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DOMINION BUREAU OF STATISTICS

PRELIMINARY REPORT

OF THE

MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR

1923

FEBRUARY 25, 1924

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LIST OF PUBLICATIONS

PREPARED IN THE
MINING, METALLURGICAL AND CHEMICAL BRANCH
DOMINION BUREAU OF STATISTICS

(1) **Mineral Production (Mining and Metallurgy).**

General Reports—

- (a) **Annual Report on the Mineral Production of Canada.**
- (b) **Preliminary Reports (semi-annual) on the Mineral Production of Canada.**

Coal—

- (a) **Annual Report on Coal Statistics for Canada.**
- (b) **Monthly Report on Coal Statistics for Canada.**

In addition to the foregoing reports on mineral production a series of annual bulletins is in preparation each of which will contain statistics relative to a particular metal or non-metallic mineral or to a special section of the mineral industry, and the series when complete will cover every phase of mineral production in Canada.

(2) **Statistics of Manufactures, based chiefly on minerals.**

Summary reports on the sections of manufactures covered by the Mining, Metallurgical and Chemical Branch are issued as follows:—

Annual—

1. **Iron and Steel and Their Products:** Pig Iron and Steel and Rolled Products—Castings and Forgings—Machinery (Agricultural Implements, Boilers and Engines, Industrial Machinery, Office and Household Machinery)—Motor Vehicles and Accessories—Railway Rolling Stock—Heating and Ventilating Equipment—Wire and Wire Goods—Sheet Metal Products—Hardware and Tools—Miscellaneous Iron and Steel Products.
2. **Manufactures of Non-Ferrous Metals:** Aluminium Ware—Brass and Copper Products—Lead, Tin and Zinc Products—Manufactures of the Precious Metals—Electrical Apparatus and Supplies—Miscellaneous Non-Ferrous Metal Goods.
3. **Manufactures of the Non-Metallic Minerals:** Aerated Waters—Asbestos and Allied Products—Cement Products and Sand-Lime Brick—Coke and By-Products—Glass (blown, cut, ornamental, etc.)—Illuminating and Fuel Gas—Monumental and Ornamental Stone—Petroleum Products.
4. **Chemicals and Allied Products:** Coal Tar and its Products—Acids, Alkalies Salts and Compressed Gases—Explosives, Ammunition, Fireworks and Matches—Fertilizers—Medicinal and Pharmaceutical Preparations—Paints, Pigments and Varnishes—Soaps, Washing Compounds and Toilet Preparations—Inks, Dyes and Colours—Wood Distillates and Extracts—Miscellaneous Chemical Industries.

Monthly—

(1) **Production of Iron and Steel in Canada.**

In addition to the foregoing printed summary reports, a series of bulletins is being prepared, each of which deals with a particular phase of manufactures.

(3) **Special Report.**

Report on the Consumption of Prepared Non-Metallic Minerals in Canada.

PREFACE

The present report is issued in continuance of the Bureau's policy of preparing preliminary estimates regarding the production of the principal mineral products from Canadian deposits. It is designed to supplement the Preliminary Report on this subject issued by the Dominion Bureau of Statistics as for the six months ending June 30, 1923, and the Preliminary Estimate of the calendar year production issued to the press on January 1, 1924. This bulletin provides the first detailed official figures available for the whole of the calendar year. Comparative figures are also given for the preceding calendar year.

During the past twelve months, the Bureau issued a number of press releases each giving revised statistics of production for 1922, and it is proposed to follow this policy during the present year. A special report on the Consumption of Prepared Non-Metallic Minerals was also completed during the year, the purpose of which was to determine the extent of the market in Canada for finely-ground non-metallic minerals. The material was collected by Mr. A. C. Young, B.Sc., and the report when published was the subject of much favourable comment.

In the preparation of this report the work was again greatly expedited by co-operation with the Ontario Department of Mines in the use of joint schedules for mine and smelter reports. The monthly statistics on coal were also collected jointly with four of the coal-producing provinces, namely: Nova Scotia, New Brunswick, Saskatchewan and Alberta.

The cordial thanks of the Bureau are tendered to the mine and smelter operators, and to the Dominion Department of Mines for assistance given and information made available. The railway and other transportation companies, as well as smelter operators outside of Canada have also furnished data, the receipt of which is gratefully acknowledged.

The report has been prepared under the direction of Mr. S. J. Cook, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch of the Bureau. Mr. D. S. Halford, B.A.Sc., supervised the work on the sections dealing with metals and metaliferous ores, and Mr. B. R. Hayden compiled the data on the non-metalliferous products.

R. H. COATS,
Dominion Statistician.

DOMINION BUREAU OF STATISTICS,
February 25, 1924.

Mineral Production of Canada, 1922-1923

	1922		1923		Increase (+) or Decrease (-)	
	Quantity	Value \$	Quantity	Value \$		
METALLIC						
Arsenic..... Tons	2,576	321,037	3,645	878,348	+ 41.4	+173.5
Chromite..... "	767	11,503	2,925	40,800	+281.3	+306.8
Cobalt..... Lb.	569,990	1,852,370	966,020	2,753,157	+ 69.5	+ 48.6
Copper..... "	42,870,818	5,738,177	87,942,458	12,682,182	+105.0	+121.0
Gold..... Fine ozs.	1,263,364	26,116,050	1,223,601	25,294,076	- 3.2	- 3.2
Iron, pig, from Canadian ore..... Tons	8,095	178,980	20,730	423,298	+156.1	+136.5
Iron ore sold for export..... "	1,781	4,938	5,663	20,270	+217.9	+310.6
Lead..... Lb.	93,307,171	5,817,702	110,730,730	7,949,359	+18.6	+ 36.0
Manganese..... Tons	73	2,044	-	-	-	-
Nickel..... Lb.	17,597,120	6,158,993	62,453,843	18,332,077	+254.9	+197.6
Palladium..... Ozs.	724	47,060	1,732	118,902	+139.2	+152.0
Platinum..... "	469	45,783	1,217	141,828	+159.4	+209.7
Rhodium, Osmium, Iridium, Ruthenium..... Ozs.	392	31,360	304	40,957	- 22.5	+ 30.6
Silver..... Fine ozs.	18,581,439	12,576,758	17,754,700	11,518,008	- 4.5	- 8.5
Zinc..... Lb.	56,290,000	3,217,536	60,368,000	3,988,514	+ 7.2	+ 23.9
Total.....	-	62,120,291	-	84,187,783	-	+ 35.4
NON-METALLIC						
Actinolite..... Tons	50	575	53	583	+ 6.0	+ 1.3
Asbestos..... "	163,706	5,552,723	231,231	7,509,138	+ 41.2	+ 35.2
Barytes..... "	280	9,537	209	4,368	- 27.7	- 54.2
Coal..... "	15,157,431	65,518,497	16,984,022	73,504,361	+ 12.0	+ 12.1
Corundum..... "	-	-	-	-	-	-
Feldspar..... "	27,727	248,402	29,483	214,346	+ 6.3	- 13.8
Fluorspar..... "	4,503	102,138	125	1,741	- 96.5	- 98.5
Graphite..... "	597	31,353	1,113	67,873	+ 86.4	+116.4
Grindstones..... "	1,005	43,742	1,493	60,742	+ 48.5	+ 38.8
Gypsum..... "	559,265	2,160,808	559,778	2,105,053	-	+ 0.2
Magnesite..... "	2,849	76,204	4,658	125,208	+ 63.4	+ 64.1
Magnesium sulphate..... "	1,021	24,017	121	6,580	- 88.2	- 72.8
Mica..... "	3,349	182,293	2,611	313,408	- 22.1	+105.8
Mineral water..... Gals.	221,433	14,220	233,933	15,490	+ 5.6	+ 8.9
Nitro-alumite..... Tons	50	2,500	15	750	- 70.0	- 70.0
Natural gas..... M cu. ft.	14,082,651	5,840,501	14,675,760	5,875,150	-	+ 0.4
Iron oxides..... Tons	7,285	110,608	10,827	142,571	+ 48.6	+ 28.8
Peat..... "	3,000	14,500	-	-	-	- 4.6
Petroleum, crude..... Brls.	179,069	611,176	171,902	542,555	- 4.0	- 11.2
Phosphate..... Tons	190	1,796	-	-	-	-
Pyrites..... "	18,143	74,303	13,301	50,084	- 26.2	- 20.5
Quartz..... "	100,947	208,598	247,473	516,037	+12.5	+147.4
Salt..... "	181,794	1,628,323	202,960	1,553,645	+ 11.6	- 4.6
Sodium carbonate..... "	202	3,027	265	3,975	+ 31.1	+ 31.3
Sodium sulphate..... "	504	11,980	523	9,139	+ 3.7	- 23.8
Talc..... "	13,195	188,458	10,076	144,014	- 23.7	- 23.6
Tripolite..... "	219	5,781	130	3,250	- 40.7	- 43.8
Total.....	-	82,642,210	-	92,638,961	-	+ 11.9
STRUCTURAL MATERIALS AND CLAY PRODUCTS						
Cement, Portland..... Brls.	6,043,972	15,438,481	7,543,590	15,004,661	+ 8.6	- 2.5
Clay products—						
Bricks, common..... No.	294,019,113	4,714,658	263,629,399	4,072,472	- 10.7	- 13.7
" pressed..... "	90,577,826	1,839,549	70,443,608	1,458,380	- 22.3	- 20.8
" hollow building..... "	4,802,504	448,674	6,206,818	584,413	+ 26.8	+ 30.2
" moulded and ornamental..... "	41,851,765	865,604	57,813,406	1,228,198	+ 38.1	+ 41.8
Fire brick..... "	6,703,127	251,776	5,599,580	267,963	- 16.5	+ 4.4
Fire clay..... Tons	10,196	55,185	8,835	45,934	- 13.4	- 16.8
Fire clay blocks..... "	-	67,588	-	35,833	-	- 47.0
Fireproofing and hollow porous blocks..... "	-	542,611	-	351,395	-	- 35.3
Kaolin..... Tons	1,107	17,866	-	-	-	-
Paving brick..... No.	150,813	5,972	-	-	-	-
Pottery from domestic clay..... "	-	266,391	-	243,049	-	- 8.8
Sewer pipe..... Tons	75,932	1,766,347	60,113	1,390,406	- 20.0	- 21.3
Architectural terra-cotta..... "	-	188,789	-	170,907	-	- 10.0
Tile drain..... No.	14,730,963	407,386	12,580,297	410,662	- 14.6	+ 0.8
Lime..... Bush.	8,972,971	3,165,005	9,240,173	3,153,843	+ 2.9	- 0.4
Sand and gravel..... Tons	11,666,373	3,502,935	12,177,003	2,881,927	+ 4.3	- 17.8
Slate..... "	1,800	14,871	1,836	17,289	+ 3.4	+ 16.2
Stone..... "	3,637,182	5,974,993	3,706,439	5,616,656	+ 1.9	- 6.0
Total.....	-	39,534,741	-	36,993,088	-	- 6.5
Grand Total.....	-	184,297,242	-	214,019,832	-	+ 16.1

DOMINION BUREAU OF STATISTICS

R. H. COATS, B.A., F.S.S., F.R.S.C., Dominion Statistician

S. J. COOK, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch

PRELIMINARY REPORT OF THE MINERAL PRODUCTION OF CANADA DURING THE CALENDAR YEAR, 1923

General Review.—Progress marked every phase of the mineral production of Canada during 1923 and several new commodity production records were established while the output as a whole advanced 16.1 per cent in value over the corresponding figures for last year, reaching a grand total of \$214,019,832 as compared with \$184,297,242 in 1922 and the record value of \$227,859,665 attained in 1920. Commodity prices, which reached a peak in 1920, have since receded and this fact must be borne in mind when production is computed in terms of values. A weighted index showing the volume of production would undoubtedly mark 1923 as the banner year in Canada's mineral industry.

New output records were established for coal, lead, zinc, asbestos and the value of cobalt. Copper production, while considerably below the record war-time outputs, was more than double the tonnage produced in 1922 and amounted in all to 87.94 million pounds. Nickel reached a total of 62.45 million pounds as against 17.59 million pounds last year, and while gold and silver were both less than in 1922, the outputs were greater than in many other recent years and together accounted for values amounting to 36.80 million dollars.

Considered by groups and compared with corresponding data for 1922, metals showed an advance of 35.4 per cent to a total value of \$84,187,783; coal reached a new annual record both in tonnage and value at 16,984,022 net tons worth \$73,504,361 at the pit; production of the other non-metals except structural materials and clay products was valued at \$19,334,600 as against \$17,123,713 in the preceding year, while structural materials and clay products including portland cement contributed \$36,993,088 to the total; the aggregate value of these varied little from the returns for 1922 although in each of several items, and in portland cement, particularly, there was a distinct variation from the previous year's figures. The drop in the price of cement in January resulted in an increased tonnage being shipped during the year but the total receipts from sales were \$15,064,661 as compared with \$15,438,481 in 1922.

The production in each of the past ten years is shown in the following table:—

Values of Metallic and Non-Metallic Production, 1914-1923

Year	Metallic	Fuels and Other non- metallics	Structural Materials and Clay Products	Total
	\$	\$	\$	\$
1914.....	59,386,619	43,467,229	26,909,227	128,863,075
1915.....	75,814,841	43,373,571	17,920,750	137,109,171
1916.....	106,319,365	53,414,083	17,467,186	177,201,534
1917.....	106,455,147	63,354,363	19,837,311	189,646,821
1918.....	114,549,152	77,621,946	19,120,799	211,301,897
1919.....	73,262,795	76,002,087	27,421,510	176,686,390
1920.....	77,939,630	108,027,947	41,892,088	227,859,665
1921.....	49,343,232	87,842,682	34,737,428	171,923,342
1922.....	62,129,291	82,642,210	39,534,741	184,307,242
1923.....	84,187,783	92,838,961	36,993,088	214,019,832

Power shortage was again experienced in Northern Ontario during the spring months and it was not until the latter part of April and the beginning of May that enough power was obtained to permit capacity operation of the Porcupine mines. The three leading

producers were reported early in May as being in a position to treat approximately 7,000 tons of ore daily. Power developments in Northern Ontario have been watched with considerable interest by the mining industry. Power from Sturgeon Falls and Indian Chutes was made available during the year, and the developments on the Quinze River and by the Hollinger on the Abitibi River are being carried forward with a view to the elimination of the recurring spring power shortage that has handicapped these properties up to the present time.

Reports on employment statistics received from the mining companies indicated a general advance during the year of approximately 6 per cent in the number of men on the rolls. The general improvement in employment throughout all industries including mining, manufacturing, logging, fishing, etc., also amounted to approximately 6 per cent. Metal mining was the outstanding exception, and during the year the number of men employed in this class of work increased approximately 27 per cent, the improvement being gradual and continuous throughout the year.

An interesting situation is reflected in the price indexes of metals, etc., compiled by the Internal Trade Branch of the Bureau. Taking the average price for 1913 as a base of 100, the index for non-ferrous metals during the period under review stood at 99.9 in January, 97.8 in February and reached a maximum of 102.5 in March, then very gradually receded to 97.6 in November. That is to say, the average prices of non-ferrous metals in Canada during 1923 were almost identical with the prices prevailing for these commodities in 1913. Non-metallic minerals on the other hand, showed an average of approximately 85 per cent in excess of the 1913 average. The non-metallic group includes such materials as coal, brick, lime, cement, glass, petroleum, pottery, sulphur, salt, etc.

Iron and steel prices showed a greater fluctuation than either of the other two groups mentioned, and ranged from 158.9 in January to a maximum of 174.4 in June, thereafter receding gradually until the index stood at 167.5 in November. Mineral prices as a whole advanced slightly during the period and were maintained at an average of between 55 and 60 per cent above the prices prevailing in 1913.

For statistical and comparative purposes it has always been customary to determine the value of the metals, copper, gold, lead, nickel, silver, and zinc as far as possible on the basis of the quantities of metals recovered from Canadian ores smelted during the year, either in Canada or abroad and to compute the value of this production in each case at the average price of the refined metal in a recognized market. In the table of metal prices the market indicated by a star is the one from which the average quotations used in making up the total values in this report, have been taken. Gold, while not mentioned in the table is invariably valued at \$20.671834 per fine ounce. The value of the non-metallics, and of the structural materials is determined as the value received by the producer at point of shipment. In this report, no departure has been made from the practice previously followed. The New York market was used in the case of the principal metals since most sales of Canadian products are made on that market.

The principal mineral-producing province of Canada in 1923 was Ontario, the value of its mineral production being determined at \$79,916,836. British Columbia came second with a mineral production valued at \$44,143,390; Alberta was third with \$31,646,816; Nova Scotia ranked fourth with \$30,534,176 and Quebec held fifth place with \$19,827,495. The other provinces followed in the order named: Yukon Territory, \$2,641,745; New Brunswick, \$2,205,846; Manitoba, \$1,753,908; and Saskatchewan, \$1,349,620.

Seventeen mineral products reached a production value of one million dollars or over in Canada during 1923. In order of the values assigned these were: coal, gold, nickel, cement, copper, silver, clay products, lead, asbestos, natural gas, stone, zinc, lime, cobalt, sand and gravel, gypsum, and salt. Production values of these commodities ranged from \$73,504,361 for coal to \$1,553,645 for salt.

In the matter of coal supply, Canada was much better off in 1923 than in many other years. Although Canada possesses about 16 per cent of the world's known coal reserves, the fact that most of this coal is found in the western provinces, while the principal demand for fuel is in the more thickly-populated areas of Central Canada, has made the latter area, so far, practically dependent upon imported fuel.

During 1923 the available supply including both bituminous and anthracite coals was approximately ten million tons greater than in the preceding year and the apparent consumption computed by adding the output from Canadian mines to the quantities imported and by deducting from this total the sum of the tonnages exported, was 38,017,000 tons. The output from Canadian mines was greater than in any previous year and amounted to almost seventeen million tons.

While the output of gold at 1,223,601 ounces valued at \$25,294,076 was somewhat lower than in 1922 when 1,263,364 ounces was produced having a value of \$26,116,050, the production was only exceeded by the output in 1922 and by the record output in 1900 when 1,350,057 ounces was produced at a value of \$27,908,153. Power shortage in Northern Ontario seriously interfered with production in the earlier months of the year but with the provision being made for the prevention of power shortage this handicap should be overcome and the developments in new fields will probably lead to the establishment of new production records.

Since 1914, Ontario has become by far the largest producer of gold in Canada and this remarkable increase has been brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The falling-off in production during 1917 and 1918 was due to the abnormal conditions created by the war. Production increased from 1919 to a maximum in 1922 and it is possible that complete returns will show that the 1923 gold output from these mines were even closer to the 1922 record than presently indicated.

The depression in the markets for nickel and copper caused by the discontinuance of the demand for these metals as war material apparently came to an end early in 1923 and the renewal of activities by the International Nickel Company and by the British America Nickel Corporation resulted in a production of nickel amounting to 62,453,843 pounds valued at \$18,332,077 or more than three times as much as was produced during the preceding calendar year when the total output was only 17,597,123 pounds valued at \$6,158,993.

Returns from the silver producers indicated a slight falling-off in the total production of this metal in Canada during 1922. In Ontario there was an appreciable increase in production in comparison with the output from the previous year which in spite of the decline in the average price of silver resulted in the value of the output being maintained at approximately the same total as in the previous year. The rejuvenated South Lorrain district was the scene of great activity throughout the year and continued to contribute large amounts to the total output of silver. The production from British Columbia mines was appreciably lower both in quantity and value than in 1922.

There was a considerable increase in the production of cobalt during the year to a total of 966,020 pounds, which compared very favourably with the record output of 1,079,572 pounds reached in 1917. Computed at the average price quoted on the New York market for the year, the value of the cobalt output would be \$2,753,157, which figure is considerably higher than any previously recorded. Cobalt is marketed in several different forms including metal, cobalt alloys, cobalt sulphate, cobalt oxide, etc., and the receipts from the sale of these products naturally vary in accordance with the prices obtaining for the several commodities. For statistical and comparative purposes it has always been customary to compute the value of the cobalt production in terms of the refined metal valued at the average price prevailing on the New York market.

The production of lead has set up new Canadian records in each of the past three years and the output in 1923 amounted to 110,730,730 pounds valued at \$7,949,359 an advance of more than seventeen million pounds and over two million dollars above the corresponding figures for 1922. By far the greater part of the production was made by the Consolidated Mining and Smelting Company at its Trail smelter, but the production in Ontario by the Kingdon Mining and Smelting Company at Galetta also exceeded its previous records, as did also the output from the Yukon.

Zinc production during the year was valued at \$3,988,514 as compared with \$3,217,536 in 1922. The quantity produced was 60,368,000 pounds, an increase of approximately 4 million pounds over the output in the previous year. Both in quantity and value, the 1923 production of zinc was considerably greater than in any previous year. The importance

of this statement is enhanced when one considers that in 1913 the average price per pound was 13.23 cents while during the year just closed the average price on the St. Louis market was 6.658 cents. The production was largely from the smelter operated by the Consolidated Mining and Smelting Company at Trail, British Columbia.

The manufacture of portland cement showed an increase of approximately 599,618 barrels but the price recession which went into effect on January 1, 1923, resulted in the sales for the year falling below the totals for 1922. The total sales of cement during 1923 amounted to 7,543,590 barrels valued at \$15,064,661.

The production of brick and tile in 1922 was greater than in the previous year. In this connection it may be noted that the Bureau reports on building permits issued in fifty-six cities during 1923 showed a total valuation of \$129,906,946. During 1922, the values reached a total of \$144,980,388. There was, therefore, a decline of 10.4 per cent as compared with 1922, but increases of 13.5 and 13.7 per cent respectively, as compared with 1921 and 1920.

Asbestos, chief of Quebec's mineral products showed considerable improvement in production during the year and set up a new Canadian record at 231,231 tons valued at \$7,508,138. Last year, 163,706 tons was produced having a market value of \$5,552,723. While 1923 must then be considered as the banner year for production in the asbestos industry, it must be noted that the previous high record for values was established in 1920 when 199,575 tons was marketed and the receipts from sales reached a total of \$14,792,201 or approximately twice the amount received for the tonnage sold during the year just closed.

The natural gas industry in Canada has been one of the important contributors to the wealth of mineral production particularly in Ontario, Alberta and New Brunswick in the order named. During 1923, approximately 14,700,000 thousand cubic feet was produced and sold for \$5,875,150. In recent years the supply of natural gas in Ontario has not been as plentiful as previously and the Ontario Government through the appointment of a special commissioner has taken measures to conserve supply for industrial and domestic use.

Sales of gypsum valued at \$2,165,953 showed that production was well maintained during the year, and in each of the four provinces contributing to the output the tonnages sold were approximately the same as in 1922.

The production of salt does not vary greatly from year to year. The output in 1923 amounting to about 202,960 tons was 21,166 tons above the production of 181,794 tons produced in 1922. The total value of salt sold during the year was slightly below the receipts in 1922.

The whole story of the mineral production as herein recorded reflects the lower commodity prices. Greater tonnages of several products were obtained but in nearly all the total values received were considerably less than during the war years when prices were at the peak.

The close of 1923 marked the establishment of several new production records in the history of Canadian mineral industry. The closing weeks found employment in the mining industry at its peak and particularly in the metal mining field the outlook for further advances in 1924 was distinctly favourable. In every branch of the industry progress was made and when all the reports are in and the final totals are compiled it is probable that 1923 will be found to have been the banner year in the Canadian mineral industry.

Mineral Production of Canada by Provinces, 1921, 1922 and 1923

	1921		1922		1923	
	Value of Production	Per cent of total	Value of Production	Per cent of total	Value of Production	Per cent of total
	\$		\$		\$	
Nova Scotia.....	28,912,111	16.82	25,923,499	14.12	30,534,176	14.3
New Brunswick.....	1,901,505	1.10	2,253,692	1.23	2,205,846	1.0
Quebec.....	15,137,094	8.82	17,647,939	9.57	19,827,495	9.3
Ontario.....	57,356,651	33.36	65,806,029	35.74	79,916,836	37.4
Manitoba.....	1,934,117	1.12	2,238,942	1.23	1,753,908	0.8
Saskatchewan.....	1,114,220	0.65	1,255,470	0.67	1,349,620	0.6
Alberta.....	30,562,229	17.78	27,872,136	15.13	31,646,816	14.8
British Columbia.....	33,230,460	19.33	39,425,962	21.39	44,143,390	20.6
Yukon.....	1,754,955	1.02	1,785,573	0.92	2,641,745	1.2
Total.....	171,923,342	100.0	184,297,242	100.00	214,619,832	100.0

EXCHANGE TABLE

Showing the amount paid in Canadian dollars for one United States dollar by months, 1920-1923

Month	1920	1921	1922	1923
	\$	\$	\$	\$
January.....	1-1056	1-1437	1-0553	1-0067
February.....	1-1497	1-1362	1-0351	1-0119
March.....	1-1178	1-1337	1-0297	1-0208
April.....	1-1112	1-1210	1-0208	1-0203
May.....	1-1134	1-1164	1-0125	1-0222
June.....	1-1381	1-1294	1-0138	1-0231
July.....	1-1134	1-1328	1-0091	1-0263
August.....	1-1273	1-1168	1-0073	1-0244
September.....	1-1075	1-1106	-.9998	1-0233
October.....	1-1016	1-0931	1-0011	1-0156
November.....	1-2131	1-0904	-.9998	1-0181
December.....	1-1643	1-0687	-.9966	1-0239
Average for the period.....	1-1227	1-1161	1-0145	1-0197

Metal Prices

	Market	1918	1919	1920	1921	1921	1922	1923
			\$	\$	\$	\$	\$	\$
Antimony (ordinaries).....	New York.....	Pound.....	0-12581	0-08190	0-08490	0-04957	0-05471	0-07897
Arsenic, white.....	".....	".....	0-09	0-10	0-11	0-09850	0-09500	0-12050
Cobalt.....	".....	".....	2-50	2-50	2-50	3-00	3-25	2-85
Cobalt oxide.....	".....	".....	1-65	1-65	-	-	2-00	2-10
Copper.....	".....	".....	0-24628	0-18091	0-17456	0-12502	0-13382	0-14421
Copper.....	Montreal.....	".....	-	-	-	-	-	0-10607
Lead.....	New York.....	".....	0-07413	0-05758	0-07957	0-01545	0-05734	0-07267
".....	Montreal*.....	".....	0-60250	0-06966	0-08940	0-05742	0-06210	0-07170
".....	Toronto.....	".....	-	-	-	-	-	0-07257
Nickel.....	New York*.....	".....	0-4025	0-45	0-45	0-35	0-40	0-29353
Platinum.....	".....	Ounce.....	105-95	114-01	110-9	75-033	97-618	116-537
Silver.....	".....	".....	0-96772	1-11122	1-009	0-62654	0-67528	0-64873
Tin.....	".....	Pound.....	0-89750	0-63328	0-48273	0-28576	0-31831	0-41799
Zinc.....	St. Louis*.....	".....	0-07890	0-06988	0-07671	0-04655	0-05716	0-06607
".....	Montreal.....	".....	-	-	-	-	-	0-08267

*Quotations used in this report in computing value of mineral production.

METALLICS

Arsenic

The production of white arsenic from Canadian ores during 1923 was 3,645 tons which at the average New York quotation of 12.05 cents per pound was valued at \$878,348. During the previous year the production was 2,576 tons valued at \$321,037.

The Hedley Gold Mine at Hedley, B.C., exported concentrates to the United States from which it is estimated 609 tons was recovered in the form of white arsenic. The remainder was produced by the smelters at Deloro and Thorold from the treatment of Northern Ontario silver ores. The Clark Gold mines of Halifax county, Nova Scotia, reported a shipment of arseno-pyrites concentrates but at the time had not received assay returns for the arsenic contents.

Insecticides of an arsenic base have been in great demand during the year particularly in the cotton growing districts of the United States where they are found to be very effective in combatting the ravages of the boll weevil.

Production, Imports and Exports of Arsenic, 1922 and 1923

	1922		1923	
	Quantity	Value	Quantity	Value
Production—		\$		\$
From arsenical concentrates..... Tons	518	21,097	609	146,765
White arsenic..... Tons	2,058	299,940	3,036	731,583
Total.....	2,576	321,037	3,645	878,348
Imports—				
White arsenic..... Lb.	44,168	32,520	457,522	66,280
Sulphide of arsenic.....	525,246	39,284	7,330	1,244
Arsenate of soda..... "	7,961	1,402	4,940	475
Exports—				
Arsenic, metallic..... Tons	222	5,238	588	25,003
Arsenic, n.o.p..... "	1,367	198,005	1,564	348,646

Chromite

Approximately 25,000 tons of chromite was mined in Canada in 1923 and treated by the Quebec Chrome Corporation in the Black Lake district, Quebec. Shipments during the year comprised 2,925 tons of chrome concentrates (48% Cr 2O3), valued at \$46,800. In 1922, shipments from stock amounting to 767 tons worth \$11,503 were made.

United States quotations on chrome ore (50% Cr 2O3) ranged from \$19.50 to \$22 per ton at the end of 1923.

Importations of bichromates into Canada during the year were as follows: bichromate of soda, 693 tons at \$103,093; bichromate of potash, 44 tons at \$9,770. Exports of chrome concentrates amounted to 3,750 tons worth \$64,890.

Cobalt

In 1923, as in former years, the major proportion of the world's supply of cobalt was derived from the silver-cobalt-nickel-arsenic ores of Northern Ontario.

During the year under review, the smelters at Deloro and Thorold treated ores and residues from this district, and marketed cobalt oxide, metallic cobalt and unseparated oxides of nickel and cobalt. Residues, from the cyanide process containing cobalt, were for the most part treated in Canada although some of these amounting to 239 tons containing 93,892 pounds of cobalt were exported for treatment.

The cobalt production of Canada during 1923 was 966,020 pounds valued at \$2,753,157. These figures were obtained as the total of the metal cobalt contained in products of the smelters and cobalt in residues exported for treatment valued at \$2.85 per pound, which was the average New York quotation for cobalt during the year.

Compared with 569,960 pounds produced in 1922, valued at \$1,852,370, the figures for the past year showed an increase of 69 per cent in quantity and 49 per cent in value.

Imports into Canada and Exports of Cobalt, 1922-1923

	1922		1923	
	lb.	\$	lb.	\$
Imports—				
Cobalt ore.....	200	233	600	576
Exports—				
Cobalt alloys.....	4,022	21,398	422	1,097
Cobalt metallics.....	111,830	288,776	239,814	571,908
Cobalt oxides and Cobalt salts.....	430,024	770,511	486,239	886,746

Copper

Copper produced from Canadian ores in 1923 amounted to 87,942,458 pounds or more than double the 1922 output which stood at 42,879,818 pounds. The value of the output at the average New York price for the year of 14.421 cents per pound was \$12,682,182 as compared with \$5,738,177 in the previous year. The increased production was due to the revival of the nickel-copper industry and to the re-entry to the list of producers of the Britannia Copper Company whose new concentrator was put in operation early in the year. The Granby Consolidated also operated at capacity but the copper smelter and refinery of the Consolidated Mining and Smelting Company at Trail remained idle throughout the year.

The price of copper fluctuated widely during the year. Many reasons are given for the variation, but it is significant that the rise coincided with the flotation of an enormous bond issue by the largest producer in the world. New York press advices are to the effect that copper is still selling below the cost of production of many large producers and must advance several cents before it is in line with the present commodity price level.

An interesting feature of the Canadian tariff changes was the provision of a bounty of 1½ cents per pound on copper bars and rods produced in Canada.

The total production of refined copper amounted to 1,647,455 pounds and was produced in the British America Nickel Corporation's refinery at Deschenes.

Ontario's production amounted to 31,582,014 pounds valued at \$4,554,442 as against 10,943,636 pounds valued at \$1,464,477 in 1922. The copper contents of the matte produced by the three nickel companies during the year amounted to 31,538,710 pounds. The silver-cobalt ores and residues exported contained a further small amount from which it was estimated 33,194 pounds of copper would be recovered. The South Ontario silver smelters also produced 40,440 pounds of copper sulphate, the copper contents of which (or 25 per cent) was included in the total for Ontario.

The production from British Columbia during the period was 56,360,444 pounds valued at \$8,127,740. The output included 24,908,954 pounds, estimated as recovered from ores and concentrates exported.

No copper was produced in Quebec or Manitoba during the year.

Copper Production in Canada by Provinces, 1922-1923

Province	1922		1923	
	Pounds	Value	Pounds	Value
		\$		\$
British Columbia.....	31,936,182	4,273,700	56,360,444	8,127,740
Ontario.....	10,943,636	1,464,477	31,582,014	4,554,442
Quebec.....	-	-	-	-
Total	42,879,818	5,738,177	87,942,458	12,682,182

Imports into Canada and Exports of Copper during the Years 1922-1923

	1922		1923	
	Pounds	Value \$	Pounds	Value \$
Imports—				
Copper in bars or rods, when imported by manufacturers of trolley, telegraph and telephone wires, electric wires and electric cables for use only in the manufacture of such articles in their own factories.....	23,403,100	3,334,793	27,493,200	4,354,715
Copper in bars or rods, in coil or otherwise, in lengths of not less than 6 feet, unmanufactured.....	445,900	90,701	1,463,800	284,484
Copper in blocks, pigs or ingots.....	1,145,463	159,671	8,167,041	1,215,349
Copper, old and scrap.....	1,470,900	205,447	3,046,400	432,362
Copper, ore and concentrates.....	200	121	500	259
Copper in strips, sheets or plates not polished or coated.....	2,293,800	497,013	2,389,900	551,166
Copper tubing in lengths of not less than 6 feet, and not polished, bent or otherwise manufactured.....	998,976	212,061	1,539,791	415,133
Copper wire, plain, tinned or plated.....	102,475	26,331	213,174	55,478
Copper wire cloth, or woven wire of copper.....	-	13,510	-	19,858
Copper wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....	-	232,872	-	390,566
Copper, all other, manufactures of, n.o.p.....	-	351,694	-	429,327
Copper, precipitate of, crude.....	450	25	-	-
Anodes of nickel, zinc, copper, silver or gold.....	-	2,757	-	1,504
Copper, sub-acetate of, or verdigris, dry.....	988	326	3,782	860
Copper, sulphate of (blue vitriol).....	3,097,450	107,503	3,374,871	176,958
Total.....	-	5,284,825	-	8,327,919
Exports—				
Copper, fine, contained in ore, matte regulus, etc.....	19,063,100	1,730,681	34,548,000	3,607,031
Copper, blister.....	32,031,300	4,204,136	39,968,000	5,556,698
Copper, old and scrap.....	3,324,000	334,673	1,575,000	187,302
Copper in bars, rods, strips, sheets, plates and tubing.....	6,800	1,247	826,000	104,023
Copper wire and cable.....	-	298,683	-	387,359
Copper mfrs., n.o.p.....	-	53,569	-	262,296
Total.....	-	6,532,989	-	10,104,714

Monthly Average Prices of Copper (Electrolytic), New York and London, 1921, 1922 and 1923

(From the Engineering and Mining Journal-Press)

	New York (In cents per Pound)			London (£ Sterling per Long Ton)		
	1921	1922	1923	1921	1922	1923
January.....	12-507	13-465	14-510	79-119	72-321	71-409
February.....	12-556	12-864	15-355	75-925	66-125	74-600
March.....	11-976	12-567	16-832	71-190	65-739	81-484
April.....	12-438	12-573	16-863	71-786	64-028	81-331
May.....	12-742	13-111	15-440	74-298	60-554	76-563
June.....	12-697	13-575	14-663	75-682	69-333	73-238
July.....	12-170	13-654	14-321	75-256	70-321	72-364
August.....	11-634	13-723	13-822	69-932	69-932	70-000
September.....	11-948	13-748	13-733	72-295	70-917	69-275
October.....	12-763	13-632	12-574	73-476	70-693	64-250
November.....	13-035	13-598	12-727	74-386	70-216	66-477
December.....	13-555	14-074	12-823	74-525	70-132	67-611
Average.....	12-502	13-382	14-421	74-223	68-859	72-291

Gold

The production of gold in Canada during 1923 was 1,223,691 fine ounces, worth at the standard rate \$25,294,076, or somewhat lower than in 1922 when 1,263,364 fine ounces worth \$26,116,050 was produced. Power shortage in Northern Ontario seriously interfered with production during the early part of the year but during the summer additional power was made available from Indian Chutes on the Montreal river and Sturgeon Falls on the Mettagami. Other developments were started on the Quinze and Abitibi rivers during the year and it is likely there will be a surplus of power in the gold districts in a short time.

The production in Ontario was 971,337 ounces as compared with 1,000,340 ounces in 1922. During the year several producers of former years reappeared on the lists. The Argonaut, Vipond and Croesus were the largest of these. The Nighthawk-Peninsular Company built a mill but did not get it in operation until early in 1924.

The small production credited to Quebec was contained in lead concentrates shipped from Notre Dame des Anges. Several promising discoveries were made in the section of the province adjacent to the gold districts of Ontario and it is quite probable that Quebec will soon become an important producer of gold.

In Nova Scotia the Consolidated Mines and Power Company, successors to the Sherbrooke Mines and Power Company, or Guysboro Company have about completed their new 40-stamp mill, which will replace the one destroyed by fire last March.

In British Columbia, the Premier, Hedley, Belmont-Surf Inlet and Granby were the chief producers. The alluvial deposits were also responsible for a portion of the production.

Production of Gold in Canada by Provinces, 1922 and 1923

Province	1922			1923			+ -	
	Fine	Value	Per cent of Total Production	Fine	Value	Per cent of Total Production	Increase or Decrease	
	Ozs.	\$		Ozs.	\$		Quantity	Per cent
Ontario.....	1,000,340	20,678,862	79.18	971,337	20,079,317	79.38	-29,003	- 2.9
British Columbia.....	207,370	4,288,718	16.42	191,180	3,952,041	15.63	-16,190	- 7.8
Yukon.....	54,456	1,125,705	4.31	60,024	1,240,806	4.90	+ 5,568	+10.2
Quebec.....	-	-	-	634	13,106	0.05	+ 634	-
Manitoba.....	150	3,225	0.01	30	620	0.01	- 126	-80.8
Nova Scotia.....	1,042	21,540	0.08	396	8,186	0.03	- 646	-62.0
Alberta.....	-	-	-	-	-	-	-	-
Canada.....	1,283,344	26,116,050	100.00	1,223,601	25,294,076	100.00	-39,763	- 3.14

Production of Placer Gold in the Yukon Territory,* 1922 and 1923

(Quantities in crude ounces)

Month	Dawson		Whitehorse		Total	
	1922	1923	1922	1923	1922	1923
January.....	18.90	960.26	-	-	18.90	960.26
February.....	815.64	1,040.36	-	-	815.64	1,040.36
March.....	295.52	2.39	-	-	295.52	2.39
April.....	82.30	-	-	-	82.30	-
May.....	-	-	-	-	-	-
June.....	14,360.08	10,352.04	-	-	14,360.08	10,352.04
July.....	10,288.07	9,176.99	-	-	10,288.07	9,176.99
August.....	8,062.47	9,953.42	-	-	8,062.47	9,953.42
September.....	15,552.16	11,924.54	81.13	-	15,633.29	11,924.54
October.....	11,681.89	24,863.87	16.00	18.00	11,697.89	24,881.87
November.....	4,550.36	4,752.59	62.68	41.58	4,613.04	4,794.17
December.....	2,092.53	1,771.87	-	-	2,092.53	1,771.87
Total.....	67,799.92	74,868.23	161.81	59.58	67,961.73	74,867.81

*Supplied by the Mining Lands Branch, Department of Interior.

Receipts at the Royal Mint, 1922 and 1923

Source	1922			1923		
	Gross Weight	Precious Metal Content		Gross Weight	Precious Metal Content	
		Fine Gold	Fine Silver		Fine Gold	Fine Silver
Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	
Yukon.....	21.27	16.363	3.55	100.97	87.144	10.98
Alberta.....	16.91	12.146	3.26	23.80	18.381	1.50
British Columbia.....	68.24	38.941	22.09	60.63	39.111	15.74
Manitoba.....	213.47	156.345	20.15	60.61	20.638	4.40
Nova Scotia.....	1,200.07	1,041.504	85.49	406.92	339.873	20.17
Ontario.....	1,234,988.20	970,407.371	160,335.07	640,535.35	509,756.704	80,150.75
Vancouver Assay Office.....	126,577.56	102,202.163	18,325.66	124,131.24	98,259.084	19,083.97
Jewelry and scrap.....	13,777.63	4,070.835	2,497.76	14,122.44	4,959.543	2,213.71
Foreign.....	345.22	260.641	67.67	295.53	238.739	33.00
Saskatchewan.....	-	-	-	15.96	10.150	1.08
Total.....	1,377,208.57	1,087,206.309	181,360.70	779,762.45	613,739.427	101,535.39

Imports into Canada and Exports of Gold, 1922 and 1923

	Imports		Exports	
	1922	1923	1922	1923
	\$	\$	\$	\$
Bullion or fringe gold.....	38,939	42,283	-	-
Gold and silver sweepings.....	5,471	4,849	-	274,467
Gold bearing quartz, dust, nuggets and bullion obtained from operators.....	-	-	3,953,938	12,542,807
Total.....	44,410	47,132	3,953,938	12,817,274

Iron Ore

The total shipments of iron ore from Canadian mines during 1923 amounted to 30,752 short tons, the net value of which was reported as \$144,944 as compared with 17,971 tons shipped in 1922 with a value of \$56,993. While the shipments showed a slight increase there was no cause for elation as the bulk came from the Moose Mountain mine at Sellwood as the result of cleanups in the course of dismantling their plant.

During the year the "Iron Ore Committee" appointed by the Ontario Government investigated the situation and recently presented their report, the chief feature of which is the recommendation that the government offer a bounty of 1 cent per unit of iron on each long ton of merchantable iron ore marketed from Ontario mines. However, the immediate future of the industry appears to depend largely on the results obtained at Babbitt, Minnesota, in the beneficiation of a low-grade taconite ore.

The exports of iron ore as reported by shipping companies in 1923 amounted to 5,663 short tons valued at \$20,279.

Pig Iron, Steel Ingots and Castings

Pig Iron.—The production of pig iron in Canada from domestic and imported ores during 1923 was 880,018 long tons valued at approximately \$20,117,000 as compared with 383,057 tons in 1922, an increase of 496,961 tons or 130 per cent. The minimum monthly output was 40,739 tons, reported in January. Production rose steadily to a peak of 101,533 tons in May and then remained more or less steady until the downward trend started in September.

The average per capita production of pig iron in Canada in 1923 was 215.5 pounds, or more than double the 1922 average of 95.6 pounds and 42 per cent greater than the average of 151.4 pounds in 1921.

Six furnaces were in blast at the end of the year including three at Sydney, N.S., two at Hamilton, Ontario, and one at Sault Ste. Marie, Ontario.

The total production of ferro-silicon was 28,961 long tons, an increase of 40 per cent over the 20,749 tons produced in the preceding year.

Canadian ores charged to blast furnaces during the year totalled 36,621 short tons from which 20,739 tons (18,517 long tons) of pig iron valued at \$432,298 was produced.

Steel Ingots and Castings.—The cumulative production of steel ingots and castings in Canada for the twelve months ending December was 884,770 long tons or 82 per cent over the output of 485,643 tons for the year 1922 and 33 per cent over the 667,484 tons in 1921. The output of steel rose steadily until May, dropped off slightly during June and July, reached a peak of 105,066 tons in August, then fell away sharply in September and gradually declined to the lowest monthly output of the year in December.

The average per capita production of steel in Canada in 1923 was 217 pounds, or almost double the 1922 average of 121 pounds and 28 per cent greater than the average of 170 pounds in 1921.

During 1923 the average price of basic pig iron in Canada rose gradually from January till May. On a base of 100 for average prices in 1913, the variation in prices during the

first five months was from 177.1 in January to 194.3 in May. In June the index stood at 188.6, from which point it gradually declined to 142.9 in November; there was a slight recovery to 148.6 in December. Rolling mill products, on the other hand, rose more gradually from an index number of 149.9 in January to 166.6 in June; slight recessions and recoveries followed, the year closing with steel prices at a maximum of 169.1 in the same index.

Production of Pig-Iron and Ferro-Alloys in Canada, 1922 and 1923

(Tons of 2,240 lbs.)

	1922				1923			
	In Blast Furnace		In Electric Furnace	Total	In Blast Furnace		In Electric Furnace	Total
	For Own Use	For Sale	For Sale		For Own Use	For Sale	For Sale	
Pig Iron—								
Basic.....	252,870	430	—	253,300	541,456	8,678	—	550,134
Foundry.....	303	99,134	—	99,437	1,007	227,930	—	228,937
Malleable.....	—	30,216	—	30,216	609	100,338	—	100,947
Castings.....	—	—	104	104	—	—	—	—
Total Pig Iron.....	253,173	129,780	104	383,057	543,072	336,946	—	880,018
Total Ferro-Alloys.....	4,349	312	16,018	20,749	—	—	28,961	28,961

Production of Steel Ingots and Castings in Canada, 1922 and 1923

(Tons of 2,240 lbs.)

	1922			1923		
	For Own Use	For Sale	Total Production	For Own Use	For Sale	Total Production
Steel Ingots—						
Open Hearth—Basic.....	462,795	—	462,795	839,710	—	839,710
Bessemer.....	7	18	25	—	—	—
Electric.....	168	125	293	—	—	—
Total Steel Ingots.....	462,970	143	463,113	839,710	—	839,710
Steel Castings—						
Open Hearth—Basic.....	1,423	7,318	8,741	2,799	25,493	28,292
Acid.....	—	—	—	—	4,359	4,359
Bessemer.....	61	3,051	3,112	149	4,012	4,161
Electric.....	979	9,698	10,677	121	8,152	8,273
Total Direct Steel Castings.....	2,463	20,067	22,530	3,039	42,021	45,060
Grand Total.....	465,433	20,210	485,643	842,749	42,021	884,770

Lead

The production of lead in Canada during 1923 was 110,730,730 pounds which at the average Montreal market price of 7.179 cents per pound for the year was valued at \$7,949,359. This compares with 93,307,171 pounds valued at \$5,817,702 in 1922 when the average Montreal market price was 6.219 cents per pound.

The major portion of the production was in the form of pig lead produced at Trail, British Columbia, and at Galetta, Ontario. In addition, lead ores were exported for treatment from the Mayo district in Yukon Territory, from the Kootenay District in British Columbia, and from Notre Dame des Anges, Quebec.

Production, Exports and Imports of Lead for Canada, 1922 and 1923

	1922		1923	
	Quantity	Value	Quantity	Value
	Lb.	\$	Lb.	\$
Production—				
Quebec.....	-	-	520,041	37,334
Ontario.....	2,890,397	180,216	4,558,914	327,284
British Columbia.....	87,093,266	5,430,265	99,473,252	7,141,185
Yukon.....	3,323,508	207,221	6,178,523	443,556
Total.....	83,307,171	5,817,702	110,730,730	7,949,359
Exports—				
Lead, contained in ore.....	10,941,800	550,088	7,948,100	535,937
Pig lead.....	41,481,900	1,877,050	47,144,500	2,496,207
Total.....	52,423,700	2,427,138	55,092,600	3,032,144
Imports—				
Lead, bars and sheets.....	263,612	17,957	407,840	31,321
Lead, pig and block.....	1,932,881	101,942	2,689,396	144,580
Lead pipe.....	96,716	6,458	85,349	6,564
Shots and bullets.....	10,324	4,173	10,705	1,253
Lead, old and scrap.....	-	-	62,059	3,505
Tea lead.....	-	-	215,345	19,622
Manufactures of lead, n.o.p.....	-	199,330	-	199,793
Total.....	-	329,860	-	403,653

Monthly Average Prices of Pig-Lead, Montreal* and New York., 1921, 1922 and 1923

(Value in cents per pound)

Month	Montreal			New York		
	1921	1922	1923	1921	1922	1923
January.....	6.093	6.152	7.245	4.821	4.700	7.633
February.....	5.683	5.897	7.561	4.373	4.700	8.050
March.....	5.377	5.930	7.798	4.084	4.720	8.252
April.....	5.404	5.908	7.243	4.356	5.115	8.10
May.....	6.021	6.139	6.841	4.952	5.420	7.306
June.....	5.795	6.190	6.760	4.485	5.745	7.146
July.....	5.75	6.235	6.480	4.410	5.729	6.237
August.....	5.571	6.226	6.593	4.382	5.824	6.582
September.....	5.588	6.178	6.865	4.600	6.110	6.856
October.....	5.581	6.235	7.205	4.690	6.530	6.83
November.....	5.820	6.775	7.682	4.683	7.047	6.846
December.....	6.223	6.957	7.870	4.700	7.163	7.369
Average.....	5.742	6.235	7.179	4.545	5.734	7.267

*Producers' prices for car load quantities ex-cars Montreal, as furnished by Messrs. Thos. Robertson & Co., Limited Montreal, 1912 to 1919, and by Consolidated Mining and Smelting Company, 1920 and 1921.

†From the Engineering and Mining Journal.

Manganese

No shipments of manganese ores were reported by operators during 1923. Manganese deposits have been worked on a small scale in former years at New Ross, Lunenburg County, Nova Scotia, and near Kaslo, B.C. Most of the shipments were made to the United States and the new mineral tariff of that country which went into effect in September, 1922, added a new obstacle to this struggling industry.

Molybdenum

There has been no molybdenum produced in Canada since 1919. During the war a considerable number of producers operated and in 1918 the peak of production was reached. With the cessation of hostilities producers were left with considerable stocks on hand which because of the limited uses for the metal were not readily absorbed into commerce.

Nickel

The production of nickel in Canada during 1923 was 62,453,843 pounds, which at 29.35 cents per pound (the average New York quotation for nickel) was valued at \$18,332,077. Compared with the low production of 17,597,123 pounds valued at \$6,158,993 in 1922 this is a great increase and in fact has only been topped by the production of the war years from 1915 to 1918 inclusive.

All the refined nickel produced by the International Nickel Co. is now made at Port Colborne, the plant in New Jersey having been dismantled; considerable quantities of matte were exported to Huntington, West Virginia, to be made into Monel metal. The Mond Nickel Company exported matte to Wales but the British America Nickel Corporation matte was treated at Deschernes, Que.

In addition to the production of the above-mentioned companies the usual small amounts were produced by the smelters at Deloro and Thorold in the treatment of silver ores from Cobalt and vicinity.

Production in Canada and Exports of Nickel, 1922 and 1923

Items	1922		1923	
	Quantity	Value	Quantity	Value
		\$		\$
Production—				
Nickel contained in matte..... Lb.	17,355,056		62,057,836	-
Nickel from Cobalt ores..... "	242,067		396,008	-
Total "	17,597,123	6,158,993	62,453,843	18,332,077
Exports—				
Nickel, fine..... "	14,449,700	4,287,941	22,897,900	4,649,251
Nickel contained in matte..... "	16,768,200	2,536,247	28,971,000	4,077,000
Total "	31,217,900	6,824,288	51,868,900	8,726,251

Metals of the Platinum Group

The total production of platinum in Canada reported for 1923 was 1,217 ounces which at the average New York quotation of \$116.537 per ounce was valued at \$141,826. In addition to this, the production of 1,732 ounces of palladium valued at \$118,902; of 206 ounces of rhodium valued at \$18,540; and of 98 ounces of iridium valued at \$22,417 was reported.

With the exception of 7 ounces of platinum produced by British Columbia placer miners, all of the above was recovered in the refining operations of the International Nickel Co. at Port Colborne, and the British America Nickel Corporation at Deschernes. The Mond Nickel Company has never furnished figures of the recovery in their refinery but assays made on behalf of the Royal Ontario Nickel Commission would make it appear that their matte is considerably richer in precious metals than that of the other two companies.

Production of Platinum Group Metals, 1922 and 1923

	1922			1923		
	Platinum	Palladium	Rhodium, etc.	Platinum	Palladium	Rhodium, etc.
Produced by Canadian and United States refineries from Canadian mattes and residues.....	458	724	391	1,210	1,732	304
Value.....	\$44,709	\$47,060	\$331,280	\$141,010	\$118,902	\$40,957
British Columbia placers.....	11	-	1	7	-	-
Value.....	\$1,074	-	\$90	\$316	-	-
Total for Canada	(a) 469	(b) 724	(c) 392	1,217	1,732	304
Value.....	\$45,783	\$47,060	\$31,360	\$141,826	\$118,902	\$40,957

(a) includes 282 ounces Platinum
 (b) includes 383 ounces Palladium
 (c) includes 206 ounces of others

} Produced but not reported prior to 1922.

Imports into Canada and Exports of Platinum, 1922 and 1923

	1922		1923	
	Quantity	Value	Quantity	Value
	Ozs.	\$	Ozs.	\$
Exports—				
Contained in concentrates.....	35	3,626	349	33,838
Platinum, old and scrap.....	151	13,328	126	8,988
Total.....	186	16,954	475	42,826
Imports—				
Platinum retorts.....	—	887	—	40,471
Platinum wire, and in bars, strips, etc.....	—	91,425	—	117,607
Platinum crucibles.....	—	3,976	—	10,177
Total.....	—	96,288	—	168,255

Silver

The production of silver in Canada during 1923 was 17,754,706 ounces which at 64.873 cents per ounce (the average New York quotation for the year) was valued at \$11,518,008. This represents silver produced as bullion in Canada together with that estimated to have been recovered from ores, etc., exported. When compared with 1922, the figures show an apparent falling off but adjustments made to bring the method of compiling silver statistics into conformity with those used for other metals accounted for the difference. When the flourishing state of the markets for the metals cobalt, arsenic and lead with which silver is chiefly associated in Canada is taken into consideration it will be seen that the silver mining industry enjoyed a prosperous year.

The outstanding development of importance during the year was the termination of the Pittman Act in the United States and the efforts of the producers of that country to wrest control of the silver market from London by means of an export association with which Canadian producers were invited to co-operate. The Pittman Act authorized the Government of the United States to buy back at one dollar per ounce from American producers three hundred and fifty million ounces of silver which had been sold at the same price to Great Britain from the treasury vaults during the war. As these sales naturally kept the silver produced in the United States from entering the world's markets, the termination of the Act was viewed with some alarm by producers of other countries but close students of the silver market predicted it would have but slight effect and the trend of the market since seems to have proved them right.

In Ontario, the South Lorrain district was the scene of great activity while very favourable results were reported from Gowganda and important discoveries were made in Cobalt proper. In British Columbia, the production from the Kootenays showed an increase, but the Premier Mine in the Portland Canal district failed to keep up its record production of the previous year. However, other properties in the district showed favourable developments.

The Mayo district in the Yukon showed an increased production and still greater things are looked for from this far-away camp.

During the year, the Nipissing Mine of Cobalt regained the title of Canada's largest silver-producing mine which had been wrested during the previous year by the Premier Mine of British Columbia.

Production of Silver in Canada by Provinces, 1922 and 1923

Province	1922			1923		
	Quantity	Value	Per cent of total production	Quantity	Value	Per cent of total production
	Ozs.	\$	Per cent	Ozs.	\$	Per cent
Quebec (in ores exported).....	—	—	—	29,563	19,178	—
Ontario.....	10,811,903	7,300,305	58	10,285,247	6,672,348	58
Manitoba and Nova Scotia.....	106	72	—	19	12	—
British Columbia.....	7,150,937	4,828,384	38	5,964,095	3,869,087	34
Yukon Territory (contained in placer gold and in ores exported).....	663,493	447,997	4	1,475,782	957,383	8
Total.....	18,626,439	12,576,758	100	17,754,706	11,518,008	100

Imports into Canada and Exports of Silver, 1922 and 1923

	1922		1923	
	Oz.	\$	Oz.	\$
Imports—				
Silver bullion in bars.....	-	657,760	-	723,040
Sterling silver.....	-	178,223	-	234,047
Total	-	835,983	-	957,087
Exports—				
Silver contained in ore, concentrates, etc.....	6,471,159	5,281,395	4,861,301	3,091,261
Silver bullion.....	10,930,638	7,402,633	12,324,336	8,046,463
Total	17,401,797	11,684,028	17,185,637	11,137,724

Monthly Average Prices of Silver,* 1921, 1922 and 1923

	New York			London		
	1921	1922	1923	1921	1922	1923
January.....	65.950	65.450	65.668	39.985	35.035	31.928
February.....	50.233	65.290	64.313	34.745	33.891	30.875
March.....	56.023	64.440	67.556	32.479	33.269	32.310
April.....	59.337	66.575	66.855	34.250	34.080	32.346
May.....	59.810	71.154	67.043	34.165	36.023	32.611
June.....	58.510	71.149	64.861	34.971	35.900	31.611
July.....	60.260	70.245	63.015	37.481	35.644	30.942
August.....	61.597	69.417	62.793	38.096	34.957	30.952
September.....	66.160	69.515	64.203	40.082	35.305	31.696
October.....	70.970	68.015	63.649	41.442	34.498	31.718
November.....	68.234	65.177	63.818	38.750	32.882	32.774
December.....	65.700	63.905	64.705	35.645	31.383	33.375
Average	62.654	67.538	64.873	38.841	34.406	31.939

* New York quotations cents per ounce, troy, 999 fine, foreign silver.
London pence per ounce, sterling silver, 925 fine.

Zinc

The production of zinc in Canada during 1923 was 60,368,000 pounds which at the average St. Louis price for spelter of 6.607 cents per pound was valued at \$3,988,514. The total production consisted of 60,050,000 pounds of refined zinc produced at Trail and 318,000 pounds, the estimated recovery from zinc concentrates exported for treatment from Notre Dame des Anges, Quebec. Compared with 1922 there was an increase of 7 per cent in quantity and 24 per cent in value.

During the year the new concentrator of the Consolidated Mining and Smelting Company at Kimberley, B.C., was completed and put in operation. The solution of the metallurgical problems involved in the treatment of the complex ores of the Sullivan mine by the staff of this company has been a truly wonderful achievement and it may be said that, due entirely to their efforts, an enormous tonnage of a mineral aggregate with doubtful value has become a great Canadian natural resource.

Imports into Canada and Exports of Zinc, 1922 and 1923

		1922		1923	
		Quantity	Value	Quantity	Value
			\$		\$
Imports—					
Zinc dust.....	Lb.	313,568	27,376	394,378	41,167
Zinc in blocks, pigs, bars and rods.....	"	51,641	3,919	5,227	464
Zinc in sheets and plates.....	"	3,845,449	296,076	3,195,855	287,664
Zinc seamless drawn tubing.....	"	54	14	-	-
Zinc spelter.....	"	1,060,283	67,737	685,356	54,408
Zinc manufactures of n.o.p.....	"	-	78,398	-	104,487
Total	"	-	473,520	-	488,190
Exports—					
Zinc ore.....	Tons	40	1,095	531	6,310
Zinc spelter.....	"	28,510	3,054,644	19,258	2,513,763
Total	"	-	3,055,739	-	2,519,073

**Monthly Average Prices of Zinc at Montreal, St. Louis and London, 1921,
1922 and 1923**

Months	Montreal ¹			St. Louis ²			London ²		
	(In Cents per Pound)			(In Cents per Pound)			(In Pounds Sterling per Long Ton)		
	1921	1922	1923	1921	1922	1923	1921	1922	1923
January.....	6-561	6-472	6-544	5-413	4-691	6-815	25-262	26-321	35-733
February.....	6-607	6-211	8-840	4-928	4-485	7-152	24-850	24-213	35-613
March.....	6-686	6-288	9-412	4-737	4-658	7-706	25-077	25-467	36-720
April.....	6-588	6-531	8-879	4-747	4-906	7-197	25-530	26-576	34-275
May.....	6-809	6-601	8-013	4-848	5-110	6-625	26-923	27-304	31-087
June.....	6-556	6-906	7-650	4-421	5-346	6-031	26-750	27-893	29-548
July.....	6-311	7-274	7-740	4-239	5-694	6-089	26-202	29-042	29-355
August.....	6-126	7-734	8-086	4-186	6-212	6-325	25-068	31-170	32-386
September.....	6-19	7-864	8-190	4-235	6-548	6-438	25-256	31-750	33-469
October.....	6-454	7-274	7-992	4-005	6-840	6-293	26-315	34-528	32-955
November.....	6-55	8-639	8-014	4-665	7-104	6-347	25-949	38-011	32-949
December.....	6-673	8-637	7-850	4-837	6-999	6-260	26-000	37-757	32-611
Average.....	6-568	7-210	8-268	4-655	5-716	6-607	25-845	30-003	33-658

¹Supplied by Consolidated Mining and Smelting Co., Montreal, P.Q.

²Quoted from *Engineering and Mining Journal-Press*.

NON-METALLICS

Abrasives

Grindstones, Pulpstones and Scythstones.—Shipments of grindstones, pulpstones and scythstones during 1923 totalled 1,493 tons valued at \$60,742 comprising 235 tons at \$1,265 from Nova Scotia and 1,258 tons worth \$59,477 from New Brunswick. During 1922 shipments of 1,005 tons valued at \$43,742 were reported.

The deposits operated were located at Woodburn, Nova Scotia, and Quarryville, New Brunswick.

Tripolite.—The only production of this commodity in Canada during recent years has been derived from deposits located at Silica Lake, Colchester County, Nova Scotia.

No shipments of tripolite were reported during the first six months of 1923, but in the last half, 130 tons valued at \$3,250 was reported.

Tripolite is a silicious material closely allied to quartz and is used mainly as an abrasive product. The crude product is calcined in rotary furnaces and is then usually exported to the United States for further treatment.

Imports into Canada and Exports of Abrasives, 1922 and 1923

	1922		1923	
	Quantity	Value	Quantity	Value
Imports—		\$		\$
Grindstones.....	-	319,941	-	13,718
Burrstones in blocks, etc.....	No. 400	910	519	6,908
Emery in bulk, crushed or ground.....	-	41,943	-	57,267
Emery and carborundum wheels and manufactures.....	-	209,356	-	151,065
Pumice and pumice stone, ground.....	-	26,405	-	28,222
Iron sand or globules for polishing and sawing.....	-	11,820	-	20,855
Sandpaper, emery paper, etc.....	-	270,231	-	293,965
Artificial abrasives.....	-	163,542	-	243,408
Exports—				
Grindstones, manufactured.....	-	17,018	-	37,101
Stone for the manufacture of grindstones.....	Tons	-	170	1,190
Abrasives—				
Natural, n.o.p.....	Cwt. 52,752	128,034	111,152	202,079
Artificial, crude, including carborundum.....	266,526	1,299,818	823,901	2,642,821
Artificial, made up into wheels, stones, etc.....	-	14,650	-	27,127

Actinolite

Shipments in 1923 of actinolite to United States, from milled stock on hand amounted to 53 tons worth \$583 or an average of \$11 a ton. The production for the previous year was 50 tons with a value of \$575. The actinolite deposit worked, is located near Actinolite, Ontario and the product is used in conjunction with coal tar in the manufacture of roofing and similar products.

Asbestos

From the point of volume of sales, 1923 may be considered the premier year for the asbestos industry in Canada, but the value of this commodity declined very materially. The sales for the year totalled 231,231 tons with a return to the operator of \$7,508,138, as compared with 163,706 tons worth \$5,552,723 in 1922.

The year under review was the scene of activity on a deposit of asbestos near McKay Lake, Deloro township, Ontario. A small test shipment of Crude No. 1 and 2, was made from a newly developed deposit. In Quebec, experimental operations were carried on by the Selective Treatment, Limited, to recover the fibre from asbestos rock by a wet process.

Output and Sales of Asbestos in Canada, 1922 and 1923

Classification	1922				1923			
	Total output	Sold or Shipped			Total output	Sold or Shipped		
		Quantity	Total sales value at mill	Average value per ton		Quantity	Total sales value at mill	Average value per ton
	Tons	Tons	\$	\$	Tons	Tons	\$	\$
Crude No. 1.....	759	433	277,492	640.85	1,029	603	275,101	456.22
Crude No. 2.....	2,190	1,351	447,845	331.49	3,066	3,246	794,834	244.86
Fiberized Crude.....	120	328	64,506	195.56	220	5	1,306	261.20
Spinning Stocks.....	11,030	6,739	1,326,920	196.90	10,425	11,734	1,460,834	124.49
Shingle Stocks.....	18,587	19,647	1,085,174	55.23	29,073	25,662	1,241,945	48.30
Mill Board Stocks.....	3,930	4,386	128,164	29.22	11,491	11,352	329,755	29.04
Paper Stocks.....	43,196	44,135	1,426,533	32.32	59,525	66,769	2,201,639	32.97
Paper Filters.....	35,257	43,275	565,671	13.07	60,199	57,814	856,498	14.81
By-Products (asbestos sand, finish, floats).....	42,954	43,412	230,418	5.31	57,656	54,046	346,226	6.41
Total.....	158,823	163,706	5,552,723	33.92	232,684	231,231	7,508,138	32.47

Imports into Canada and Exports of Asbestos, 1922 and 1923

	1922		1923	
	Tons	\$	Tons	\$
<i>Imports—</i>				
Asbestos in any form other than crude, and all manufactures of, n.o.p.	-	476,408	-	697,319
<i>Exports—</i>				
Asbestos.....	105,114	5,993,570	137,551	7,628,777
Asbestos sand and waste.....	56,885	562,223	77,951	931,245
Asbestos manufactures.....	-	85,826	-	72,498
Total.....	-	6,651,619	-	8,632,520

Monthly Average Prices of Asbestos by Grades, 1923
(Short Tons)

Month	Crude No. 1	Crude No. 2	Spinning Fibres	Magnesia and Compressed Sheet Fibres	Shingle Stock	Paper Stock	Cement Stock	Floats Stock
	\$	\$	\$	\$	\$	\$	\$	\$
January.....	675	375	220	150	75	38	18	10
February.....	500	300	200	150	70	35	18	10
March.....	500	292	178	133	73	37	21	11
April.....	500	288	168	125	75	39	23	12
May.....	500	288	168	125	75	39	23	12
June.....	500	288	168	125	73	39	19	11
July.....	500	275	175	125	75	38	23	10
August.....	453	275	184	125	62	39	19	10
September.....	438	275	222	115	58	37	23	11
October.....	425	275	138	93	58	35	19	10
November.....	397	225	113	75	58	35	19	9
December.....	397	225	113	75	57	35	19	9
Average.....	462	262	170	118	67	34	20	10

Coal

The output of coal from Canadian mines during the twelve months ending December was 16,984,000 tons valued at \$73,504,000. Alberta was the premier producing province with a total of 6,849,000 tons and Nova Scotia was a close second with 6,596,000 tons. In point of output value, however, Nova Scotia held first place, the coal production for the year being valued at \$29,153,000, as compared with \$28,279,000 for Alberta and \$14,088,000 for British Columbia placing that province third among the coal-producing areas. Saskatchewan produced more coal than New Brunswick, but the value of the New Brunswick output was higher. The figures for these two provinces were as follows: Saskatchewan, 440,000 tons valued at \$919,000; New Brunswick, 277,000 tons valued at \$1,065,000. Approximately 30,000 men found employment in the coal mines of Canada, about 75 per cent of these being employed underground and 25 per cent on the surface. The output per man-day during December was 2.39 tons.

During the year, the total importations of all coal were more than twenty-two million net tons, an increase of about 59 per cent over the tonnage for the preceding year.

Coal from the United Kingdom was brought in more or less continuously throughout the year the total importations amounting to 530,469 net tons, approximately one-half of which was anthracite and the balance bituminous. The grading and sizing of Welsh coal imported for domestic use made it much more popular with the householder and it is probable that the importations of coal from the United Kingdom to Canada will be increased as time goes on and as the British producer learns more about the requirements of the Canadian market. Anthracite importations during the year including coal from the United States and from Great Britain amounted to 5,168,000 tons, or nearly double the quantity imported during 1922 and approximately 27 per cent more than the average for the three preceding years. Some attempt was made to supply the Central Canada area with Alberta coal, but it cannot be said that the experiment proved a great commercial success. The high freight rates seemed to be the principal deterrent factor.

Exports of Canadian coal during the year were 1,654,000 tons or somewhat less than in the preceding year.

The amount of coal made available for consumption in Canada, computed by adding the output from Canadian mines to the quantities imported and by deducting from this total the sum of the exports, showed that 38,917,000 tons of coal was made available for use in Canada during 1923 or about ten million tons more than in 1922.

Fewer tables have been prepared for this preliminary report owing to the fact that the Bureau publishes a monthly report on coal statistics which is now in its second year. The monthly report gives complete data regarding the output of coal from Canadian mines by districts; the imports of coal by grades and by provinces and by ports of entry; and the exports of Canadian coal through each customs port. Data are given for the current month, the preceding month, and the calendar year to date with comparative figures showing the three-year average in each case,

Output and Value of Coal by Provinces and Grades, 1922 and 1923

(Short tons)

Provinces	1922		1923	
	Output	Total Value	Output	Total Value
	Tons	\$	Tons	\$
Nova Scotia—				
Bituminous.....	5,569,072	24,629,921	6,595,672	29,152,870
New Brunswick—				
Bituminous.....	287,513	1,107,643	276,603	1,064,922
Saskatchewan—				
Lignite.....	382,437	802,053	439,892	919,374
Alberta—				
Anthracite.....	40,417	122,538	107	324
Bituminous.....	2,846,405	12,983,976	3,243,803	14,791,742
Sub-bituminous*			465,982	2,124,878
Lignite.....	3,104,089	11,245,399	3,138,646	11,361,899
Total for Alberta.....	5,990,911	24,351,913	6,848,538	28,278,843
British Columbia—				
Bituminous.....	2,927,033	14,622,317	2,823,317	14,088,352
Yukon—				
Bituminous.....	465	4,650		
Canada—				
Anthracite.....	40,417	122,538	107	324
Bituminous.....	11,630,488	53,348,507	12,939,395	50,097,846
Sub-bituminous*			465,982	2,124,878
Lignite.....	3,486,526	12,047,452	3,578,538	12,281,273
Total for Canada.....	15,157,431	65,518,497	16,991,622	73,591,341

*Not separately reported in 1922.

Shipments of Coal from Canadian Mines by Grades and Destinations, 1922 and 1923

(Short tons)

Destination	1922				1923			
	Run of Mine	Screened	Slack	Total	Run of Mine	Screened	Slack	Total
Nova Scotia.....	633,310	453,722	211,037	1,298,069	580,920	564,912	704,806	1,850,638
Prince Edward Island.....	13,982	56,537	476	70,995	13,943	66,593	380	80,916
New Brunswick.....	327,004	182,377	52,839	562,220	461,499	218,930	52,382	732,811
Quebec.....	1,186,408	17,239	250,669	1,454,316	1,390,476	28,151	221,656	1,540,283
Ontario.....	14,227	22,123	2,457	38,807	21,812	45,414	10,529	80,755
Manitoba.....	133,242	501,699	63,220	698,161	175,968	537,744	71,602	785,314
Saskatchewan.....	226,485	1,096,848	109,063	1,432,396	231,155	1,079,278	110,861	1,421,294
Alberta.....	263,409	851,790	258,295	1,373,494	229,422	805,775	293,761	1,328,958
British Columbia.....	120,197	713,777	233,593	1,067,567	92,024	576,092	246,399	914,515
Yukon.....	390	81	79	460	-	-	-	-
Total Domestic Shipments.....	2,918,564	3,896,193	1,181,728	7,996,485	3,100,219	3,922,889	1,712,376	8,735,484
Railroads.....	3,220,113	186,024	173,075	3,579,212	4,523,990	236,805	145,420	4,906,215
Ships' Bunker.....	301,799	321,081	3,909	626,789	259,884	338,072	8,305	606,261
Total Railroads and Ships' Bunkers.....	3,521,912	507,105	176,984	4,206,001	4,783,874	574,877	153,725	5,512,476
United States.....	568,912	348,060	147,263	1,064,235	323,463	195,863	61,059	580,385
Newfoundland.....	78,854	127,376	9,092	216,222	107,465	153,444	10,476	271,385
West Indies.....	-	-	-	-	-	106	-	106
Europe.....	-	386	-	386	86,636	1,216	-	87,752
Other Places.....	1,718	7,868	112	9,698	3,031	7,287	466	10,784
Lost at Sea.....	-	170	-	170	-	-	-	-
Total Foreign Shipments.....	649,484	483,860	157,367	1,290,711	520,495	357,910	72,001	950,413
Total.....	7,089,960	4,887,158	1,516,079	13,493,197	8,404,588	4,855,652	1,938,102	15,198,372

Exports of Canadian Coal by Provinces, 1922 and 1923

(Short tons)

	1922	1923
Nova Scotia.....	641,304	679,771
New Brunswick.....	66,460	115,364
Quebec.....	55,275	3
Ontario.....	76	877
Manitoba.....	2,082	8,213
Saskatchewan.....	5,040	11,510
Alberta.....	915	605
British Columbia and Yukon.....	1,047,430	838,063
Total.....	1,818,582	1,654,406

**Summary Statistics for 1923—Output, Exports, Interprovincial Shipments, Imports
and Coal made Available for Consumption in Canada, by Provinces**

(Short tons)

Provinces	Canadian Coal				Imported from U.S.A.	Imported from Great Britain	Coal available for con- sumption
	Output	Received from other provinces	Shipped to other provinces	Exported			
Nova Scotia—							
Anthracite.....	—	—	—	—	35,169	18,570	53,739
Bituminous.....	6,595,672	—	2,175,220	679,771	44,426	7,871	3,792,978
Total.....	6,595,672	—	2,175,220	679,771	79,595	26,441	3,846,717
New Brunswick—							
Anthracite.....	—	—	—	—	54,556	35,787	90,343
Bituminous.....	276,603	561,258	32,112	115,364	78,842	23,440	792,607
Total.....	276,603	561,258	32,112	115,364	133,398	59,227	883,010
Prince Edward Island—							
Anthracite.....	—	—	—	—	4,303	—	4,303
Bituminous.....	—	80,916	—	—	1,263	—	82,179
Total.....	—	80,916	—	—	5,566	—	86,482
Quebec—							
Anthracite.....	—	—	—	—	1,611,351	205,058	1,816,409
Bituminous.....	—	1,540,283	—	3	2,922,991	237,498	4,700,769
Lignite.....	—	—	—	—	—	—	—
Total.....	—	1,540,283	—	3	4,534,342	442,556	6,517,178
Central Ontario—							
Anthracite.....	—	—	—	—	—	—	—
Bituminous.....	—	27,901	—	877	3,059,964	2,244	3,062,208
Lignite.....	—	51,265*	—	—	11,717,298	—	11,744,412
Sub-bituminous.....	—	1,499*	—	—	—	—	1,265
Total.....	—	80,755	—	877	14,777,262	2,244	14,859,384
Manitoba and Head of Lakes—							
Anthracite.....	—	—	—	—	—	—	138,414
Bituminous.....	—	22,269	—	8,213	138,414	—	2,476,894
Lignite.....	—	701,981	—	—	2,462,838	—	701,981
Sub-bituminous.....	—	61,064	—	—	—	—	61,064
Total.....	—	785,314	—	8,213	2,601,252	—	3,378,353
Saskatchewan—							
Anthracite.....	—	—	—	—	2,291	—	2,291
Bituminous.....	—	101,820	—	11,510	1,007	—	91,917
Lignite.....	439,892	1,118,391	222,178	—	—	—	1,336,105
Sub-bituminous.....	—	29,338	—	—	—	—	29,338
Total.....	439,892	1,249,549	222,178	11,510	3,898	—	1,459,651
Alberta—							
Anthracite.....	107	—	—	—	—	—	107
Bituminous.....	3,243,803	18,054	106,406	605	1,110	—	3,155,956
Lignite.....	3,138,046	—	1,720,450	—	—	—	1,418,187
Sub-bituminous.....	465,982	—	106,270	—	—	—	359,703
Total.....	6,848,538	18,054	1,933,144	605	1,110	—	4,933,953
British Columbia and Yukon—							
Anthracite.....	—	—	—	—	174	—	174
Bituminous.....	2,823,317	23,298	62,151	838,063	17,923	1	1,964,325
Lignite.....	—	71,000	—	—	2,331	—	73,331
Sub-bituminous.....	—	14,378	—	—	—	—	14,378
Total.....	2,823,317	108,676	62,151	838,063	20,428	1	2,052,208
Canada—							
Anthracite.....	107	—	—	—	4,906,222	261,659	5,167,988
Bituminous.....	12,939,395	2,375,889	2,375,889	1,654,406	17,248,298	268,810	28,802,007
Lignite.....	3,578,538	1,042,637	1,942,637	—	2,331	—	3,580,869
Sub-bituminous.....	465,982	106,279	106,279	—	—	—	465,982
Total.....	16,984,022	4,424,805	4,424,805	1,654,406	22,136,851	530,469	38,016,936

*Includes all coal shipped to any point in Ontario from Western Mines.

Coal Made Available for Consumption in Canada, 1922 and 1923

(Short tons)

Month	1922				1923			
	Output	Imports	Exports	Coal made available for use	Output	Imports	Exports	Coal made available for use
January	1,231,855	835,177	124,100	1,942,932	1,831,058	1,641,714	216,190	3,256,573
February	1,287,274	1,020,142	116,540	2,190,968	1,640,202	1,326,207	184,952	2,781,457
March	1,446,566	1,615,160	174,236	2,887,499	1,468,295	1,817,687	284,401	3,061,491
April	672,694	680,418	46,188	1,308,924	1,361,871	1,171,188	128,550	2,344,500
May	734,814	441,742	54,046	1,122,510	1,262,617	1,683,675	99,141	2,847,151
June	832,085	521,388	90,406	1,283,067	1,318,442	2,562,379	79,421	3,779,400
July	935,363	446,837	242,607	1,139,593	965,071	2,444,798	79,272	3,367,167
August	851,222	392,440	235,765	1,007,903	1,593,827	2,745,938	103,478	4,236,287
September	1,635,738	880,207	269,190	2,306,843	1,237,696	2,125,379	90,566	3,272,509
October	1,934,616	2,337,768	190,395	4,081,989	1,535,443	1,931,450	153,396	3,311,497
November	1,856,893	2,778,953	168,957	4,466,880	1,514,326	1,661,264	101,558	3,074,032
December	1,738,313	2,307,087	166,242	3,879,158	1,284,574	1,575,671	115,373	2,744,872
Total	15,157,431	14,257,424	1,818,582	27,596,273	16,964,623	22,687,320	1,654,406	38,016,936

Imports of Anthracite and Bituminous Coal into Canada from United States and Great Britain, 1922 and 1923

(Short tons)

	Three-year average for the month 1920-1922	1922			1923		
		United States	Great Britain	Total	United States	Great Britain	Total
Anthracite—							
January	311,093	245,000	-	245,000	405,679	15,888	421,567
February	282,800	245,826	-	245,826	380,347	42,203	422,550
March	404,530	388,995	-	388,995	486,673	6,674	493,347
April	229,167	149,922	-	149,922	392,417	23,035	415,452
May	285,365	58,754	-	58,754	433,044	-	433,044
June	344,388	54,414	-	54,414	479,160	26,742	505,902
July	361,074	28,440	3,898	32,338	474,177	21,590	495,767
August	348,376	24,960	3,808	28,768	468,687	10,565	488,282
September	255,017	32,420	9,506	41,926	287,862	40,959	328,821
October	386,121	328,596	87,097	415,693	301,320	9,787	311,116
November	435,503	520,267	30,922	551,189	391,844	12,268	404,112
December	414,314	436,655	44,477	481,132	405,003	42,918	447,921
Total	4,657,688	2,514,249	179,768*	2,693,957	4,906,222	261,659	5,167,881
Bituminous—							
January	829,882	590,177	-	590,177	1,210,074	10,073	1,220,147
February	744,062	774,316	-	774,316	881,661	21,996	903,657
March	1,012,342	1,226,174	-	1,226,174	1,308,993	15,347	1,324,340
April	606,858	530,496	-	530,496	749,582	6,154	755,736
May	686,162	382,988	-	382,988	1,235,618	15,013	1,250,631
June	907,408	466,974	-	466,974	2,003,773	52,704	2,056,477
July	1,184,585	407,406	7,093	414,499	1,906,044	42,957	1,949,001
August	1,309,269	345,935	27,743	363,678	2,241,389	16,267	2,257,656
September	1,275,172	711,966	125,407	838,371	1,759,458	37,100	1,796,558
October	1,491,239	1,814,688	107,387	1,922,075	1,593,223	27,111	1,620,334
November	1,816,730	2,065,200	222,503	2,227,763	1,238,503	18,949	1,257,152
December	1,513,547	1,674,667	151,289	1,825,956	1,122,311	5,439	1,127,750
Total	13,667,256	10,924,045	639,423†	11,563,467	17,250,629‡	268,810	17,519,439

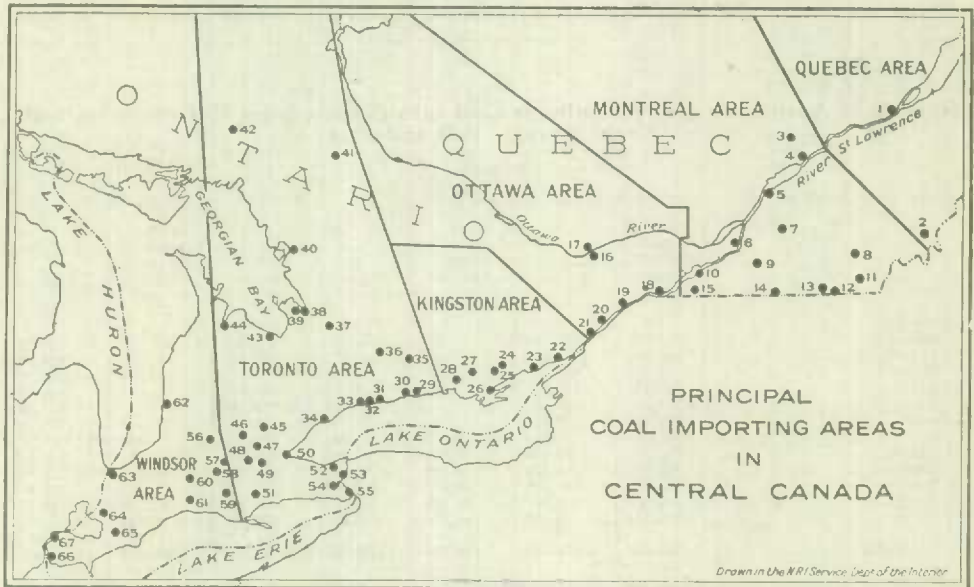
*Includes 1,226 tons from Other Countries.

† " 579 " " "

‡ " 2,331 " lignite coal.

Imports of Coal into Central Canada by Principal Areas

Area	Anthracite			Bituminous		
	(1) 12 months ending Dec. 31, 1923	(2) Five-year average 1918-1922	(3) Per cent of (1) to (2)	(4) 12 months ending Dec. 31, 1923	(5) Five-year average 1918-1922	(6) Per cent of (4) to (5)
Quebec.....	105,544	133,254	79	219,650	294,459	75
Montreal.....	1,690,820	1,228,881	137	2,852,394	2,651,532	108
Ottawa.....	344,035	329,586	104	917,727	679,720	135
Kingston.....	141,378	138,141	102	239,740	165,854	144
Toronto.....	2,190,918	1,848,851	118	6,176,010	4,802,221	129
Windsor.....	387,280	333,190	116	3,211,000	2,547,122	126
Total.....	4,859,984	4,011,903	121	13,616,521	11,140,968	122



Key to the Ports of Entry Shown on the Map

QUEBEC AREA—	OTTAWA AREA—	TORONTO AREA—CON.	TORONTO AREA—CON.
1 Quebec City	16 Ottawa	32 Oshawa	51 Simcoe
2 Megantic	17 Hull	33 Whitby	52 St. Catharines
	18 Cornwall	34 Toronto	53 Niagara Falls
	19 Morrisburg	35 Peterboro	54 Welland
MONTREAL AREA—	20 Prescott	36 Lindsay	55 Bridgeburg
3 Shawinigan Falls	21 Brockville	37 Orillia	
4 Three Rivers	KINGSTON AREA—	38 Port McNicoll	WINDSOR AREA—
5 Sorel	22 Gananoque	39 Midland	56 Stratford
6 Montreal	23 Kingston	40 Parry Sound	57 Woodstock
7 St. Hyacinthe	24 Napanee	41 North Bay	58 Ingersoll
8 Sherbrooke	25 Deseronto	42 Sudbury	59 Tillsonburg
9 St. Johns	26 Picton	43 Collingwood	60 London
10 Valleyfield	27 Belleville	44 Owen Sound	61 St. Thomas
11 Coaticook	28 Trenton	45 Guelph	62 Goderich
12 Beebe Junction		46 Kitchener	63 Sarnia
13 Mansonville	TORONTO AREA—	47 Galt	64 Wallaceburg
14 St. Armand	29 Cobourg	48 Paris	65 Chatham
15 Athelstan	30 Port Hope	49 Brantford	66 Amherstburg
	31 Bowmanville	50 Hamilton	67 Windsor

Feldspar

The advance in the shipments of feldspar noted during the first six months of 1923 was well maintained throughout the remainder of the year. The total sales as reported were 29,483 tons valued at \$214,346, made up of 17,317 tons from Ontario and 12,166 tons from Quebec, as compared with 27,727 tons valued at \$248,402 sold in 1922. In addition to the sales of feldspar for use in the ceramic industry, a small shipment of dental spar was made to France. This latter grade was produced at the Villeneuve quarry at Notre Dame de Sales, Quebec.

The average price received for crude spar was \$7.27 per ton while the ground material brought from \$16.50 to \$20 a ton.

The grinding plants situated at Toronto and Kingston, Ontario, were active during the period under review, producing 2,550 tons of ground material. The total capacity of these two plants is approximately 7,500 tons per annum.

Production, Imports and Exports of Feldspar, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Production.....	27,727	248,402	29,483	214,346
Imports.....	1,454	31,408	1,701	36,622
Exports.....	24,995	170,964	26,476	177,569

Fluorspar

The production of fluorspar in Canada during 1923 declined to almost a negligible quantity. Sales amounting to only 125 tons, valued at \$1,741 were reported, while in the previous twelve months 4,503 tons worth \$102,138 were recorded.

Cross and Wellington, in Ontario, and the Consolidated Mining and Smelting Company in British Columbia were the only shippers.

The United States tariff of \$5.40 per ton which was enacted in September, 1922, practically precludes any shipment of fluorspar from Canadian deposits to that country.

Production, Imports and Exports of Fluorspar, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Production—				
Ontario.....	284	3,905	50	606
British Columbia.....	4,219	98,233	75	1,135
Total.....	4,503	102,138	125	1,741
Imports—Hydro-fluo-silicic acid.....	0.06	15	3.8	662
Fluorspar.....	4,980	73,343	17,235	199,595
Exports.....	2,944	32,914		

Graphite

The market for graphite in 1923 showed a considerable improvement over conditions prevailing in the previous year. The total quantity mined in Canada during the year was 1,400 tons, while shipments amounted to 1,113 tons valued at \$67,873.

The Black Donald Graphite Co., Limited, the Quebec Graphite Co., and the Canadian Graphite Corporation were the only firms that reported shipments. The mill owned by the Ontario company at Calabogie was operated throughout the year and treated some 1,025 tons.

There was no appreciable increase in the production of graphite in United States during 1923 notwithstanding the imposition of the following tariff on imported graphite.—crude or refined, amorphous—10 per cent ad valorem; crystalline, lump, chip or dust—20 per cent ad valorem; and crystalline flake—1½ cents per pound.

The outlook in the graphite industry seems promising and in each of the past three years sales have shown a continued increase which points to a better demand for this product.

Production, Imports and Exports of Graphite, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
Production.....	597	\$ 31,353	1,113	\$ 67,873
Imports—				
Crucibles, plumbago.....		39,061		57,322
Plumbago not ground or otherwise manufactured.....		1,007		1,661
Plumbago ground and manufactures of, n.o.p.....		47,095		70,704
Exports—				
Graphite or plumbago, crude or refined.....	452	16,619	799	36,980

Gypsum

The production of gypsum in Canada in 1923 totalled 559,778 tons valued at \$2,165,953 as compared with 559,265 tons at \$2,160,898 in the previous year.

The output of gypsum rock was 565,120 tons of which quantity 150,481 tons or 27 per cent was calcined during the year. Sales values received by Canadian operators averaged, by grades; lump, \$1.65; crushed, \$2.08; fine ground, \$6.14; and calcined, \$11.28.

Exports during the period amounted to 401,983 tons consisting of 397,329 tons crude and 4,654 tons ground gypsum, with a total value of \$671,337.

Production of Gypsum in Canada, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Crude—				
Lump or mine run.....	350,650	534,160	321,694	532,016
Crushed.....	68,181	154,197	110,104	228,540
Fine ground.....	5,769	35,880	7,446	45,683
Calcined gypsum sold.....	25,339	309,879	29,608	386,476
Calcined gypsum used in the manufacture of gypsum products, such as wall plaster, alabaster, etc.....	109,326	1,126,782	90,026	973,238
(Weight and value of gypsum content only.)				
Total sold or used.....	559,265	2,160,898	559,778	2,165,953

Imports into Canada and Exports of Gypsum, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Imports—				
Gypsum, crude (sulphate of lime).....	2,872	21,040	3,654	39,336
Plaster of Paris or gypsum ground not calcined.....	148	5,592	78	3,253
Plaster of Paris, calcined and prepared wall plaster.....	3,657	49,015	3,617	54,591
Total.....	6,677	75,647	7,349	97,180
Exports—				
Gypsum or plaster, crude.....	325,354	505,464	397,329	578,859
Plaster of Paris ground, and prepared wall plaster.....	3,188	59,534	4,654	92,478
Total.....	328,540	564,998	401,983	671,337

Iron Oxides (Bog Iron Ore)

Sales of iron oxides in Canada during 1923 amounted to 10,827 tons valued at \$142,571. In the previous twelve months the production was 7,285 tons worth \$110,608. As usual practically all the shipments were made from Quebec deposits, only two British Columbia operators reporting minor quantities sold. The crude oxide was used in the purification of illuminating gas, while the calcined product was used as a raw material in the paint industry.

Magnesite

The total production of magnesite in Canada during 1923 was derived from deposits in Argenteuil county, Quebec. The sales of this commodity during the year amounted to 4,658 tons valued at \$125,208 as compared with 2,849 tons at \$76,294 in 1922.

Dead-burned magnesite is consumed entirely in the metallurgical industry as a refractory lining for furnaces. Calcined magnesite is used as a plastic material for floors and walls in buildings and also in the manufacture of pipe and furnace coverings.

The exports of calcined magnesite from Canada were less than during the previous year and amounted to 563 tons.

The United States Magnesite Cement Building Products Association is seeking to lower the present tariff and has presented its case to the Tariff Commission. The American producers on the other hand have sought to maintain and even increase the tariff.

Production, Imports and Exports of Magnesite, 1922 and 1923

	1922		1923	
	Tons	Value \$	Tons	Value \$
Production—				
Calcined.....	1,026	23,430	—	—
Clinkered.....	1,823	52,864	—	—
Total.....	2,849	76,294	4,658	125,208
Imports—				
Magnesia.....	207	34,460	369	113,484
Magnesite.....	79	2,198	244	9,223
Magnesite firebrick.....	—	56,561	—	120,453
Exports—				
Magnesite, crude.....	800	1,800	—	—
Magnesite, calcined.....	940	21,317	563	14,056

Magnesium Sulphate

The production of magnesium sulphate in Canada during 1923 amounted to 121 tons valued at \$6,580 as compared with 1,021 tons with a value of \$24,107 in the previous year. These sales were made from the magnesium sulphate deposit near Ashcroft, British Columbia, which is owned and operated by the Basque Chemical Company. The No. 1 grade sold for \$60 per ton while the No. 2 grade brought \$40 a ton. In addition to some sales of this commodity to local dealers, shipments were made as far east in Canada as Toronto, Ontario.

Importations during the year of magnesium sulphate or epsom salts totalled 1,867 tons evaluated at \$47,155, while exports recorded were 20 tons worth \$830.

Mica

The mica industry in Canada during 1923 showed a considerable improvement over the conditions prevailing in 1922, and the total production as reported was 2,611 tons comprising 1,792 tons from Ontario and the balance or 819 tons from Quebec. Sales of the thumb-trimmed grade (from 1 in. x 1 in. to 5 in. x 8 in.) were higher than in 1922 and amounted to 501,790 pounds. The quantity of scrap mica marketed was lower. This material is used very extensively in the manufacture of prepared roofings.

Production of Mica in Canada, 1922 and 1923

Grade	1922			1923		
	Quantity	Value F. O. B. Shipping point	Price per pound	Quantity	Value F. O. B. Shipping point	Price per pound
	Lb.	\$	\$	Lb.	\$	\$
Rough cobbled.....	186,470	22,305	0.12	284,767	27,126	0.09
Thumb trimmed.....	95,702	25,837	0.27	501,790	173,451	0.35
Splittings.....	112,778	72,303	0.64	93,466	86,256	0.92
Scrap.....	6,302,157	31,818	0.005	4,341,046	26,575	0.006
Total.....	6,697,107	152,263	0.02	5,221,069	313,408	0.06

Exports of Mica from Canada, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Rough cobbled and thumb trimmed.....	74	45,151	85	40,286
Mica splittings.....	286	366,974	502	624,110
Mica, scrap and waste.....	3,473	41,040	4,855	70,866
Mica, plate and manufactures of (micanite).....	-	10,438	-	22,014
Total.....	-	461,512	-	657,276

Mineral Water

Mineral water produced in Canada during 1923 amounted to 233,933 gallons valued at \$15,490, as against 221,433 gallons at \$14,220 in the previous year. Ontario and Quebec mineral springs contributed the entire Canadian production.

Under this section, there has been included a record of all known shipments of natural mineral water sold to the public for medicinal purposes. The values given do not take into account any mineral water used at the springs for drinking or bathing purposes.

Natro-Alunite

The Alunite-Chemical Corporation, Limited, operated a deposit of natro-alunite at Kyuquot Sound on the west coast of Vancouver Island, British Columbia, for a short time during the month of April. Shipments of ground and calcined material amounting to 15 tons valued at \$750 were made during 1923. In the previous year the total shipments were 50 tons worth \$2,500. The treatment of this ore consisted in crushing, grinding and washing.

Natural Gas

The production of natural gas in Canada in 1923 of 14,675,760 thousand cubic feet was approximately the same as in the previous year. Ontario continued to be the principal producer, closely followed by the province of Alberta. The latter province's production of 6,135,260 thousand cubic feet showed an increase of 266,821 thousand cubic feet over the 1922 record.

In recent years the supply of natural gas in Ontario has not been as plentiful as previously and the Ontario Government through the appointment of a special commissioner has taken measures to conserve supply for industrial and domestic use.

In Alberta and Ontario the manufacture of carbon black from natural gas is a promising new industry and the Dominion Government has already published regulations covering the manufacture of this product from natural gas. Two plants are now being made ready to produce carbon black.

Production of Natural Gas in Canada by Provinces, 1922 and 1923

Province	1922		1923	
	M cu. ft.	Value	M cu. ft.	Value
		\$		\$
New Brunswick.....	753,898	148,040	640,300	122,003
Ontario.....	8,060,114	4,076,296	7,900,000	4,053,087
Manitoba.....	200	60	200	60
Alberta.....	5,868,439	1,622,105	6,135,260	1,700,000
Total.....	14,682,651	5,846,501	14,675,760	5,875,150

Petroleum

A further decline in the quantity and value of petroleum produced in Canada was recorded for 1923. Reports showed a production of 171,902 barrels valued at \$542,555 as compared with 179,068 barrels worth \$611,176 in 1922. The average values per barrel received by operators in the current year were as follows: New Brunswick, \$4.04; Ontario, \$3.00. During 1922 the average for the former province was \$4.21 and the latter \$3.20 a barrel.

An excerpt from the Petroleum Bounties Act, as enacted on June 30, 1923, which is administered by the Department of Trade and Commerce, is given here as important changes have been made in the duration and the rates of payment.

"The said bounty shall be paid during the periods and at the rates following, that is to say:—

On such crude petroleum produced on or before the thirtieth day of June, one thousand nine hundred and twenty-four, a bounty of one and one-half cents per imperial gallon shall be paid;

On such crude petroleum produced on or after the first day of July, one thousand nine hundred and twenty-four, and not later than the thirtieth day of June, one thousand nine hundred and twenty-five, a bounty of three-quarters of one cent per imperial gallon shall be paid;

On such crude petroleum produced on and after the first day of July, one thousand nine hundred and twenty-five, no bounty shall be paid."

The outstanding feature of this industry during the year was the bringing in of an oil well with a production of 150 barrels per day in Romney Township on the shore of Lake Erie. The importance of this well is that it lies in the Trenton formation. Production from Trenton limestones has made the neighbouring state of Ohio one of the greatest gas and oil producing fields in America but the formation has not been explored to any extent in Ontario.

The Trenton underlies the southwestern peninsula of Ontario and is buried at depths of from 3,000 feet to 300 feet below the surface. Mr. R. B. Harkness, natural gas commissioner for Ontario, thinks that "there is every possibility of a large oil field being developed in this area".

Production of Crude Petroleum in Canada, 1922 and 1923

	1922				1923			
	Barrels	Value less Bounty	Bounty paid	Total Value	Barrels	Value less Bounty	Bounty paid	Total Value
		\$	\$	\$		\$	\$	\$
New Brunswick.....	7,778	28,359	4,373	32,732	8,826	31,092	3,650	35,642
Ontario—								
Petrolia and Ebniskillen.....	64,935	173,375	34,001	207,466	64,159	157,830	33,683	191,513
Oil Springs.....	43,214	115,380	22,687	138,067	39,090	98,698	20,522	119,420
Moore Township.....	7,275	19,424	3,819	23,243	4,789	11,783	2,515	14,298
Sarnia Township.....	3,224	8,607	1,692	10,299	2,387	5,571	1,253	7,124
Plympton Township.....	695	1,856	365	2,221	872	2,146	458	2,604
Bothwell.....	25,681	68,568	13,482	82,050	27,665	68,056	14,524	82,580
Tilbury East.....	127	338	67	405	1,951	4,798	1,024	5,822
West Dover.....	5,482	14,638	2,878	17,516	5,018	13,821	2,950	16,770
Raleigh Township.....	663	1,771	348	2,119	302	744	159	902
Dutton.....	387	1,033	203	1,236	315	775	165	941
Onondaga.....	489	1,307	257	1,564	237	583	124	708
Moza Township.....	11,959	31,932	6,279	38,211	10,319	25,386	5,418	30,803
Thamesville.....	383	1,024	202	1,226	568	1,396	298	1,694
Dawn Township.....	217	579	114	693	—	—	—	—
Elgin Township.....	—	—	—	—	270	685	146	832
Total for Ontario.....	164,731	439,832	86,484	526,316	158,551	392,772	83,239	476,011
Alberta.....	6,559	51,882	246	52,128	4,525	30,801	101	30,902
Total for Canada.....	179,668	526,673	91,163	611,176	171,992	455,565	86,990	512,555

Imports into Canada and Exports of Petroleum and its Products, 1922 and 1923

	1922		1923		
	Quantity	Value	Quantity	Value	
		\$		\$	
Imports—					
Crude petroleum in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories.....	Gals.	419,559,952	21,602,247	392,185,557	17,449,032
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than .8235 but not less than .775 specific gravity at 60 degrees.....	"	913,415	76,900	475,842	38,903
Petroleum (not including crude petroleum imported to be refined or illuminating or lubricating oils) .8235 specific gravity or heavier at 60 degrees temperature.....	"	71,891,597	3,014,390	108,506,938	4,206,193
Petroleum, imported by miners of mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments.....	"	17,972	4,075	32,960	5,913
KEROSENE AND ILLUMINATING OILS					
Coal oil and kerosene, distilled, purified or refined.....	"	3,673,234	314,514	4,118,943	322,434
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon.....	"	99,497	50,045	42,474	16,296
LUBRICATING OILS					
Lubricating oils, composed wholly or in part of petroleum, and costing less than 20 cents per gallon.....	"	3,898,930	720,223	4,295,635	737,053
Lubricating oils, n.o.p.....	"	3,211,124	1,412,473	3,901,048	1,573,897
OTHER OILS					
Gasoline under .725 specific gravity at 60 degrees temperature.....	"	24,743,275	5,411,972	35,845,251	5,134,286
Gasoline .725 specific gravity but not heavier than .750 specific gravity at 60 degrees temperature (a).....	"	13,466,789	2,570,643	13,927,843	1,993,596
Gasoline, n.o.p.....	"	3,902,204	769,309	177,566	32,750
All other oils, n.o.p.....	"	144,927	60,469	248,888	86,958
OTHER PRODUCTS OF PETROLEUM					
Grease, axle.....	Lb.	2,851,550	177,575	2,981,849	176,216
Paraffine wax.....	"	870,564	51,032	1,034,921	63,695
Paraffine wax candles.....	"	109,762	39,299	176,487	32,516
Vaseline and all similar preparations of petroleum for toilet, medical or other purposes.....	"	—	242,743	—	268,267
Petroleum, products of, n.o.p.....	Gals.	1,330,170	298,815	1,712,665	299,358
Total.....		—	35,816,724	—	32,437,399
Exports—					
Oil, coal and kerosene, crude.....	Gals.	7,036,627	288,828	2,384,899	138,361
Oil, coal and kerosene, refined.....	"	1,471,947	136,834	1,450,051	139,904
Oil, gasoline and naphtha.....	"	1,976,244	510,037	1,217,298	263,326
Oil, mineral, n.o.p.....	"	1,155,965	206,709	1,200,347	223,511
Wax, mineral.....	Cwt.	15,615	45,526	66,274	206,575
Total.....		—	1,187,934	—	971,717

(a) From May 24, 1922.

Pyrites

The total mine output of pyritic ores (iron and copper) during 1923, was 15,800 tons. Sales for the same period amounted to 13,391 tons valued at approximately \$59,084 per ton. The average value per ton received by Ontario operators was \$4.27; while the British Columbia producers sold their product at \$5 a ton.

The Caldwell mine and the Sulphide mine, owned, respectively, by the Grasselli Chemical Company, Limited, and the Nichols Chemical Company, Limited, were the only Ontario shippers. In British Columbia, the Hidden Creek mine at Anyox and the Sullivan mine at Kimberley were active during the year.

Production, Imports and Exports of Pyrites, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Production by Provinces—				
Quebec.....	-	-	-	-
Ontario.....	11,235	39,763	10,764	45,949
British Columbia.....	6,908	34,540	2,627	13,135
Total.....	18,143	74,303	13,391	59,084
Imports—				
Brimstone, or sulphur in roll or flour.....	123,158	1,700,604	135,767	1,803,550
Exports—				
Sulphur contained in pyrites.....	-	-	9,670	46,514

Quartz

Shipments of quartz from Canadian quarries in 1923 totalled 247,473 tons worth \$516,037 or an average of \$2.08 per ton.

The crushing plant of the Silico Limited at St. Canut, Quebec, was operated during 1923 and produced a large quantity of silica sand. The Feldspar Milling Company, Limited, at Toronto, Ontario, ground a considerable amount of silica; this product was sold to feldspar users in Eastern Canada.

The increase in production of quartz was due to the resumption of activity in the metallurgical industry as a whole.

Production in Canada and Imports of Quartz, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Production—				
Quebec.....	10,994	53,023	12,276	65,255
Ontario.....	81,528	118,054	217,772	413,261
British Columbia.....	17,425	37,521	17,425	37,521
Total.....	109,947	208,598	247,473	516,037
Imports—				
Silex or crystallized quartz, ground or unground.....	1,058	25,248	2,303	57,040
Flint.....	6,633	92,004	6,327	81,704

Salt

Ten firms reported operations in the salt industry in Canada during the year. The output of these active plants amounted to 207,194 tons of which 202,960 tons were marketed. Ontario continued to be the principal producing province, contributing 198,480 tons valued at \$1,514,494, while Nova Scotia shipments totalled 4,480 tons worth \$39,151.

Exports during the year totalled 861 tons at \$10,201 as against 740 tons with a valuation of \$10,053 in 1922.

Production of Salt in Canada by Grades, 1922 and 1923

Grade	1922			1923		
	Manu- factured	Sold	Value of Salt Sold (Not includ- ing pack- ages)	Manu- factured	Sold	Value of Salt Sold (Not includ- ing pack- ages)
	Tons	Tons	\$	Ton	Tons	\$
Table and dairy.....	41,274	41,119	837,994	42,371	42,468	764,293
Common fine.....	35,758	34,684	329,475	41,806	36,024	308,039
Common coarse.....	28,096	28,580	282,336	31,266	31,845	263,173
Land salt.....	6,964	6,875	38,840	3,744	3,713	17,628
Other grades.....	7,636	6,826	72,621	7,908	7,911	72,063
Brine for chemical works..... (Salt equivalent sold or used)	63,710	63,710	67,058	80,099	80,090	128,449
Total.....	183,438	181,794	1,629,324	207,194	202,960	1,553,645
Value of packages.....	-	-	528,895	-	-	533,821
Grand Total.....	183,438	181,794	2,157,219	207,194	202,960	2,087,466

Imports into Canada and Exports of Salt, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Imports—				
Salt, for the use of the sea or gulf fisheries.....	82,185	355,890	67,941	294,526
Salt in bulk, n.o.p.....	61,913	321,380	65,118	317,773
Salt, n.o.p. in bags, barrels, etc.....	51,772	596,513	38,799	455,306
Total.....	195,870	1,273,783	171,858	1,067,605
Exports.....	740	10,053	861	10,201

Sodium Sulphate

Sales of sodium sulphate from Canadian deposits during 1923 amounted to 523 tons with a total value of \$9,139, as against 504 tons at \$11,980 in the previous twelve months. These shipments were made from natural deposits of sodium sulphate in Saskatchewan.

Imports of salt cake decreased from 39,472 tons at \$830,515 in 1922 to 30,967 tons valued at \$684,604 in the year under review. This commodity is imported into Canada duty free.

Talc

The total quantity of talc mined in Canada during the calendar year 1923 was 10,235 tons, of which quantity 9,445 tons was milled. Sales of milled product amounted to 10,076 tons valued at \$144,014 as against 13,195 tons at \$188,458 in the previous year. The average selling prices by grades were similar to those prevailing in 1922 and were as follows: high-grade, \$22; medium, \$13; and low grade, \$9.

Exportations of refined talc were slightly lower than those recorded for the previous year.

Production in Canada and Exports of Talc, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Production.....	13,195	188,458	10,076	144,014
Exports—				
Talc, refined.....	9,854	143,938	7,233	99,239

STRUCTURAL MATERIALS AND CLAY PRODUCTS

The activities in the building and construction industries which were so outstanding in 1922 were fairly well maintained during 1923. Although there was a slight decline in the total value of all structural materials produced during 1923 as compared with the previous year, the quantities were slightly higher. The total valuation according to reports at hand was \$369,930,088 as compared with \$39,534,741 in 1922.

Contracts awarded for building and construction projects in Canada in 1923 as reported by *MacLean Building Review* were valued at \$314,254,300, a decrease of \$17,589,500 from the total for 1922. An analysis of the awards as given in the same publication for the year follows: residential buildings, \$97,645,200; business, \$80,436,800; industrial, \$27,022,000; engineering construction, \$109,150,300.

An examination of the table below shows a considerable falling-off in the number of industrial disputes during 1923 with a consequent decrease in the number of days work lost by employees involved.

Statistics of Labour Disputes in the Building Trades in Canada, 1921, 1922 and 1923

	1921	1922	1923
Number of disputes.....	36	21	9
Employees involved.....	4,004	1,831	1,284
Loss in working days.....	153,372	39,667	12,824

Cement

Ten plants were reported as producing in the cement industry during 1923; four of these were in Ontario; one in Quebec; two in Manitoba; two in Alberta; and one in British Columbia.

The total mill output of Portland cement was 7,688,196 barrels with an estimated valuation of \$15,417,587. The production (sales) amounted to 7,543,590 barrels worth \$15,064,661, while the records for the previous year showed 6,943,972 barrels at \$15,438,481. Thus there was an increase in sales of 599,618 barrels with a decrease in value of \$373,820. The average selling price over the whole Dominion for 1923 computed from the total quantity sold and sales value recorded, was \$2 per barrel, as compared with \$2.22 per barrel in 1922.

Summary Statistics of the Cement Industry in Canada, 1922 and 1923

	1922		1923	
	Barrels	Value	Barrels	Value
		\$		\$
Output.....	6,447,696	14,324,715	7,688,196	15,417,587
Sold or used.....	6,943,972	15,438,481	7,543,590	15,064,661
Stocks, December 31, 1921.....	1,603,215	-	1,106,039	-
Stocks, December 31, 1922.....	1,106,939	-	1,251,545	-
Imports—				
Portland.....	30,914	96,310	17,697	75,294
Manufactures.....	-	13,273	-	86,974
Exports.....	425,137	999,738	493,751	824,811
Consumption.....	6,549,749	-	7,067,536	-

Clay and Clay Products

The clay and clay products group includes the production of (a) brick—common, pressed, moulded and ornamental and hollow-building brick or blocks, (b) drain tile and sewer pipe, (c) pottery, (d) architectural terra-cotta, (e) kaolin or china clay, (f) refractories—fireclay, firebrick, fireclay blocks and shapes. The production of these commodities in Canada during 1923 was valued at \$10,258,712, a decrease of 10 per cent from the 1922

production which was valued at \$11,438,456. This coincides with the Bureau's report on building permits in fifty-six cities which showed a decline of 10.4 per cent in value when compared with the previous year. The decrease was not confined to any particular set of products but was distributed throughout the list.

Production of Clay Products in Canada by Provinces, 1922 and 1923

	1922	1923
	\$	\$
Nova Scotia	431,618	411,977
New Brunswick	75,425	61,457
Quebec	2,494,236	2,136,352
Ontario	6,944,218	6,329,794
Manitoba	210,740	161,434
Saskatchewan	134,704	109,142
Alberta	700,063	612,242
British Columbia	447,452	430,314
Canada	11,438,456	10,258,712

Production in Canada, Imports and Exports of Clay and Clay Products, 1922 and 1923

	1922		1923	
	Quantity	Value	Quantity	Value
		\$		\$
Production—				
Bricks, common	No. 294,919,113	4,714,658	263,629,399	4,072,472
Bricks, pressed	" 90,577,826	1,839,549	70,443,608	1,458,380
Bricks, hollow building	" 4,892,504	448,674	6,206,818	584,413
Bricks, moulded and ornamental	" 41,851,765	865,664	57,811,406	1,228,198
Fire brick	" 6,705,127	251,776	5,599,580	267,963
Fire clay	10,196	55,185	8,835	45,934
Fire clay blocks	-	67,588	-	35,833
Fireproofing and hollow porous blocks	-	542,611	-	351,395
Kaolin	Tons 1,197	17,866	-	-
Paving brick	No. 150,813	5,972	-	-
Pottery from domestic clay	-	266,301	-	243,049
Sewer pipe	Tons 75,932	1,766,347	60,113	1,399,406
Architectural terra-cotta	-	188,789	-	170,007
Tile drain	No. 14,730,963	407,386	12,580,297	410,662
Total	-	11,438,456	-	10,258,712
Imports—				
Bath brick	-	1,043	-	1,933
Building brick	M 7,468	174,321	5,381	140,441
Building blocks	-	79,689	-	77,973
Clays—				
China	Cwt. 257,953	173,988	342,408	242,860
Fire	" 615,830	138,995	1,070,122	223,623
Pipe	-	2,804	-	1,161
Other clays	-	65,422	-	99,515
Drain tile, unglazed	-	692	-	2,041
Drain and sewer pipe	-	61,397	-	61,865
Earthenware	-	3,931,943	-	4,383,982
Firebrick (a)	-	611,564	-	970,324
Firebrick, n.o.p.	-	361,338	-	610,243
Magnesite brick	-	56,561	-	120,453
Silica brick	-	131,517	-	216,642
Paving brick	M 1,766	45,680	3,243	90,767
Other clay manufactures	-	827,483	-	924,827
Total	-	6,664,503	-	8,168,662
Exports—				
Building brick	M 2,418	31,383	4,069	42,742
Clay—				
Unmanufactured	Cwt. 2,589	1,777	11	52
Manufactures	-	104,933	-	109,957
Earthenware	-	172,955	-	432,092
Total	-	311,048	-	584,843

(a) Duty free, of a kind not made in Canada.

Lime

The total value of lime produced in Canada in 1923 was \$3,153,843, a decrease of 0.4 per cent from the 1922 production of \$3,165,005. The total production comprised 7,761,173 bushels of quicklime valued at \$2,526,125 and 51,765 tons of hydrated lime at \$627,718.

Ontario continued to be the leading producer of quicklime accounting for 3,992,060 bushels worth \$1,287,947. Quebec followed with 2,119,425 bushels at \$555,955. Hydrated lime amounting to 41,727 tons valued at \$519,839 was produced by Ontario operators.

The average selling price for quicklime in Canada was 33 cents per bushel as compared with 34 cents in 1922; hydrated lime averaged \$12.13 per ton this year against \$12.15 in the previous twelve months.

Importations of lime into Canada amounted to 99,786 cwt., valued at \$55,820, while the previous year's records showed 51,107 cwt., at \$27,942. Exports were considerably higher, totalling 486,512 cwt., worth \$428,286, as compared with 286,596 cwt., at \$270,724 in 1922.

Production of Lime in Canada in 1923

Province	Quicklime		Hydrated Lime		Total Value
	Quantity	Value	Quantity	Value	
	Bushels	\$	Tons	\$	\$
New Brunswick.....	405,814	159,863	-	-	159,863
Quebec.....	2,119,425	555,955	5,505	57,482	613,437
Ontario.....	3,992,060	1,287,947	41,727	519,839	1,807,786
Manitoba.....	491,998	146,266	-	-	146,266
Alberta.....	96,905	37,653	33	346	37,999
British Columbia.....	564,971	338,441	4,410	50,051	388,492
Total.....	7,761,173	2,526,125	51,765	627,718	3,153,843

Sand and Gravel

The value of sand and gravel produced in Canada during 1923 was \$2,881,927. This was a decrease of \$621,008 from the figures for 1922 of \$3,502,935. More than 50 per cent of the sand and gravel sold or used in Canada was produced by railway companies for their own use, mainly as ballast. The imports of sand, other than glass sand, amounted to 355,126 tons valued at \$247,388 as against 350,992 tons at \$175,667 in 1922. Exports amounted to 764,521 tons worth \$182,750 as compared with 713,709 tons with a valuation of \$116,121.

Slate

The entire production of Canadian slate comes from deposits located along the south shore of the St. Lawrence River in the province of Quebec. Prior to 1922 there was an annual production of roofing slate in squares from quarries in Melbourne Township, Quebec. The total sales for 1923 amounted to 1,836 tons valued at \$17,289 as compared with 1,899 tons worth \$14,871 in the previous year. This year's production consisted of crushed, green and red slate and was used in the manufacture of roofing paper.

Production in Canada and Imports of Slate, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		\$		\$
Production.....	1,899	14,871	1,836	17,289
Imports—				
Roofing.....	6,640	67,035	5,905	67,507
School-writing.....	-	12,885	-	111,922
Pencils.....	-	17,330	-	9,027
Mantles and manufactures of slate, n.o.p.....	-	73,974	-	77,300
Total Imports.....	-	266,995	-	265,846

Stone

The production of stone in Canada during 1923 was valued at \$5,616,656, a decrease of \$358,337 or 5.9 per cent from the 1922 record of \$5,974,993. Ontario was the leading producer with a value of \$2,632,027 and Quebec followed producing stone worth \$2,208,916. The other provinces in order of production value were: British Columbia, Nova Scotia, Manitoba, New Brunswick and Alberta.

The kinds of stone quarried included granite (traprock, syenite and other igneous rock), limestone, sandstone and marble.

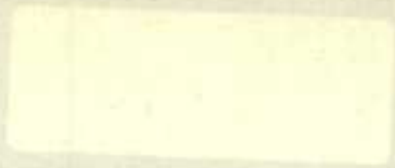
The quantity of limestone quarried and used in the manufacture of lime by the operator is not included under this industry; only the quantity and value of lime are here recorded in order to avoid duplication of entries.

Production of Stone in Canada by Provinces, 1922 and 1923

Province	1922	1923
	\$	\$
Nova Scotia.....	119,492	77,691
New Brunswick.....	104,730	95,234
Quebec.....	2,342,316	2,208,916
Ontario.....	2,969,926	2,632,027
Manitoba.....	106,638	123,475
Alberta.....	7,300	14,393
British Columbia.....	324,591	364,920
Canada.....	5,974,993	5,616,656

Imports into Canada and Exports of Stone by Kinds, 1922 and 1923

	1922		1923	
	Tons	Value	Quantity	Value
		\$		\$
Imports—				
Building stone.....	-	371,490	-	403,550
Granite.....	-	72,633	-	158,864
Marble.....	-	294,206	-	293,806
Refuse..... Tons	328,679	199,397	392,819	225,565
Total.....	-	837,726	-	1,061,785
Exports—				
Crushed..... Tons	126,063	80,544	89,434	159,083
Ornamental, rough..... "	2,666	32,474	3,165	30,350
Building, rough..... "	2,357	13,364	1,302	12,575
Dressed..... "	-	7,870	-	20,227
Total.....	-	134,252	-	222,240



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