correction the total quantity of cement made during the year was 4,089,191 barrels as compared with 3,495,961 barrels in 1908, an increase of 593,230 barrels or 17 per cent.

The total quantity of Canadian Portland Cement sold during the year was 4,010,180 barrels, as compared with 2,665,289 barrels in 1908, an increase of 1,344,891 barrels or 50 per cent.

The total consumption of Portland cement in 1909 including Canadian and imported cement was 4,152,374 barrels, as compared with 3,134,338 barrels in 1908, an increase of 1,018,036 barrels or 32 per cent.

Detailed statistics of production during the past three years have been as follows:—

	1907.	1908.	1909.
	Barrels.	Barrels.	Barrels.
Portland cement sold.....	2,436,093	2,665,289	4,010,180
“ manufactured.....	2,491,513	3,495,961	4,089,191
Stock on hand January 1.....	299,015	383,349	1,093,493
“ December 31.....	354,435	1,214,011	1,172,504
Value of cement sold.....	\$3,777,328	\$3,709,063	\$5,266,008
Wages paid.....	956,080	1,274,638	1,182,090
Men employed.....	1,786	3,029	2,411

The average price per barrel at the works in 1909 was \$1.31 as compared with \$1.39 in 1908.

The imports of Portland cement into Canada during the twelve months ending December 31, 1909, were 497,678 cwt., valued at \$166,669. This is equivalent to 142,194 barrels of

350 pounds, at an average price per barrel of \$1.17. The imports in 1908 were 469,049 barrels, valued at \$531,045, or an average price per barrel of \$1.13. The duty is 12½ cents per hundred pounds.

As there is very little cement exported from Canada, the consumption is practically represented by the Canadian sales together with the imports.

Following is an estimate of the Canadian consumption of Portland cement for the past five years:—

Calendar Years.	Canadian.		Imported.		Total.	
	Barrels.	Per cent.	Barrels.	Per cent.	Barrels.	Per cent.
1905.....	1,346,548	59	918,701	41	2,285,249	.....
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.....	4,010,180	97	142,194	3	4,152,374	.....

Exports of the Products of the Mine, Year 1909

(Compiled from Trade and Navigation Monthly Statements.)

Products.	Quantity.	Value.
		\$
Arsenic.....	Lbs. 3,111,249	119,673
Asbestos.....	Tons. 56,971	1,729,857
Chromite.....	" 1,794	20,858
Coal.....	" 1,588,099	4,456,342
Feldspar.....	" 10,834	35,234
Gold.....	"	5,629,551
Gypsum.....	Tons. 315,201	372,286
Copper, fine in ore, etc.....	Lbs. 54,447,750	5,832,246
Lead, in ore, etc.....	" 6,226,068	132,573
" pig, etc.....	" 11,301,960	361,064
Nickel, in ore, etc.....	" 25,610,398	2,676,483
Silver, in ore, etc.....	Ozs. 31,126,504	15,719,909
Platinum, in ore concentrates, etc.....	" 466	2,118
Mica.....	Lbs. 717,066	256,834
Mineral pigments.....	" 1,316,514	7,956
Mineral water.....	Galls. 60,562	7,433
Oil, refined.....	" 7,768	934
Ores—		
Antimony.....	Tons. 4	120
Iron.....	" 21,956	61,954
Manganese.....	" 3	434
Other ores.....	" 11,939	925,142
Phosphate.....	" 895	15,735
Plumbago.....	Cwt. 20,070	52,440
Pyrites.....	Tons. 35,798	156,644
Salt.....	Lbs. 276,765	2,488
Sand and gravel.....	Tons. 481,584	256,166
Slate.....	" 134	612
Stone, ornamental.....	" 1,027	8,606
" building, etc.....	" 26,672	15,481
" for manufacture of grindstones.....	" 125	1,685
Other products of the mine.....		109,350
Manufactures—		
Bricks.....	M. 365	2,255
Aluminium in bars, etc.....	Cwt. 61,345	918,195
" manufactures, etc.....		3,453
Cement.....		113,362
Clay, manufactures of.....		979
Coke.....	Tons. 74,067	329,051
Grindstones, manufactured.....		13,942
Gypsum, ground.....		2,787
Iron and steel—		
Stoves.....	No. 744	10,330
Castings, N. E. S.....		25,038
Pig iron.....	Tons. 5,063	186,978
Machinery (linotype machines).....		421,707
Sewing machines.....	No. 12,759	147,402
Typewriters.....	" 3,749	238,167
Scrap iron and steel.....	Cwt. 410,506	305,256
Hardware, tools, etc.....		52,207
" N. E. S.....		35,507
Steel and manufactures of.....		1,132,678
Lime.....		48,821
Metals, N. O. P.....		134,062
Plumbago, manufactures of.....		864
Stone, ornamental.....		33,097
" building.....		501