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1904

MINERAL PRODUCTION OF CANADA

ROBERT BELL, M.D., D.Sc. (Cantab), LL.D., F.R.S., I.S.O.
Acting Deputy Head and Director.

SIR,—I have the honour to submit herewith the annual preliminary statistical statement of the mineral production of Canada for 1904.

Although the figures given herewith are, as stated, subject to revision, they may still be taken as a very close approximation to those which will be given in the final report.

The completed Annual Report will follow later and, besides containing a revise of the general table of production, will include other details relating to exploration, development, exports, imports, etc.

Much of this information is not available till several months after the close of the year ; the compilation and printing necessarily occupy some time ; the Annual Report cannot be completed therefore till well on in the year following the one covered.

I have the honour to remain, sir,

Your obedient servant,

ELFRIC DREW INGALL.

SECTION OF MINES, February 21, 1905.

GEOLOGICAL SURVEY OF CANADA

SECTION OF MINES

SUMMARY

OF THE

MINERAL PRODUCTION OF CANADA

FOR

1904

ELFRIC DREW INGALL, M.E.

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1905

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GEOLOGICAL SURVEY OF CANADA

SUMMARY OF THE MINERAL PRODUCTION OF CANADA IN 1904.

(Subject to Revision.)

PRODUCT.	Quantity. (a)	Value. (b)
METALLIC.		8
Copper (b)..... Lbs.	42,970,594	5,510,119
Gold, Yukon..... \$10,337,000		
" all other..... 6,063,000		16,400,000
Iron ore (exports)..... Tons.	168,828	401,738
*Pig iron from Canadian ore..... "	68,297	901,880
Lead (c)..... Lbs.	38,000,000	1,637,420
Nickel (d)..... "	10,547,883	4,219,153
Silver (e)..... Oz.	3,718,668	2,127,859
Zinc (f)..... Lbs.	477,568	24,356
Total metallic.....		31,222,525
NON-METALLIC.		
Arsenic (exports)..... Tons.	73	6,900
Asbestos..... "	35,635	1,167,238
Asbestic..... "	13,011	13,006
Chromite..... "	6,074	67,146
Coal..... "	7,509,860	14,599,090
Coke (f)..... "	543,557	1,884,219
Corundum..... "	919	101,050
Feldspar..... "	11,083	21,166
Graphite..... "	452	11,760
Grindstones..... "	4,509	42,782
Gypsum..... "	340,761	372,924
Limestone for flux..... "	200,646	176,973
Manganese ore (exports)..... "	123	2,706
Mica..... "		152,170
Mineral pigments—		
Barytes..... Tons.	1,382	3,702
Ochres..... "	3,925	24,995
Mineral water.....		80,000
Moulding sand..... Tons.	3,423	6,790
Natural gas (g).....		247,370
Petroleum (h)..... Brls.	552,575	984,310
Phosphate..... Tons.	917	4,500
Pyrites..... "	33,039	94,797
Salt..... "	68,777	318,628
Talc..... "	840	1,875
Tripolite..... "	320	6,400

* The total production of Pig iron in Canada in 1904 from Canadian and imported ores amounted to 303,454 tons valued at \$3,582,001 of which it is estimated 68,297 tons valued at \$901,880 should be attributed to Canadian ore and 235,157 tons valued at \$2,680,121 to the ore imported.

SUMMARY OF THE MINERAL PRODUCTION OF CANADA IN 1904—*Concluded.*

(Subject to Revision.)

PRODUCT.	Quantity. (a)	Value. (a)
STRUCTURAL MATERIALS AND CLAY PRODUCTS.		\$
Cement, natural rock Brls.	56,814	49,397
* " Portland "	850,358	1,197,992
Flagstone		6,720
Granite		100,000
Pottery		200,000
Sands and gravels (exports) Tons.	399,809	129,803
Sewer pipe		378,894
Slate		23,247
Terra-cotta, pressed brick, &c.		400,000
Tiles		275,000
Building material, including bricks, building stone, lime, &c.		5,667,000
Total structural materials and clay products		8,428,053
" all other non-metallic		20,392,587
Total non-metallic		28,820,640
" metallic		31,222,525
Estimated value of mineral products not returned		300,000
Total, 1904		60,343,165
1903, Total		62,600,434
1902 "		63,885,999
1901 "		66,339,158
1900 "		64,618,268
1899 "		49,584,027
1898 "		38,607,021
1897 "		28,661,430
1896 "		22,584,513
1895 "		20,618,964
1894 "		19,931,158
1893 "		20,035,082
1892 "		16,623,417
1891 "		18,976,616
1890 "		16,763,353
1889 "		14,013,113
1888 "		12,518,894
1887 "		11,321,331
1886 "		10,221,255

(a.) Quantity or value of product marketed. The ton used is that of 2,000 lbs.

(b.) Copper contents of ore, matte, &c., at 12·823 cents per lb.

(c.) Lead contents of ores, &c., at 4·309 cents per lb.

(d.) Nickel contents of ore, matte, &c., at 40 cents per lb.

(e.) Silver contents of ore at 57·221 cents per oz.

(f.) Oven coke, all the production of Nova Scotia, British Columbia and the North-west Territories.

(g.) Gross return from sale of gas.

(h.) Includes crude oil sold to refiners and oil sold for fuel and other purposes.

(i.) Zinc contents of ores at 5·100 cents per lb.

* For more complete figures, see page 12.

REMARKS.

In the accompanying general table it is shown that the value of the mineral products of Canada during 1904, aggregated over \$60,000,000. In comparing this record with that of previous years it must be borne in mind that complete figures are never available at this time of the year, so that in a number of items the data are necessarily partly estimated.

Allowing for this, there nevertheless remains a falling off of about \$2,250,000 in the grand total. This does not necessarily indicate a general slackening in the permanent mineral industries of the country, but rather a gradual return to natural conditions after a few years of abnormal inflation due to the rapid exploitation of the richer and easily accessible portions of the Yukon placers. To this cause can be attributed nearly \$2,000,000 of the decrease shown.

Taking the following figures of the actual variation in the values of the metallic products, this feature will be quite apparent. The items given aggregate nearly 85 per cent of the whole production, and it will be seen that, if the Yukon gold yield be eliminated, the decreases in some industries are practically offset by increases in others, bringing about practical equality.

	Increase.	Decrease.
	\$	\$
Copper		139,368
Gold, Yukon		1,913,000
" B.C., N.S., and Ont.		530,590
Pig iron (from Canadian ore)	194,042	
Iron ore, exports	16,811	
Lead	868,858	
Nickel		783,051
Silver	418,217	
Zinc		24,244
Asbestos	250,487	
Coal		496,333
Coke	149,815	
Petroleum		64,664
Cement	47,400	
Total	1,945,630	3,951,250
Net decrease		2,005,620

The special features of the leading mineral industries which, taken together, contribute close on 85 per cent of the grand aggregate for 1904, are to be found in the table given below.

Product.	Quantity.		Value.	
	Increase.	Decrease.	Increase.	Decrease.
	p. c.	p. c.	p. c.	p. c.
<i>Metallic :</i>				
Copper	67			2.47
Gold				12.97
Pig iron (from Canadian ore only)....	62.41		27.41	
Pig iron (from both home and imported ores)	1.87			4.29
Lead	109.49		113.05	
Nickel		15.65		15.65
Silver	16.26		24.46	
<i>Non-metallic :—</i>				
Asbestos and asbestic	16.72		26.94	
Coal		1.75		3.29
Coke		3.16	8.64	
Petroleum	13.55			6.16
Portland cement	35.46		4.12	

Taking the different classes, comparison with the totals for 1903 shows that the structural material and clay products class remained practically stationary as far as their aggregate value is concerned, whilst the total for the metallic class show a decrease of \$2,000,000, a feature which has already been explained

1903.		1904.	
Product.	Per cent of total mineral production of Canada.	Product.	Per cent of total mineral production of Canada.
1 Gold.....	30.10	1 Coal and Coke.....	27.32
2 Coal and coke.....	26.88	2 Gold.....	27.18
3 Building material.....	9.05	3 Building material.....	9.39
4 Copper.....	9.02	4 Copper.....	9.13
5 Nickel.....	7.99	5 Nickel.....	6.99
6 Silver.....	2.73	6 Silver.....	3.53
7 Cement.....	1.96	7 Lead.....	2.71
8 Petroleum.....	1.68	8 Cement.....	2.07
9 Asbestos.....	1.46	9 Asbestos.....	1.96
10 Lead.....	1.23	10 Petroleum.....	1.63
11 Pig iron (from Canadian ore).	1.13	11 Pig iron (from Canadian ore).	1.49

The foregoing table is intended to illustrate the relative values of the contributions to the grand total of the mineral output of Canada. The figures given account for all but 6.6 per cent of the whole. They omit all those contributing less than 1 per cent, although some of these, such as the mica and corundum industries, are otherwise interesting and important.

As formerly, the coal and coke output when added to the value of the gold constitute considerably more than half the mineral values produced, whilst, if the whole of the metal producing industries together with coal and coke be considered, a little less than ten per cent of the whole remains to be accounted for.

The per capita of the total mineral products for 1904 was about \$10.40 as compared with \$11.89, in 1903, and \$2.23, in 1886, the first year for which figures are available.

Gold.—Practically every province in Canada shows a falling off in gold production, in 1904, as compared with 1903. Nova Scotia, which ordinarily has an output of about half a million dollars, shows a decrease of nearly half its production. Several reasons are given for this, among which may be mentioned (1) the extreme drought during the past season, (2) the closing down, owing to financial difficulties, of a number of the best producing mines, and (3) the cessation of production at the Richardson mine owing to the destruction of the shaft and workings by an extensive crush.

In Ontario, although a considerable amount of prospecting and development work has been done, most of the mines that were formerly important producers, were not operated during the year.

In British Columbia, an increased output from placer mines is indicated, while a smaller production was obtained from the lode mines. The ore shipments from Rossland and vicinity, the chief gold producing district, were less than in 1903 by about 20,000 tons.

The Yukon output for the year \$10,337,000 is based on the receipts of Canadian Yukon gold at the United States mint at San Francisco and other receiving offices.

Silver.—The bounty granted by the Dominion government on the production of lead ores, seems to have stimulated the operations of the silver-lead mines. The St. Eugene mine, in East Kootenay, was reopened and its production probably accounts for the greater part of the increase.

Silver .999 fine is now turned out at the refinery of the Canadian Smelting Works at Trail, B.C., as is also gold, .994 fine. Refined silver has been shipped to New York, San Francisco and to China.

The average price per ounce of fine silver in New York during the year was 57.221 cents as compared with 53.45 cents in 1903.

Lead.—Although over twice as much lead was produced in 1904 as in 1903 the output is still far from its former maximum, viz. 31,584 tons in 1900. The production in 1904 was about 19,000 tons as compared with 9,070 tons in 1903.

The exports of lead from Canada in 1904 were 12,913 tons of lead in ore etc. and about 21 tons of pig lead.

An electrolytic lead refinery is now in operation at the Canadian Smelting works, Trail, B.C., producing pig lead, lead pipe, sheet lead, etc.

It is said that lead corroding works are to be established in Montreal by a Chicago firm, for the manufacture of white lead and other pigments which will require a large amount of pig lead per annum.

Copper.—The copper contained in ore, matte, etc. shipped from Canadian mines in 1904 was about 21,485 tons as compared with 21,342 tons in 1903.

In Ontario there was a falling off of over a thousand tons which was more than made up by the increased production from the Boundary district and the Coast district of British Columbia. From Sudbury district, Ontario, 10,154 tons of matte were shipped, containing 2,455 tons of copper (see further under nickel). In British Columbia,

shipments from the Boundary district were approximately 818,000 tons in 1904 and from Rossland 342,000 tons as compared with 697,284 tons from the Boundary district and 360,786 tons from Rossland in 1903.

The average price per pound of electrolytic copper in New York in 1904 was 12.823 cents as compared with 13.235 cents in 1903.

Cobalt etc.—The discovery of certain cobalt, nickel, arsenic and silver ores which was made public in November 1903, promises to add in the near future, largely to the production of these metals. The deposits were found during the building of the Timiskaming and Northern Ontario Railway, the roadbed running almost over the top of the first of the outcrops discovered. The ores are contained in a series of almost vertical veins varying in width from eight inches up to six feet although the wider portions always contain more or less rocky matter. The veins intersect the conglomerate and slate usually classified as Huronian. All of the deposits thus far discovered possess certain features in common. The minerals represented are chiefly smaltite, nicolite and native silver, with smaller quantities of erythrite, dyscrasite, chloanthite and tetrahedrite. In some the native silver is very abundant and a sample which was fairly representative of one of the smaller veins showed an assay value of \$5,237.60 per ton. Analysis of the ore from one of the veins composed mainly of smaltite showed from 16 to 19 per cent of cobalt, 4 to 7 per cent of nickel, 60 to 66 per cent of arsenic, and 3 to 7 per cent of sulphur. The ores are thus so rich, that comparatively small veins could be worked at a hand some profit.

Although no returns have yet been received at this office it is stated that several car loads of ore have been shipped from this district, which realized very high values.

Nickel.—The following were the results of operations on the nickel-copper deposits of Ontario in 1903.

	Tons
Ore mined.....	203,388
Ore smelted	118,470
Matte produced.....	8,924
Matte shipped.....	10,154
Copper contents of matte shipped.....	2,455
Nickel contents in matte.....	5,274
Value of matte shipped.....	\$2,193,198

According to customs returns exports of nickel in matte, etc. were as follows :

	Lbs.
To Great Britain.....	2,028,908
United States	9,204,961
Total.....	11,233,869

The price of refined nickel in New York remained steady throughout the year at from 40 to 47 cents per pound.

Zinc.—About 533 tons of zinc ore worth \$3,700 were shipped during the year from the Long Lake zinc mine in the County of Frontenac, Ont. No returns have been received of zinc production in British Columbia.

Iron.—Exports of iron ore were 168,828 tons valued at \$401,738. In addition to the ore exported, about 180,932 tons of ore worth about \$489,687, were mined in Canada and charged to Canadian blast furnaces.

Besides the above Canadian ore 454,671 tons of imported ore valued at \$922,594 were used in Canadian furnaces. The total amount of pig iron manufactured from both Canadian and imported ores was 303,454 tons of which 21,583 tons were made with charcoal as fuel and 281,871 tons with coke. The quantity of charcoal used was 3,477,470 bushels and of coke 387,392 tons.

The pig iron was made by three firms in Nova Scotia, two in Quebec and four in Ontario.

Coal and Coke.—With the exception of a small decrease in shipments, coal production in Nova Scotia in 1904 shows but little change. A smaller amount of coke was made owing to the smaller production of pig iron by the Dominion Iron and Steel Company. Efforts are being made to find new markets farther west in Ontario as well as to increase the exportation. In the North-west territories many small mines have been opened, and the output shows a substantial growth. Coke is now being made in Alberta. On December 31, 1904, 56 beehive ovens were in operation at Coleman, Alta, and 34 Belgian ovens, Bernard type, were in operation at Lille, Alta. In British Columbia, the output of the Western Fuel Company in Vancouver Island was considerably diminished owing to the destruction by fire of the head works at No. 1 mine. The Crows Nest Pass Company, however, continued to increase its output, over 1,000,000 tons of coal being produced, of which more than half was used in making coke. This company has now 1,128 coke ovens completed.

Asbestos.—The production of asbestos divided into crude and mill stock was as follows :—

	Tons.	\$
Crude.....	4,239	509,001
Mill stock.....	31,396	658,277
Total.....	35,635	1,167,278

Exports of asbestos according to Customs returns were :

37,272 tons valued at \$1,160,887.

Natural Gas.—There was a somewhat increased production of natural gas in Ontario, due entirely to operations in the Welland field, production in the Essex field having dropped to very small amounts.

The development of the gas field at Medicine Hat, North-west territories, seems to have been continued with much success. The gas commission of the town of Medicine Hat has now six producing wells, one of which has been put down to a depth of nearly a thousand feet yielding $1\frac{1}{2}$ million feet per twenty-four hours. The Canadian Pacific Railway Company has just completed drilling a well to a depth of 989 feet with $4\frac{5}{8}$ inch casing to 941 feet. The pressure per square inch developed in eighteen hours was 525 pounds.

Cement.—The production of natural rock cement, which has for a number of years been small in comparison with the output of Portland cement, shows another large decrease in 1904, the sales being only 56,814 barrels, valued at \$49,397, as compared with 92,252 barrels valued at \$74,655 in 1903.

Although a much larger quantity of Portland cement was sold in 1904 the total value, owing to the fall in price, is only slightly in excess of that in 1903.

In the absence of complete returns, Portland cement statistics have been partially estimated. The following is, however, a close approximation :—

Portland cement sold	900,358 brls. valued at \$1,272,992
" manufactured....	908,990 "
Stock on hand January 1, 1904...	124,919 "
" December 31, 1904.	133,551 "

The imports of Portland cement in 1904 were :

Six months ending June.....	cwt.	829,872	\$ 320,137
" " December.....	"	1,916,336	740,919
Total.....	"	2,746,208	\$1,061,056

This is equivalent to about 784,630 barrels of 350 pounds each, at an average price per pound of \$1.35. The duty is twelve and a half cents per hundred pounds.

Exports of Products of the Mine, Calendar Year 1904.

Product.	Quantity.	Value.
		\$
Aluminium in bars, ingots, etc. Lb.	296,801	59,266
Arsenic "	146,000	6,900
Asbestos Tons.	37,272	1,160,887
Barytes Cwt.	13,080	5,178
Chromite Tons.	3,338	60,336
Coal "	1,577,412	4,036,373
Feldspar "	13,960	29,263
Gold bearing quartz, dust, nuggets, etc. \$		15,737,477
Gypsum, crude Tons.	298,211	316,436
Copper, fine in ore, &c. Lb.	38,548,473	4,215,596
" black or coarse, cement-copper and cop-		
per in pigs. "	4,809	618
Nickel in ore, matte, &c. "	11,233,869	1,091,349
Lead in ore, &c. "	25,826,413	558,464
" pig, &c. "	42,410	997
Platinum in ore, concentrates, &c. Oz.		140
Silver in ore, &c. "	3,371,013	1,904,394
Mica Lb.	795,843	198,482
Mineral pigments "	832,570	7,260
" water. Gals.	6,615	2,917
Oil—		
crude "	4,207	213
refined. "	2,126	470
Ores—		
Antimony Tons.	160	7,237
Iron "	168,828	401,738
Manganese "	123	2,706
Other "	8,579	222,117
Phosphate "	191	5,348
Plumbago, crude. Cwt.	3,542	9,609
Pyrites Tons.	18,279	49,911
Salt Lb.	1,006,936	4,186
Sand and gravel. Tons.	399,809	129,803
Stone, ornamental. "	162	1,082
" building. "	70,639	16,720
" for manufacture of grindstones. "	887	8,717
Other products of the mine.		18,523
Manufactures—		
Bricks M.	696	5,357
Cement \$		5,494
Coke Tons.	102,463	345,031
Clay \$		2,722
Grindstones, mfd. "		26,895
Gypsum, ground. "		2,333
Iron and steel—		
Stoves No.	1,366	17,642
Castings \$		61,624
Pig iron Tons.	21,016	200,363
Machinery, N.E.S. \$		356,868
Scrap iron or steel Cwt.	157,182	76,125
Hardware, N.E.S. \$		120,070
Steel and mfgs. of. "		332,932
Sewing machines. No.	1,073	22,663
Typewriters. "	4,240	130,115
Lime \$		73,838
Metals, N.O.P. "		478,435
Plumbago, mfg. of. "		6,958
Stone, ornamental. "		4,722
" building. "		38