CANADA

DOMINION BUREAU OF STATISTICS

MINING, METALLURGICAL AND CHEMICAL BRANCH

PRELIMINARY REPORT

OF THE

MINERAL PRODUCTION OF CANADA

DURING THE SIX MONTHS ENDING
JUNE 30, 1923

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LIST OF PUBLICATIONS

PREPARED IN THE

MINING, METALLURGICAL AND CHEMICAL BRANCH
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(a) **Annual Report on the Mineral Production of Canada.**
(b) **Preliminary Reports (semi-annual) on the Mineral Production of Canada.**

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

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. Data are given showing the quantity and value of each metal produced and of each non-metallic mineral shipped during the six months ending June. Comparative figures are given for the corresponding period of the previous year and revised statistics for the calendar year 1922 have been included. No attempt has been made to obtain reports of production in the structural materials and clay products group, owing to the fact that the industries classified under this heading are largely seasonal in their operation and as a result a report covering the first six months of the calendar year would really include only two or three months of actual production.

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, by Mr. D. S. Halford, B.A.Sc., who directly supervised the work on the sections dealing with metals and metalliferous ores, and by Mr. B. R. Hayden, who devoted his attention more particularly to the non-metalliferous products. A special investigation on the consumption of non-metallic minerals in Canada has also just been completed in this Branch, the work being done by Mr. A. C. Young, B.Sc. This latter report will be sent to press almost immediately.

R. H. COATS,
Dominion Statistician.

Dominion Bureau of Statistics,
August 17, 1923.

DOMINION BUREAU OF STATISTICS

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PRELIMINARY REPORT

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DURING THE SIX MONTHS ENDING JUNE 30, 1923

General Review.—Measured in terms of the metallic and non-metallic mineral output and excluding structural materials and clay products, the mineral production of Canada during the six months ending June 1923, was valued at $87,152,248, as compared with $57,082,944, the value of the corresponding production in the first six months of 1922. The output of these commodities during the twelve months of the calendar year 1922 was valued at $144,762,501, so the records for the present year show that an appreciable advance has been made both in relation to the output in the first six months of 1922 and also to the entire calendar year.

The outstanding feature of the metal industry during the first six months was the recovery in the production of nickel and copper. The re-opening of the smelters and refineries operated by the International Nickel Company and the British America Nickel Corporation resulted in a production of nickel during the first six months of the year which was nearly seven times greater than the production in the first half of last year, and the output of copper was more than double the quantity produced in the corresponding period last year. The copper output during the half-year was greater than the total production during the calendar year 1922; the nickel output was also nearly 60 per cent greater than the entire quantity made during the twelve months ending December, 1922.

The production of gold and silver was maintained at about the same levels as in the corresponding period in 1922, while the outputs of asbestos, coal, lead and zinc were higher than in the first half of 1922. Shipments of gypsum, while less in amount were greater in value, and while the output of salt declined the quantity sold was greater than in the half-year ending June 1922.

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, the Hollinger treating about 5,000, the Dome 1,200 and the McIntyre 1,000. The operation of the enlarged McIntyre plant was also made possible by the additional power obtained about the beginning of May.

Power developments in Northern Ontario have been watched with considerable interest by the mining industry. Sturgeon Falls power is now available; Metachewan is expected to be operating by fall 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 mining companies indicated a slight increase in nominal staffs as compared with the number employed in January, 1920. The actual number returned for the first six months of 1923 showed that the number employed in the mineral industry was maintained throughout the period at fairly constant levels with the peak of employment in February. For the month of April the number of employees reported was slightly lower than in any other month of the half-year. About 200 firms reported employing 47,330 men on the average throughout the period.

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, about 102 during the next three months and 101·4 in June. That is to say the average prices of non-ferrous metals in Canada during the first six months of 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 and salt, etc. Iron and steel prices showed a greater fluctuation than either of the other two groups mentioned and ranged from 157·3 in January to a maximum of 171·5 in June, the advance being gradual and continuous throughout the period. 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.

Metal Prices.—Although the principal sales of metals mined in Canada are based on New York market prices, the difference in exchange between United States and Canada since 1919 has permitted Canadian mine operators to offset in certain measure the decline in prices which has characterized the metal markets during this period. A table has been prepared which shows the amount paid in Canadian dollars for one American dollar during each month of the years 1920, 1921 and 1922, and to the end of June, 1923.

The figures given were obtained as the average of the maximum and minimum quotations for the month.

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	1·1216	1·0308	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	.....
August	1·1275	1·1168	1·0023	.....
September	1·1075	1·1106	·9998	.....
October	1·1016	1·0631	1·0011	.....
November	1·2131	1·0904	·9998	.....
December	1·1643	1·0687	·9966	.....
Average for the period	**1·1227**	**1·1161**	**1·0145**	**1·0175**

For statistical and comparative purposes in making up the tables on the mineral production of Canada and of the provinces, the production of the metals, cobalt, copper, gold, lead, nickel, metals of the platinum group, silver, and zinc, is determined as far as possible on the basis of the quantities recovered in the smelters. These quantities are then valued on the average market 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.

METAL PRICES

(In cents per pound or ounce)

	Market	Unit	1918	1919	1920	1921	1922	January 1 to June 30, 1923
Antimony (ordinaries)	New York	Pound	12·581	8·190	8·490	4·957	5·471	7·626
Arsenic, white	New York	"	9·000	10·0	11·0	8·850	8·500	12·500
Cobalt	New York*	"	250·000	250·000	250·000	300·000	325·000	285·000
Cobalt oxide	New York	"	1·650	1·65	.....	.....	200·000	200·000
Copper	New York*	"	24·628	18·691	17·456	12·502	13·382	15·577
"	Montreal	"	.....	.....	.....	.....	.....	17·720
Lead	New York	"	7·413	5·759	7·957	4·545	5·734	7·748
"	Montreal*	"	9·250	6·966	8·940	5·742	6·219	7·202
"	Toronto	"	.....	.....	.....	.....	.....	7·284
Nickel	New York*	"	46·250	45·000	45·000	35·000	40·000	31·130
Platinum	New York*	"	105·950	114·610	110·900	75·033	97·618	114·019
Silver	New York*	Ounce	96·772	111·122	100·900	62·654	67·521	66·049
Tin	New York	Pound	88·750	63·328	48·273	28·576	31·831	42·041
Zinc	St. Louis*	"	7·890	6·988	7·671	4·655	5·716	6·921
"	Montreal	"	.....	.....	.....	.....	.....	8·387

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

Mineral Production of Canada, January 1 to June 30, 1922 and 1923. Also for Twelve Months Ending December 31, 1922

	1922 12 months		1922 Jan. 1 to June 30		1923 Jan. 1 to June 30	
	Quantity	Value	Quantity	Value	Quantity	Value
Metallic		$		$		$
Cobalt, metallic, and contained in oxide..Lb.	569,960	1,852,370	125,561	376,683	538,018	1,533,351
Copper.....Lb.	42,879,818	5,738,177	17,941,755	2,337,093	44,729,386	6,967,496
Gold.....Fine ozs.	1,263,364	26,116,050	585,833	12,110,242	530,402	10,984,382
Iron, pig, from Canadian ore.....Tons	8,095	178,980	–	–	6,087	169,156
Iron ore sold for export..... "	1,781	4,938	–	–	4,976	17,848
Lead.....Lb.	93,307,171	5,817,702	47,747,627	2,882,047	49,680,000	3,577,953
Nickel..... "	17,597,123	6,158,993	4,005,169	1,401,820	27,071,426	8,427,335
Palladium.....Crude ozs.	724	47,060	–	–	48	3,680
Platinum..... " "	469	45,783	–	–	36	4,105
Rhodium, Osmium, Iridium, Ruthenium.....Ozs.	392	31,360	–	–	–	–
Silver.....Fine ozs.	18,581,439	12,576,758	8,905,454	5,997,199	8,336,946	5,506,469
Zinc.....Lb.	56,290,000	3,217,536	28,164,000	1,370,400	29,950,000	2,072,839
Total.....	–	**61,785,707**	–	**26,475,544**	–	**39,244,614**
Non-Metallic						
Actinolite.....Tons	50	575	–	–	55	605
Arsenic, white, and in ore..... "	2,576	321,037	1,219	163,318	1,413	298,396
Asbestos..... "	163,706	5,552,723	54,846	1,894,232	99,042	3,574,762
Barytes..... "	289	9,537	28	900	79	1,508
Chromite..... "	767	11,503	498	4,980	2,220	37,363
Coal..... "	15,157,431	65,518,497	6,205,288	26,993,498	8,722,205	38,188,343
Corundum..... "	–	–	–	–	–	–
Feldspar..... "	27,727	248,402	13,525	108,405	17,622	120,890
Fluorspar..... "	4,503	102,138	178	2,343	62	532
Graphite..... "	597	31,353	334	17,528	556	32,365
Grindstones..... "	1,005	43,742	659	32,200	535	27,382
Gypsum..... "	559,265	2,160,898	190,819	781,215	189,648	820,974
Magnesite..... "	2,849	76,294	1,361	36,189	2,617	71,826
Magnesium sulphate..... "	1,021	24,107	736	18,059	650	15,288
Manganese..... "	73	2,044	27	681	30	840
Mica..... "	3,349	152,263	302	39,807	1,138	131,975
Mineral water.....Gals.	221,434	14,220	–	5,264	–	5,000
Natro-alunite.....Tons	50	2,500	–	–	–	–
Natural gas.....M cu. ft.	14,682,651	5,846,501	8,050,724	2,448,829	8,414,563	3,251,747
Iron oxides.....Tons	7,285	110,608	1,921	42,083	4,961	66,350
Peat..... "	3,000	14,500	2,250	11,250	–	–
Petroleum, crude.....Brls.	179,068	611,176	83,316	300,402	83,189	259,763
Phosphate.....Tons	190	1,796	90	1,060	–	–
Pyrites..... "	18,143	74,303	9,473	39,751	10,185	42,292
Quartz..... "	109,947	208,598	18,225	36,539	53,325	125,183
Salt..... "	181,794	1,628,323	88,213	836,648	89,235	755,694
Sodium carbonate..... "	202	3,027	–	–	137	2,055
Sodium sulphate..... "	504	11,980	92	1,380	66	1,268
Talc..... "	13,195	188,458	4,890	67,180	4,766	66,173
Tripolite..... "	219	5,781	55	1,815	–	–
Total.....	–	**82,976,794**	–	**33,885,565**	–	**47,907,634**
Structural Materials and Clay Products*						
Cement, Portland.....Brls.	6,943,972	15,438,481	–	–	–	–
Clay products —						
Bricks, common..... No.	–		–	–	–	–
" pressed..... "	–		–	–	–	–
Bricks, hollow building..... "	–		–	–	–	–
Bricks, moulded and ornamental.. "	–		–	–	–	–
Fire brick..... "	–		–	–	–	–
Fire clay.....	–		–	–	–	–
Fire clay blocks.....	–		–	–	–	–
Fireproofing and hollow porous blocks.....	–	11,438,456	–	–	–	–
Kaolin.....Tons	–		–	–	–	–
Paving brick.....No.	–		–	–	–	–
Pottery from domestic clay.....	–		–	–	–	–
Sewer pipe.....	–		–	–	–	–
Architectural terra-cotta.....	–		–	–	–	–
Tile drain..... No.	–		–	–	–	–
Lime.....Bush.	7,742,651	3,165,005	–	–	–	–
Sand and gravel.....Tons	11,666,371	3,502,935	–	–	–	–
Slate.....	1,899	14,871	–	–	–	–
Stone.....Tons	3,637,182	5,974,993	–	–	–	–
Total.....	–	**39,534,741**	–	–	–	–
Grand Total.....	–	**184,297,242**	–	**60,361,109**	–	**87,152,248**

* Data not available for the half-year.

Comparative Table of Mineral Production of Canada, January 1 to June 30, 1922 and 1923

		Increase (+) or Decrease (−)		Increase (+) or Decrease (−)	
		Quantity	%	Value	%
Metallic					
Cobalt, metallic and contained in oxide	Lb.	+ 412,457	+329	+ 1,156,668	+ 307
Copper	"	+26,787,631	+149	+ 4,630,403	+ 198
Gold	Fine oz.	− 53,431	− 9	− 1,145,860	− 9
Iron, pig, from Canadian ore	Tons	+ 6,087	-	+ 169,156	-
Iron ore sold for export	"	+ 4,796	-	17,848	-
Lead	Lb.	+ 1,932,373	+ 4	+ 695,906	+ 24
Nickel	"	+23,065,327	+576	+ 7,025,515	+ 500
Palladium	Crude oz.	+ 48	-	+ 3,680	-
Platinum	"	+ 36	-	+ 4,105	-
Rhodium	"	-	-	-	-
Silver	Fine oz.	568,508	− 6	− 490,730	− 8
Zinc	Lb.	1,786,000	+ 6	+ 702,379	+ 51
Total		-	-	-	-
Non-Metallic					
Actinolite	Tons	+ 55	-	+ 605	-
Arsenic, white and in ore	"	+ 194	+ 15·9	+ 135,078	+ 82·7
Asbestos	"	+ 44,196	+ 80·3	+ 1,680,530	+ 88·7
Barytes	"	+ 51	+182·1	+ 659	+ 72·4
Chromite	"	+ 1,722	+345·7	+ 32,383	+650·2
Coal	"	+ 2,516,917	+ 40·5	+11,194,845	+ 41·5
Corundum	"	-	-	-	-
Feldspar	"	+ 4,097	+ 30·2	+ 21,485	+ 19·8
Fluorspar	"	− 116	− 65·1	− 1,811	− 77·2
Graphite	"	+ 222	+ 66·4	+ 14,837	+ 84·6
Grindstones	"	− 124	− 18·8	− 4,818	− 15·0
Gypsum	"	− 1,171	− 0·6	+ 30,759	+ 5·1
Magnesite	"	+ 1,256	+ 92·2	+ 35,637	+ 98·4
Magnesium sulphate	"	− 86	− 11·7	− 2,771	− 15·3
Manganese	"	+ 3	+ 11·1	+ 159	+ 23·3
Mica	"	+ 836	+276·8	+ 92,168	+231·0
Mineral water	Gal.	-	-	— 264	− 5·0
Natro-alunite	Tons	-	-	-	-
Natural gas	M cu. ft.	+ 363,839	+ 4·5	+ 802,918	+ 32·8
Oxides, iron	Tons	+ 3,040	+158·2	+ 24,267	+ 57·6
Peat	"	− 2,250	-	− 11,250	-
Petroleum, crude	Brl.	− 127	− 0·2	− 40,639	− 13·5
Phosphate	Tons	− 90	-	− 1,060	-
Pyrites	"	+ 712	+ 7·5	+ 2,541	+ 6·3
Quartz	"	+ 35,100	+192·5	+ 88,644	+242·6
Salt	"	+ 1,022	+ 1·1	− 80,954	− 9·6
Sodium carbonate	"	+ 137	-	+ 2,055	-
Sodium sulphate	"	− 26	− 28·2	− 112	− 8·1
Talc	"	− 124	− 2·5	− 1,007	− 1·4
Tripolite	"	− 55	-	− 1,815	-
Total		-	-	+14,022,069	+ 41·3

Mineral Production of Canada, by Provinces, 1920, 1921 and 1922

Province	1920		1921		1922	
	Value of production	Per cent of total	Value of production	Per cent of total	Value of production	Per cent of total
	$		$			
Nova Scotia	34,130,017	14·98	28,912,111	16·82	25,923,499	14
New Brunswick	2,491,787	1·09	1,901,505	1·10	2,263,692	1
Quebec	28,886,214	12·68	15,157,094	8·82	17,647,939	10
Ontario	81,715,808	35·86	57,356,651	33·36	65,867,183	36
Manitoba	4,223,461	1·85	1,934,117	1·12	2,258,942	1
Saskatchewan	1,837,468	0·81	1,114,220	0·65	1,255,470	1
Alberta	33,586,456	14,74	30,562,229	17·78	27,872,136	15
British Columbia	39,411,728	17·30	33,230,460	19·33	39,422,808	21
Yukon	1,576,726	0·69	1,754,955	1·02	1,785,573	1
Total for Canada	**227,859,665**	**100·00**	**171,923,342**	**100·00**	**184,297,242**	**100**

EXPORTS OF CANADIAN MINERALS—January 1 to June 30, 1922, and 1923

Product		1922		1923	
		Quantity	Value	Quantity	Value
Metallic			$		$
Copper, fine, in ore, matte, etc.	Cwt.	26,754	335,904	194,244	2,370,978
Copper, blister	"	122,893	1,607,671	152,333	2,076,632
Gold bearing quartz, dust, nuggets, and bullion obtained from operators		–	1,937,326	–	6,913,907
Iron ore	Tons	1,002	4,186	4,811	17,036
Lead, metallic, contained in ore, etc.	Cwt.	11,400	45,600	4,710	32,934
Lead, in pig and block	"	227,314	997,154	218,047	1,186,083
Nickel, fine, contained in ore, matte or speise	"	726	22,079	133,780	1,894,081
Nickel, fine	"	39,483	1,210,389	120,667	2,535,875
Platinum concentrates	Oz.	7	551	36	3,751
Silver contained in ore, concentrates, etc.	"	2,638,280	1,744,485	2,056,790	1,352,850
Silver bullion	"	5,578,991	3,743,497	5,973,305	3,950,443
Zinc ore	Tons	20,163	92,772	–	–
Zinc spelter	Cwt.	384,125	1,943,632	133,838	946,415
Non-Metallic					
Arsenic, metallic	Cwt.	–	–	2,674	4,744
Arsenic, other than metallic	"	16,196	104,475	12,047	153,653
Asbestos, crude	Tons	42,082	2,561,830	58,691	3,807,830
Asbestos, sand and waste	"	17,264	168,193	32,656	385,163
Chromite	"	489	4,890	1,924	32,375
Feldspar	"	11,706	82,556	11,351	70,137
Graphite or plumbago, crude or refined	"	221	7,751	352	11,795
Gypsum, crude	"	95,051	150,503	81,279	111,157
" ground or calcined	"	1,146	21,938	2,176	42,445
Magnesite, crude	"	800	4,800	–	–
Magnesite, calcined	"	301	8,296	395	9,164
Magnesium sulphate	"	90	3,008	20	830
Manganese ore	"	53	1,235	–	–
Mica, rough cobbed and thumb trimmed	Cwt.	556	14,161	191	11,075
Mica splittings	"	2,010	119,702	5,558	331,683
" scrap and waste	"	27,661	15,815	43,164	32,460
Mineral pigments, iron oxides, ochres, etc.	Tons	754	35,831	13,045	32,678
Salt	"	141	2,257	334	3,401
Talc, refined	"	4,909	73,857	3,902	54,206

METALLIC

Cobalt

The major proportion of the world's supply of cobalt for almost two decades has been derived from the silver-cobalt-nickel arsenides of the Cobalt District.

During the first half of the present year Coniagas and Deloro Smelters treated ores and residues from this district, and marketed cobalt oxide, metallic cobalt and unseparated oxides of nickel and cobalt. The cobalt residues from the cyanide process were for the most part treated in Canada although some of these as well as smelter residues amounting in all to 187 tons containing 62,880 pounds of cobalt were shipped abroad for treatment.

The cobalt production of Canada during the first half of 1923 was 538,018 pounds valued at $1,533,351. These figures were obtained as the total of the metal cobalt contained in smelter products made during the half-year and cobalt in residues exported for treatment valued at $2.85 per pound, which was the average New York quotation for cobalt during the six months ending June, 1923.

Copper

The re-opening of the nickel-copper smelters and refineries resulted in a very greatly increased production of nickel and copper. The total production of copper in Canada during the six months ending June was 44,729,386 pounds which at the average New York quotation for electrolytic copper of 15·577c. was valued at $6,967,496. The entire production during the twelve months ending December 1922 was 42,879,818 pounds of which amount 17,941,755 pounds was produced during the first six months of the year.

Of the production during the first half of this year 16,100,000 pounds was contained in blister copper, all of which was exported to the United States for treatment; 14,504,902 pounds was contained in nickel-copper matte produced at Sudbury, some of which was exported and some refined in Canada; 28,484 pounds contained in copper sulphate; and 15,150,000 pounds the estimated recoveries from ores, concentrates and residues exported for treatment.

No refined copper was produced during the period in Canada. The copper smelters and refineries of the Consolidated Mining and Smelting Co. were not in operation. An interesting feature of the Canadian tariff changes was the provision for a bounty of 1½c. per pound on copper bars and rods produced in Canada. It is thought that this bounty will prove distinctly beneficial to this branch of the industry.

Ontario's production during the half-year amounted to 14,592,902 pounds valued at $2,273,136 as against 3,602,159 pounds valued at $469,217 in the first half of 1922.

In British Columbia the new concentrator of the Britannia Copper Co. was put in operation early in the year. Shipments from this property together with increased output from the Grandby smelter more than counteracted the effect of the inactivity of the Trail smelter on the provincial total.

The price of copper which fluctuated very considerably during the first few months of the year reacted slightly towards the close of the period but stabilization of copper prices is expected to result in the increased production of this metal.

Copper Production of Canada, January to June, 1922-1923

Province	1922		1923	
	Output in lb. of copper	Value	Output in lb. of copper	Value
		$		$
British Columbia	14,339,596	1,867,876	30,136,484	4,694,360
Ontario	3,602,159	469,217	14,592,902	2,273,136
Total	**17,941,755**	**2,337,093**	**44,729,386**	**6,967,496**

Gold

The production of gold in Canada which was the outstanding feature of metal statistics for 1922 was well maintained during the first half of 1923 and the production from all sources amounted to 530,402 fine ounces valued at $10,964,382. During the calendar year 1922 the gold production of Canada amounted to 1,263,364 fine ounces valued at $26,116,050 and of this total 585,833 fine ounces valued at $12,110,242 was produced during the first six months of the year. Production in 1922 represented an increase of 36 per cent over the preceding year. The maintenance of production during the present calendar year at approximately the same rate as in 1922 must therefore be recorded as satisfactory progress in this industry.

Ontario was as usual the principal producing province and contributed 418,113 fine ounces valued at $8,643,162 or 78 per cent of the entire Canadian output. Activities during the latter part of the period in the Porcupine gold area were quite pronounced and with the resumption of capacity operations consequent upon the plentiful supply of power, production records were steadily increased. There has been considerable competition during the last few months in shaft sinking in this area and it is freely predicted that the gold mines will yet be worked to depths between 5,000 and 6,000 feet. The threatened labour difficulties which seemed eminent early in the year did not materialize so that there is now little impediment to the progress of the producing companies.

Production of Gold by Provinces, January to June, 1923

Province	Fine Ounces	Value
		$
Ontario	418,113	8,643,162
British Columbia	102,232	2,113,323
Yukon	9,868	203,990
Nova Scotia	177	3,659
Saskatchewan	10	207
Manitoba	2	41
Total	**530,402**	**10,964,382**

Iron Ore

Two companies reported having shipped iron ore for export during the six months under review. The shipments were made up of magnetite from Texada Island, B.C., and beneficiated hematite from Moose Mountain, Ontario, and amounted in all to 4,976 tons valued at $17,848.

Exploration by means of drilling is being carried on in the western part of Ontario in localities where geological conditions lend to the belief that workable deposits of iron ore exist. Favourable results from this work would mean much to the industry.

Pig Iron

The total production of pig iron during the half-year was 435,146 long tons comprising 278,096 long tons of basic pig iron, 109,155 long tons of foundry iron and 37,895 long tons of malleable. The total production of pig iron in the six months ending June, 1922, was only 192,187 long tons. The production of ferro-silicon was also greater during the past six months than a year ago, and amounted to 13,013 tons.

Blast furnaces were operated during the period by the Algoma Steel Corporation at Steelton near Sault Ste. Marie, Ont.; The Dominion Iron and Steel Company at Sydney, N.S.; the Steel Co. of Canada at Hamilton, Ont.; the Canadian Furnace Co., at Port Colborne, Ont.

The output of pig iron steadily increased during the half-year reaching a peak in May, when 101,533 tons of pig iron was produced.

Pig iron was produced from Canadian ores in relatively small proportions by two firms in Canada during the period. The production from this source amounted to 6,087 short tons which had a value of $169,156.

Total Production of Pig-Iron, and Ferro-Alloys in Canada, January 1 to June 30, 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	107,202	430	–	107,632	271,972	6,124	–	278,096
Foundry	205	65,664	–	65,869	569	108,586	–	109,155
Malleable	–	18,590	–	18,590	70	47,825	–	47,895
Castings	–	–	96	96	–	–	–	–
Total Pig Iron	**107,407**	**84,684**	**96**	**192,187**	**272,611**	**162,535**	**–**	**435,146**
Total Ferro-Alloys	**4,389**	**342**	**4,940**	**9,671**	**–**	**–**	**13,013**	**13,013**

Steel Ingots and Castings

The cumulative production for the half-year ending June 30th was 476,430 tons as compared with an output of 177,080 tons in the corresponding period of 1922, and a production during the first six months of 1921 of 295,140 tons. Open-hearth basic ingots produced in the first six months of 1923 amounted to 453,726 tons as contrasted with 167,622 tons, the cumulative production for the same period in 1922. The direct steel castings increased from 9,321 tons to 22,704 tons in the six months period ending June 30th. Considerable expansion was recorded in the production of open-hearth basic castings, while electric castings declined slightly. No acid open-hearth castings were produced in the first half of 1922, while 1,855 tons was reported for the corresponding period this year.

Total Production of Steel Ingots and Castings in Canada, January 1 to June 30, 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	167,612	–	167,612	453,076	–	453,076
Acid	–	–	–	–	–	–
Bessemer	6	14	20	–	–	–
Electric	2	125	127	–	–	–
Total Steel Ingots	**167,620**	**139**	**167,759**	**453,076**	**–**	**453,076**
Steel Castings—						
Open Hearth—Basic	917	2,653	3,570	1,075	13,326	14,401
Acid	–	–	–	–	1,855	1,855
Bessemer	25	865	890	57	2,138	2,195
Electric	724	4,137	4,861	29	4,224	4,253
Total Direct Steel Castings	**1,666**	**7,655**	**9,321**	**1,161**	**21,543**	**22,704**
Grand Total	**169,286**	**7,794**	**177,080**	**454,887**	**21,543**	**476,430**

Lead

The production of lead during the six months ending June showed a still further advance and amounted to 49,680,000 pounds which at the average market price in Montreal for the half-year of 7·202c. per pound was valued at $3,577,953 as against 47,747,627 pounds valued at $2,882,047 in the half-year ending June, 1922, and a total of 93,307,171 tons valued at $5,817,702, the production during the calendar year 1922.

The production included 24,187 tons of pig lead produced at Trail, B.C. and Galetta, Ont.; 647 pounds, the estimated recovery of lead ores and concentrates exported to the United States; and 6 tons estimated as recovered from ores and concentrates exported from Cobalt to United States smelters. By far the greater part of the production was made by the Consolidated Mining, Smelting and Power Co. at its Trail smelter, but the production at Galetta in Ontario by the Kingdon Mining and Smelting Company was well-maintained.

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 depression in the markets for nickel caused by the discontinuance of the demand for this metal as a war material which has prevailed during the past few years apparently came to an end early in the present year 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 27,071,326 lb. during the first six months of the present year. The output included 26,885,545 lbs. contained in nickel-copper matte made by the Canadian smelters treating Sudbury ores and 185,968 lb., the nickel contents of smelter products resulting from the treatment of silver-cobalt ores. At the average New York price of 31·130c. per lb. for 99 per cent virgin metal the output of nickel was computed to be worth $8,427,335.

During the half-year 474,959 tons of nickel bearing ore was mined in the Sudbury district. The smelters treating 467,269 tons from which 25,670 tons of matte was produced.

Platinum

Metals of the platinum group have been recovered in small quantities from the treatments of the nickel-copper ores from the Sudbury district in recent years, and in the six months ending June recoveries amounting to 36 ounces of platinum and 48 ounces of palladium were reported. The closure of the International Nickel Company's Refinery at Bayonne, N.J., and the increased consumption of matte at the Huntington West Virginia plant will probably be reflected in a decreased production of the precious metals of the platinum group.

Silver

The production of silver in Canada during the first half of 1923 amounted to 8,336,946 ounces, which at the average price of 66·049 cents an ounce was valued at $5,506,469. Of the total production 4,572,149 ounces or 54·9 per cent was contained in silver and gold bullion produced during the period. 1,970,660 ounces or 23·6 per cent was contained in blister copper and lead bullion and 1,794,137 ounces or 21·5 per cent was estimated as recovered from ores, etc., exported. Comparable statistics for the first half of 1922 are not available owing to the fact that adjustments were made in the final statistics for the calendar year 1922 to bring the method of computation into harmony with that used in regarding the production of the other metals. Prior to 1922 the method used in compiling statistics on the silver production of Canada was to include except for Ontario the quantities of silver produced from Canadian ores either in Canadian or foreign smelters. For Ontario the sales of silver bullion from the mines and smelters were considered as the year's production. In order to bring the practice for Ontario into harmony with that used in computing the silver output for the other provinces adjustments amounting to 1,222,450 ounces were made to take account of the stocks of silver bullion on hand at the end of 1921 which had not been previously included in the reports of the Mineral Production of Canada. Disregarding the adjustments the total production of silver in Canada during the first six months of 1922 amounted to 8,905,454 ounces valued at $5,997,119.

Although the silver production of Canada shows an apparent falling off for the period this branch of the industry is really in a very flourishing state. The Premier mine, at Stewart, B.C., which was the largest Canadian producer in 1922 continues to make heavy shipments to the smelters. The Portland Canal district in which this mine is situated is being thoroughly prospected at present. Several shippers of ore from Mayo, Yukon Territories, are reported by United States smelters. Unfortunately time would not permit us to get in direct touch with these shippers and we have had to group the Yukon production reported by the smelters with that of B.C.

In Ontario the rejuvenated South Lorrain district is the scene of great activity and continues to contribute large amounts to the total output of silver. The exploration of the lower contact of the diabase sill by the Colonial and Coniagas companies at Cobalt this year means much to that famous camp, and if the more optimistic predictions of geological students are substantiated by this work the district will take on a new lease of life as the "sill" extends over a large area.

Production of Silver by Provinces, January to June 1922-1923

	1922		1923	
	Quantity	Value	Quantity	Value
	Ounces	$	Ounces	$
Ontario	4,999,150	3,366,583	4,766,603	3,148,293
British Columbia and Yukon	3,906,243	2,630,581	3,570,331	2,358,168
Nova Scotia	52	35	11	7
Saskatchewan	–	–	1	1
Total	**8,905,454**	**5,997,199**	**8,336,946**	**5,506,469**

Zinc

The production of zinc in the refined state at Trail, B.C., during the six months ending June, 1923, accounted for the whole Canadian production and amounted to 29,950,000 pounds, which at the average St. Louis price of 6·921 cents per pound was valued at $2,072,839. No mine operators reported having shipped zinc ores to the United States during the period. The production this year was well over the output during the corresponding period last year and pointed to a considerably increased output for the present calendar year. During the twelve months ending December, 1922, 56,290,000 pounds of refined zinc was produced at Trail, having a computed value of $3,217,536.

The production of zinc by small operators in the past has progressed under many difficulties. Where a Slocan mill, for instance, produced both lead concentrates and zinc concentrates, it could readily market the lead concentrates, but there was more difficulty in disposing of the zinc product. Zinc ores and concentrates were formerly exported at heavy cost in freight and duty to American Smelters. The operators were recompensed for the zinc contents but lost valuable amounts of silver, and were penalized for any lead present. On the other hand, lead ores and concentrates containing considerable zinc proved very refractory when treated in the lead smelters in Canada, and as a result mine operators suffered a penalty per unit of zinc in their ores. Under these conditions zinc mining was handicapped and could not flourish except under such conditions as obtained in the late war. At present these impediments are on a fair way to being entirely eliminated. By the introduction of improvements in the electrolytic process carried on by the Consolidated Mining and Smelting Company, it has been found possible to offer a schedule of smelter rates under which the mine operators are enabled to market zinc ores and concentrates and receive payment for a considerable portion of the precious metal contents in addition. While zinc contained in lead ores may continue to be a loss, the penalty will be lowered and it is expected that the lead-zinc industry will benefit materially.

NON-METALLICS

Arsenic

The production of arsenic in Canada during the half-year ending June 30, 1923, amounted to 1,413 tons valued at $298,396. The smelting of silver-cobalt-nickel ores of the Cobalt district and the recovery from the arsenical gold concentrates shipped by the Hedley Gold Mining Company in British Columbia to the Tacoma Smelter accounted for the output.

The average price of white arsenic, quoted in the Engineering-Mining Journal Press, during the half-year was 12·5 cents per pound as compared with the average price of 7·21 cents a pound which prevailed in the first half of 1922 and an average of 8·5 cents per pound for the calendar year.

This commodity is generally marketed in the form of arsenious oxide (As_2O_3). It is used principally in the manufacture of insecticides such as paris green and lead arsenate, although there is a considerable quantity consumed in the glass and tanning industries. Trade records show exportations of arsenic during the half-year as follows: white arsenic, 602 tons at $153,653; metallic, 27 tons valued at $4,744.

Asbestos

The total asbestos mined during the first six months of 1923 amounted to 1,482,102 tons, of which 1,297,243 tons or 87·5 per cent was milled. Sales advanced to a total of 99,042 tons valued at $3.574,762, as compared with sales of 54,846 tons valued at $1,894,232 in the six months ending June 1922.

Tables have been prepared showing the description and disposition of the output during the first half of the present year and comparative data are given for the corresponding period for 1922. In addition a table of prices compiled from the quotations given in the Engineering and Mining Press has been included.

Output, Sales and Stocks of Asbestos in Canada, January 1 to June 30, 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	129	87	73,300	842·52	579	319	153,476	481·11
Crude No. 2	507	189	81,462	431·00	1,398	1,936	484,470	250·24
Fiberized Crude	106	242	48,990	202·43	106	–	–	–
Spinning Stocks	3,635	2,158	487,620	225·95	5,252	6,598	833,956	126·40
Shingle Stocks	4,903	4,091	367,134	89·74	11,560	11,680	585,541	50·13
Mill Board Stocks	6,185	6,696	235,819	35·21	2,569	2,996	87,989	29·37
Paper Stocks	14,520	12,814	355,565	27·74	26,134	30,528	952,885	31·21
Paper Fillers	4,976	10,518	142,525	13·55	25,886	24,946	357,069	14·31
By-Products (asbestos sand, finish, floats)	18,062	18,051	101,817	5·64	19,730	20,039	119,376	5·96
Total	**53,923**	**54,846**	**1,894,232**	**34·53**	**93,214**	**99,942**	**3,574,763**	**36·09**

Average Price of Asbestos, f.o.b., Mines, Quebec, January 1 to June 30, 1923

(Short tons)

Crude No. 1	$ 554
Crude No. 2	306
Spinning Fibres	187
Magnesia and Compressed Sheet Fibres	138
Shingle Stock	73
Paper Stock	37
Cement Stock	20
Floats Stock	11

Barytes

Sales of barytes during the half-year amounted to 79 tons valued at $1,568 as compared with 28 tons worth $909 for the same period of 1922. These shipments were made from the barytes deposit at Lake Ainslie, Inverness county, Nova Scotia.

Ground barytes is used as a filler by paint and rubber manufacturers and is also used in the production of lithopone, barium binoxide, barium carbonate, barium chloride, barium nitrate and blanc fixé (barium sulphate, precipitated).

Lithophone is a compound of zinc oxide, zinc sulphide and barium sulphate and is used as a standard pigment and filler in the paint and rubber industry.

Blanc fixé is artificially prepared by treating a solution of barium salt, either the chloride or sulphide, with sulphuric acid, or aluminium sulphate. It is used in the paint, rubber and paper industries.

Chromite

Shipments of chromite during the six months ending June 30, 1923, totalled 2,220 tons valued at $37,363 as against 498 tons at $8,964 during the same period of 1922. These shipments were made from the Black Lake district in the Eastern Townships of Quebec. With the exception of a very small quantity, the concentrates shipped were marketed in the United States.

Coal

The output of coal from Canadian mines during the first six months of 1923 amounted to 8,722,205 tons valued at $38,188,343 as compared with 6,205,288 tons valued at $26,993,498 in the corresponding period of the previous year.

Nova Scotia was the principal producing province, leading with an output of 3,613,339 tons, and Alberta was a close second with an output of 3,312,991 tons. British Columbia produced 1,475,315 tons, and Saskatchewan and New Brunswick followed with outputs of 177,874 tons and 142,686 tons, respectively.

Exports of Canadian coal during the first half of the present year were very considerably greater than in the corresponding period of 1922. Exports were about evenly divided between the Eastern Canada mines and those in the West. During the six months ending June, 1923, Canada exported 1,014,763 tons of domestic coal.

Imports of coal during the period were more than double the receipts in the first half of 1922 and comprised 7,510,988 tons of bituminous coal, mostly from the United States, but including 121,287 tons from Great Britain, and 2,691,862 tons of anthracite which also consisted principally of United States coal but included 114,542 tons from Great Britain.

A table has been prepared which shows the quantities of anthracite and bituminous coal imported into each of the principal consuming areas of Central Canada during the six months ending June, 1923, with comparative figures showing the average importations in the corresponding periods of the three preceding years. A chart also shows these principal importing areas.

Computed from the output, imports and exports data, the coal made available for consumption in Canada during the first six months of the present calendar year amounted to 17,910,292 short tons as compared with a total of 10,713,898 tons for the corresponding period in 1922. In both January and June, the amount of coal made available for consumption as thus computed was in excess of three million tons and the least amount made available for consumption during any month of the present year was in April when the coal made available was determined as 2,340,474 tons.

Fewer tables have been prepared for this half-yearly 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, January 1 to June 30, 1922 and 1923

(Short Tons)

Provinces	1922		1923	
	Output	Total Value	Output	Total Value
	Tons	$	Tons	$
Nova Scotia—				
Bituminous	2,336,261	10,326,274	3,613,339	15,970,958
New Brunswick—				
Bituminous	118,311	455,497	142,686	549,341
Saskatchewan—				
Lignite	165,069	344,994	177,874	371,757
Alberta—				
Anthracite	35,145	106,489	–	–
Bituminous	1,158,465	5,282,600	1,773,145	8,085,541
Sub-Bituminous*	–	–	292,214	1,332,496
Lignite	1,064,686	3,854,163	1,247,632	4,516,428
Total for Alberta	**2,258,296**	**9,243,252**	**3,312,991**	**13,934,465**
British Columbia—				
Bituminous	1,327,351	6,623,481	1,475,315	7,361,822
Canada—				
Anthracite	35,145	106,489	–	–
Bituminous	4,940,388	22,687,852	7,004,485	31,967,662
Sub-Bituminous*	–	–	292,214	1,332,496
Lignite	1,229,755	4,199,157	1,425,506	4,888,185
Total for Canada	**6,205,288**	**26,993,498**	**8,722,205**	**38,188,343**

*Not separately reported in 1922.

Exports of Canadian Coal by Provinces, January 1 to June 30, 1922 and 1923

(Short Tons)

—	1922	1923
Nova Scotia	84,015	407,378
New Brunswick	32,941	97,201
Quebec	8,298	3
Ontario	–	877
Manitoba	240	5,062
Saskatchewan	976	6,401
Alberta	191	216
British Columbia and Yukon	478,765	497,625
Total	**605,426**	**1,014,763**

Imports of Anthracite and Bituminous Coal into Canada from United States and Great Britain, January 1 to June 30, 1922 and 1923

(Short tons)

—	Three-year Average for the period 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	285,305	58,754	–	58,754	433,044	–	433,044
June	344,388	54,414	–	54,414	479,160	26,742	505,902
Total	**1,857,283**	**1,142,911**	–	**1,142,911**	**2,577,320**	**114,542**	**2,691,862**
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	997,408	466,974	–	466,974	2,003,773	52,704	2,056,477
Total	**4,876,714**	**3,971,125**	–	**3,971,125**	**7,389,701**	**121,287**	**7,510,988**

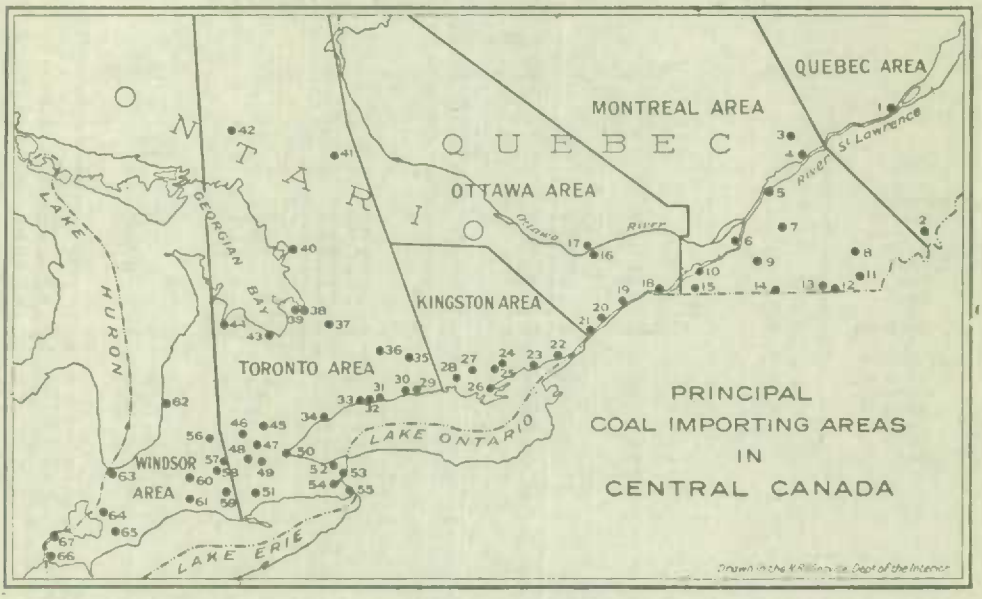
Coal Made Available for Consumption in Canada, January 1 to June 30, 1922 and 1923

(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	838,177	124,100	1,942,932	1,763,870	1,641,714	216,199	3,189,385
February	1,287,274	1,020,142	116,450	2,190,966	1,638,756	1,326,207	184,952	2,780,611
March	1,446,506	1,615,169	174,236	2,887,499	1,464,051	1,817,687	284,491	2,997,347
April	672,694	680,418	46,188	1,306,924	1,207,845	1,171,188	128,559	2,340,474
May	734,814	441,743	54,046	1,122,510	1,253,248	1,683,675	99,141	2,837,782
June	832,085	521,388	90,406	1,263,067	1,304,435	2,562,379	101,421	3,765,393
Total	**6,205,288**	**5,114,036**	**605,426**	**10,713,898**	**8,722,205**	**10,202,850**	**1,014,763**	**17,910,292**

Imports of Coal into Central Canada by Principal Areas

Area	Anthracite			Bituminous		
	(1) 6 months ending June 30, 1923	(2) Three year Average for period 1920-22	(3) Per cent of (1) to (2)	(4) 6 months ending June 30, 1923	(5) Three year Average for period 1920-22	(6) Per cent of (4) to (5)
Quebec	48,444	46,857	103	51,796	48,178	108
Montreal	862,221	461,160	187	1,280,619	912,498	140
Ottawa	177,797	132,810	134	477,520	287,953	166
Kingston	61,880	48,651	127	120,496	59,976	201
Toronto	1,253,116	903,715	139	2,943,953	2,146,038	137
Windsor	219,574	166,969	132	1,635,694	905,815	181
Total	**2,623,032**	**1,760,162**	**149**	**6,510,078**	**4,360,458**	**149**



Key to the Ports of Entry Shown on the Map

Quebec Area—

1 Quebec City
2 Megantic

Montreal Area—

3 Shawinigan Falls
4 Three Rivers
5 Sorel
6 Montreal
7 St. Hyacinthe
8 Sherbrooke
9 St. Johns
10 Valleyfield
11 Coaticook
12 Beebe Junction
13 Mansonville
14 St. Armand
15 Athelstan

Ottawa Area—

16 Ottawa
17 Hull
18 Cornwall
19 Morrisburg

Kingston Area

20 Prescott
21 Brockville
22 Gananoque
23 Kingston
24 Napanee
25 Deseronto
26 Picton
27 Belleville
28 Trenton

Toronto Area—

29 Cobourg
30 Port Hope
31 Bowmanville
32 Oshawa
33 Whitby
34 Toronto
35 Peterboro
36 Lindsay
37 Orillia
38 Port McNicoll
39 Midland
40 Parry Sound
41 North Bay
42 Sudbury
43 Collingwood
44 Owen Sound
45 Guelph
46 Kitchener
47 Galt
48 Paris
49 Brantford
50 Hamilton
51 Simcoe
52 St. Catharines
53 Niagara Falls
54 Welland
55 Bridgeburg

Windsor Area—

56 Stratford
57 Woodstock
58 Ingersoll
59 Tillsonburg
60 London
61 St. Thomas
62 Goderich
63 Sarnia
64 Wallaceburg
65 Chatham
66 Amherstbur
67 Windsor

Feldspar

The production of feldspar during the first six months of 1923 amounted to 17,622 tons valued at $129,890, as against 13,525 tons at $110,789 for the same period of 1922. This period's shipments comprised 11,507 tons from Ontario and 6,115 tons from Quebec. While the average value of crude spar was $7.37 per ton, ground spar brought from $16 to $17 a ton. In addition to the sales of the crude and ground grades a quantity of crushed spar and dust was sold for use as stucco dash in the building industry. Shipments of dental spar to France during this period were also reported.

The grinding plant erected by the Frontenac Floor and Wall Tile Company at Kingston, Ontario, during 1921, was operated during the period. The grinding capacity of this plant is approximately 1,500 tons per annum.

The exports of feldspar during the half-year amounted to 11,351 tons with a value of $79,137.

Fluorspar

No mining operations were reported in this industry during the first six months of 1923. The production of fluorspar in Canada during the period was practically negligible. Shipments amounting to 62 tons valued at $532, were reported as compared with 178 tons valued at $2,834 during the same period of 1922. The Rock Candy mine and mill at Lynch Creek, owned by the Consolidated Mining and Smelting Company, which was the chief producer in previous years, was closed down for the entire half-year.

Magnesite

The production of calcined and clinkered magnesite in the first half of 1923 showed a considerable increase over that of the first six months of 1922. Total sales amounted to 2,617 tons at $71,826 as against 1,361 tons worth $36,185 in the corresponding period of 1922.

As in previous years, the North American Magnesite Producers Limited, the Scottish Canadian Magnesite Company, Limited, and the International Magnesite Company, Limited, were the only producers of magnesite, all three being located in the province of Quebec.

The exports of calcined magnesite during the period under review totalled 395 tons, with a valuation of $9,164.

Graphite

The total quantity of graphite mined during the six months ending June 30, 1923, was 1,013 tons. Shipments reported for the period amounted to 556 tons valued at $32,363. The average value per ton was, Flake, $140; Dusts, $43; as against the prevailing price, $202.85 per ton for the former, and $36 a ton for the latter during 1922.

The Black Donald Graphite Co., Ltd., the Quebec Graphite Co., and the Canadian Graphite Corporation, were the only firms that reported shipments. The mill owned by the Ontario company was operated during the period and treated some 500 tons of graphite.

Exportations of graphite or plumbago, crude or refined, during the six months under review amounted to 352 tons with a valuation of $11,795.

Gypsum

The output of gypsum rock during the six months ending June 30, 1923, was 214,696 tons. Of the total gypsum rock quarried 59,029 tons, or 27 per cent, was calcined during the period. By provinces the quantity shipped was, Nova Scotia, 96,183 tons; New Brunswick, 30,670 tons; Ontario, 47,948 tons; Manitoba, 14,727 tons; and British Columbia, 120 tons. Total shipments reported of all grades amounted to 189,648 tons valued at $820,974, as against 190,819 tons worth $781,215, for the first six months of the previous year. Average values per ton for the different grades were as follows: lump, $1.46; crushed, $2.11; fine ground, $6.44, and calcined, $10.77.

Exports during the half-year amounted to 83,455 tons consisting of 81,279 tons crude and 2,176 tons of ground gypsum, with a total value of $153,602.

Principal statistics relating to this industry are given in the following table:—

Shipments of Gypsum in Canada, January 1 to June 30, 1922 and 1923

	1922		1923	
	Tons	Value	Tons	Value
		$		$
Lump or Mine Run	101,082	167,242	91,628	133,588
Crushed	31,138	74,587	41,165	87,050
Fine ground	2,170	14,359	2,787	17,939
Calcined gypsum sold	5,923	32,912	10,059	154,587
Calcined gypsum used in the manufacture of gypsum products, such as wall plaster, alabastine, etc. (Weight and value of gypsum content only.)	50,506	492,115	44,009	427,810
Total sold or used	**190,819**	**781,215**	**189,648**	**820,974**

Iron Oxides

The province of Quebec continued to be the only producer of iron oxides in Canada. The total quantity mined during the half-year was 8,099 tons. Sales amounted to 4,961 tons valued at $66,350, consisting of 3,563 tons crude and 1,398 tons ground and calcined. The average value of the former was $3 per ton, while the latter sold for $40 per ton. The crude oxide was used for the purification of illuminating gas and the calcined product was consumed entirely in the paint industry.

Mica

The quantity of mica mined during the first six months of 1923 was 278 tons against 87 tons in the corresponding period of 1922. Sales reported for the period totalled some 1,138 tons at $132,015, consisting of 767 tons from Ontario deposits and the balance or 371 tons from Quebec.

Detailed data of this industry are shown in the table below.

Shipments of Mica in Canada, January 1 to June 30, 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 cobbed	130,008	27,588	0·21	73,890	8,149	0·11
Thumb trimmed—						
1 x 1 inches	3,044	507	0·16			
1 x 2 "	5,468	1,217	0·22			
1 x 3 "	3,536	864	0·24			
2 x 3 "	1,186	593	0·50	193,908	31,444	0·16
4 x 6 "	64	256	4·00			
5 x 8 "	68	340	5·00			
Splittings	7,178	4,332	0·60	109,939	81,612	0·74
Scrap	453,158	4,150	0·009	1,898,820	10,810	0·005
Total	**603,770**	**39,807**	**0·65**	**2,276,557**	**132,015**	**0·06**

Natural Gas

Natural gas produced in Canada during the half year amounted to 8,414,563 thousand cubic feet valued at $3,251,747, or an average of 38·6 cents per thousand cubic feet.

Ontario continued to be the leading producer of this commodity, contributing 4,800,000 thousand cubic feet averaging 50·5 cents a thousand. Alberta came second with a production of 3,202,863 thousand cubic feet valued at 23·3 cents per thousand. New Brunswick followed with 411,700 thousand cubic feet at 19·5 cents a thousand.

The production and value of natural gas by provinces is shown in the following table.

Production of Natural Gas in Canada, by Provinces, January 1 to June 30, 1922 and 1923

Province	1922		1923	
	M cu. ft.	Value	M cu. ft.	Value
		$		$
New Brunswick	486,772	92,020	411,700	80,375
Ontario	4,290,282	1,579,437	4,800,000	2,424,000
Alberta	3,293,680	777,829	3,202,863	747,372
Total	**8,050,734**	**2,448,829**	**8,414,563**	**3,251,747**

Petroleum

The total production of crude petroleum in Canada during the first six months of the present year, was 83,189 barrels valued at $259,763, consisting of 78,298 barrels from Ontario; 3,747 barrels from New Brunswick and 1,144 barrels from Alberta.

The average value per barrel (less bounty) in Ontario was $2.68 as against $2.88 during the same period of the previous year. In New Brunswick the value per barrel was $3.73, a slightly higher average price than that which prevailed in 1922.

Through the courtesy of the supervisor of Crude Petroleum Bounties at Petrolia, detailed data covering the production of petroleum in Ontario by fields during the first six months of 1922 and 1923, are included in the following table.

Crude Petroleum Production in Canada, January 1 to June 30, 1922 and 1923

	1922				1923			
	Quantity in Barrels	Value Less Bounty	Bounty Paid	Total Value	Quantity in Barrels	Value Less Bounty	Bounty Paid	Total Value
		$	$	$		$	$	$
New Brunswick	3,843	13,403	1,959	15,362	3,747	13,994	1,967	15,961
Ontario—								
Petrolia and Enniskillen	31,553	90,871	16,565	107,436	31,555	84,567	16,567	101,134
Oil Springs	18,537	53,387	9,732	63,119	18,232	48,862	9,572	58,434
Moore Township	3,166	9,117	1,662	10,779	2,109	5,652	1,107	6,759
Sarnia Township	1,260	3,629	662	4,291	1,218	3,264	640	3,904
Plympton Township	234	675	123	798	367	984	193	1,177
Bothwell	11,218	32,308	5,889	38,197	13,836	37,080	7,264	44,344
Tilbury East	127	365	67	432	963	2,581	506	3,087
West Dover	3,578	10,305	1,879	12,184	3,726	9,986	1,956	11,942
Raleigh Township	398	1,147	208	1,355	398	1,067	209	1,276
Dutton	246	709	129	838	315	844	165	1,009
Onondaga	28	80	15	95	–	–	–	–
Moza Township	5,441	15,670	2,857	18,527	5,162	13,834	2,710	16,544
Thamesville	–	–	–	–	273	732	143	875
Dawn Township	217	625	114	739	–	–	–	–
Elgin Township	–	–	–	–	144	386	75	461
Total for Ontario	**76,003**	**218,888**	**39,902**	**258,790**	**78,298**	**209,839**	**41,107**	**250,946**
Alberta	3,500	26,250	–	26,250	1,144	8,716	101	8,817
Total for Canada	**83,316**	**258,541**	**41,861**	**300,402**	**83,189**	**218,555**	**43,175**	**259,763**

Pyrites

Four firms in Canada reported shipments of pyrites during the half-year 1923. Two of these were in Ontario and two in British Columbia. No shipments of copper-pyritic ore were made from the Weedon Mines in Quebec during this period. The Caldwell mine operated by the Grasselli Chemical Company, Limited, and the Sulphide mine owned by the Nichols Chemical Company, Limited, were the Ontario shippers. In British Columbia the Granby Consolidated and the Consolidated Mining and Smelting Company, Limited, were the only producers. The former company shipped from the Hidden Creek Mine at Anyox to the acid plant at Barnet, B.C., and the latter firm's shipments were from the Sullivan Mine to the plant at Trail.

The total quantity of pyrites mined during the six months was 8,745 tons. Shipments reported for the same period amounted to 10,185 tons valued at $42,292. Of this total Ontario producers shipped 6,536 tons and British Columbia operators the balance, 3,649 tons.

Salt

Ten firms reported operations in the salt industry in Canada during the period under review. The output of these active plants amounted to 90,965 tons of which 89,235 tons were marketed. Ontario continued to be the principal producing province, contributing 86,803 tons valued at $732,205, while Nova Scotia shipments totalled 2,432 tons worth $23,489.

Exports during the half-year totalled 334 tons at $3,401 as against 141 tons with a valuation of $2,257 in the corresponding period of 1922.

Production of Salt in Canada, by Grades, January 1 to June 30, 1922 and 1923

Grade	1922			1923		
	Manufactured	Sold	Value of Salt Sold Not Including Packages	Manufactured	Sold	Value of Salt Sold Not Including Packages
	Tons	Tons	$	Tons	Tons	$
Table and dairy	22,474	22,290	434,165	23,613	23,694	400,275
Common fine	21,108	17,178	181,135	18,158	17,825	164,414
Common coarse	16,791	16,558	150,677	14,028	12,044	106,108
Land salt	1,452	1,437	12,191	2,009	2,030	10,572
Other grades	2,864	2,553	28,597	3,344	3,829	38,786
Brine for chemical works (Salt equivalent sold or used)	28,197	28,197	29,883	29,813	29,813	35,539
Total	**92,886**	**88,213**	**836,648**	**90,965**	**89,235**	**755,694**
Value of packages	-	-	280,588	-	-	261,972
Grand Total	**92,886**	**88,213**	**1,117,236**	**90,965**	**89,235**	**1,017,666**

Quartz

The output of quartz during the first six months of 1923 was 58,287 tons as against 19,637 tons quarried during the same period of 1922. Sales totalled 53,325 tons with a valuation of $125,183, as compared with 18,225 tons at $36,539 for the first half of the previous year.

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

The Silico Limited, at St. Canut in the province of Quebec, operated its quartz crushing plant during the period under review.

Sodium Sulphate

Sales of sodium sulphate during the first six months of 1923 totalled 66 tons with a value of $1,268. As in previous years these shipments were made from the natural deposits of sodium sulphate in Saskatchewan.

The imports of salt cake during the period amounted to 16,899 tons valued at $364,378, a decrease of nearly 600 tons over those of the first six months of the previous year.

Talc

The total quantity of talc mined during the six months ending June 30, 1923, was 4,149 tons. Sales of the milled product amounted to 4,766 tons as against 4,890 tons in the first half of the previous year. The average selling price in 1923, by grades, was as follows: high-grade, $22; medium, $13; and low-grade, $9. The prices were similar to the prevailing quotations during the previous year.

The exports of refined talc 3,902 tons valued at $54,206, were lower than those for the same period of 1922.