CANADA
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL BRANCH

PRELIMINARY REPORT

OF THE

MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR

1921

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LIST OF PUBLICATIONS

PREPARED IN THE

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The following printed publications have been issued:

(1) Directory of Chemical Industries in Canada as of date January 1, 1919. (Supply exhausted).

(2) Directory of Chemical Industries in Canada as of date January 1, 1921.

(3) Preliminary Report on the Mineral Production of Canada for the six months ending June, 1921.

(4) Monthly Reports on the Production of Iron and Steel in Canada (series inaugurated January, 1921).

(5) Preliminary Report on the Mineral Production of Canada for 1921.

In addition the following reports have been issued in stencil form:

(1) Preliminary Report on Coal Statistics for Canada for 1920.

(2) Preliminary Reports on Coal Statistics for Canada:

(a) For the six months ending June, 1921.

(b) For the nine months ending September, 1921.

(c) For the twelve months ending December, 1921.

(3) A series of reports each dealing with a particular phase of the chemical industry in Canada for 1918.

The reports named below are in course of preparation and will be printed within the coming year:

(1) Chemicals and Allied Products in Canada in 1919 and 1920.

(2) Chemicals and Allied Products in Canada in 1921.

(3) Annual Report on the Iron and Steel Industry in Canada in 1920.

(4) Annual Report on the Iron and Steel Industry in Canada in 1921.

(5) Annual Report on Coal Statistics for Canada for 1920 and 1921.

(6) Annual Report on the Mineral Production of Canada, 1921.

(a) Part one—Production, Imports and Exports by commodities.

(b) Part two—General Statistics by industries with summary tables.

(7) Preliminary Reports on the Mineral Production of Canada for the half-year ending June, 1922.

(8) Monthly Report on Coal Statistics for Canada. (Series beginning January, 1922).

Copies of issued publications listed above will be sent free on request.

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PREFACE

The present Preliminary Report on the Mineral Production of Canada in 1921 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, 1921, and to present the first official figures available for the whole of the calendar year.

The cordial thanks of the Bureau are tendered to the Dominion Department of Mines and to the several Provincial Departments of Mines, which have without exception assisted materially in the preparation of the report. It may be added that the co-ordination of the general work on mining statistics between the Provincial Departments and the Bureau has been under consideration during the year, and it has been found possible to arrange for the co-operative collection of monthly statistics of coal production with all the Provinces in which such records are obtained, namely, Nova Scotia, New Brunswick, Saskatchewan, and Alberta. In the field of general mining statistics, conferences with the Ontario Department of Mines have resulted in a plan whereby the final data for the year 1921 are being collected on joint forms, thus preventing overlapping and duplication of work. The data on mining statistics are made available to the Dominion Department of Mines.

The thanks of the Bureau are also tendered to mine and quarry owners, operators, and other members of the mining community for their co-operation in supplying the data from which the report has been prepared.

The present report has been prepared under the direction of Mr. S. J. Cook, Chief of the Mining, Metallurgical and Chemical Branch of the Bureau. The compilation of the data on metallic mineral production was carried out by Mr. A. C. Young.

R. H. COATS,
Dominion Statistician.

Dominion Bureau of Statistics,
February 23, 1922.

MINERAL PRODUCTION OF CANADA

—		1911–1920	1920	1921	
		Average Production	Quantity	Quantity	Value
METALLIC					$
Cobalt, metallic and contained in oxide	Lbs.	895,476	546,023	196,160	588,480
Copper	"	88,877,924	81,600,691	53,461,795	7,459,780
Gold	Fine ozs.	748,003	765,007	924,374	21,327,000
Iron, pig from Canadian ore	Tons	72,987	75,869	29,200	580,000
Iron ore sold for export	"	96,812	8,885	938	4,690
Lead	Lbs.	38,511,868	35,953,717	67,146,011	3,855,524
Nickel	"	80,612,038	61,335,706	19,293,186	6,752,615
Palladium	Crude ozs.	97·5	913	591	39,577
Platinum	"	114	595	269	22,527
Rhodium	Ozs.	.....	513	56	6,250
Silver	Fine ozs.	24,985,220	13,330,357	13,134,926	9,185,007
Zinc	Lbs.	24,553,932	39,863,912	53,095,609	2,758,552
NON-METALLIC					
Actinolite	Tons	132	100	78	975
Arsenic, white, and in ore	"	2,450	2,459	1,491	269,300
Asbestos	"	150,421	199,573	90,407	4,807,052
Barytes	"	903	751	270	9,567
Chromite	"	14,803	11,016	2,300	19,000
Coal	"	14,157,420	16,631,954	14,942,418	74,273,000
Corundum	"	667	196	402	50,250
Feldspar	"	19,115	37,873	30,540	223,000
Fluorspar	"	4,181	11,235	5,519	136,267
Graphite	"	2,411	2,190	398	25,696
Grindstones	"	3,391	2,444	.....	5,400
Gypsum	"	428,465	429,144	357,183	1,725,730
Magnesite	"	20,088	18,378	3,700	81,320
Magnesium sulphate	"	1,391	1,947	1,021	21,315
Manganese	"	353	649	68	3,800
Mica	"	.....	2,203	707	76,773
Mineral water	Gal.	.....	.....	338,956	18,621
Natural gas	M cu. ft.	.....	16,845,518	15,043,944	4,902,020
Iron oxides	Tons	9,593	19,128	8,879	92,765
Peat	"	1,748	4,550	.....	.....
Petroleum, crude	Brls.	234,619	196,251	190,338	580,842
Phosphate	Tons	.....	.....	30	453
Pyrites	"	232,586	174,744	24,438	106,286
Quartz	"	126,476	128,295	84,896	268,277
Salt	"	127,600	209,855	127,108	1,641,935
Sodium Sulphate	"	81·1	811	592	9,538
Strontium	"	.....	75	.....	.....
Talc	"	13,790	21,671	7,916	32,456
Tripolite	"	419	260	341	11,268
STRUCTURAL MATERIALS AND CLAY PRODUCTS					
Cement, Portland, Puzzolan	Brls.	5,971,473	6,651,980	5,805,237	14,277,180
Clay products		.....	.....	.....	8,657,000
Brick, common	No.	398,286,373	303,343,028	.....	.....
Brick, pressed	"	76,384,843	85,137,125	.....	.....
Fireproofing	Tons	.....	49,091	.....	.....
Kaolin	Tons	823	683	.....	.....
Moulded and ornamental terra cotta		.....	3,515,000	.....	.....
Sewerpipe	Tons	.....	58,887	.....	.....
Tile, drain	No.	.....	14,527,000	.....	.....
Lime	Bush.	7,064,288	9,427,334	.....	.....
Quicklime	"	.....	.....	4,619,107	1,821,240
Hydrated lime	Tons	.....	.....	34,029	418,702
Sand-lime brick	No.	45,732,591	45,459,000	.....	*
Sand and gravel	Tons	.....	11,530,795	.....	1,500,000
Stone		.....	.....	.....	3,668,200

Total value metallics	$ 52,580,002
Total value non-metallic	89,405,256
Total value structural materials and clay products	30,342,322
Grand Total	$172,327,580

* See Text.

PRELIMINARY REPORT

OF THE

MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR, 1921

By S. J. COOK, B.A., A.I.C.,

Chief of the Mining, Metallurgical and Chemical Branch

The break in prices of most metals during the last quarter of 1920 foreshadowed a difficult year in the mining industry in Canada. In spite of these difficulties and although many hitherto thriving branches of the mining industry suffered severely during 1921, there were some redeeming features, and the survey of the mineral production now completed for the calendar year, shows that the aggregate value of the economic minerals produced reached a total of $172,327,580 (Canadian funds) as compared with $237,422,857 (Canadian funds) in the preceding year. Estimates of the total probable value of the mineral production of Canada during 1921 determined in December last gave a total of $170,000,000 or not quite 2 per cent less than the totals given in this report. The determination of the mineral production of the country in terms of Canadian dollars has been made in pursuance of the custom followed in previous years, with one exception.

The total value of the mineral production of Canada as reported for 1920 amounted to $227,859,665, comprising metallics valued at $77,939,630; non-metallics $108,027,947; and structural materials and clay products $41,892,088. The basis of valuation used in computing 1920 production was the same as in previous years, namely, to compute the quantity of the metals contained in Canadian ores smelted during the year either in Canada or abroad, and to compute the total value of this production at the average prevailing price for the metal in a recognized market. The value of the non-metallics, and of the structural materials produced was determined as the value received by the producer at point of shipment. The New York market was used in the case of the principal metals since most sales of Canadian products are made on that market.

During the past two years the variation in the rate of exchange prevailing between Canada and the United States has been a considerable factor in determining the value to the producer marketing his product across the line. In the published record of the mineral production of Canada for 1920 no account was taken of the exchange premium, although mention was made of the fact that the quotations given were based on the New York market prices.

In this report the values of the metals have been determined precisely as in previous reports with the exception that the total value of the metal in New York funds has been raised by an amount equivalent to the average premium obtained on New York funds during the year. In a later section of this report under "Metal Prices" this subject is dealt with more fully, and a table of exchange premiums by months is given. Recomputed on this basis the value of the mineral production of Canada referred to above during 1920 would be $237,422,857 comprising metallics $87,502,822; non-metallics and structural materials at the same totals as before.

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The readjustment which had set in during the closing months of 1920 continued throughout the greater part of 1921 and particularly during the first half of the year there was little constructive change in the market conditions governing the sales of most mineral products. The mining of coal and the production of gold and silver might be regarded as industries to be excepted from the foregoing statement.

Towards the close of the year mineral markets became somewhat more active, prices showed a slight tendency to rise and with the gradual absorption of stocks left over from the abnormal activities of the war period a general improvement was observed.

The principal mineral producing province of Canada, according to the returns for 1921, was Ontario, for which province the value of mineral production was $54,505,770. British Columbia came second with a mineral production valued at nearly $35,000,000. Nova Scotia was a close third with $32,500,000. Alberta ranked fourth with $29,000,000. Quebec was fifth with $14,600,000, and Manitoba, Yukon Territory, New Brunswick and Saskatchewan followed in the order named with productions between one and two million dollars each.

The ten principal products of the mineral industries of Canada in 1921 arranged in order of the values assigned were, coal, gold, silver, copper, nickel, natural gas, asbestos, lead, zinc and gypsum. Production values of these commodities ranged from $74,273,000 for coal down to $1,725,000 for gypsum, and in the aggregate the value of these ten commodities grouped in 1921 was $131,447,114.

The output of coal while less than in the preceding year was still very creditable and the decline of 12 per cent from the quantity mined during the preceding year was still not sufficient to reduce the output to the level of 1919. Alberta and Nova Scotia were the principal producing provinces, Alberta being only slightly in advance of its eastern rival. Production continued in British Columbia at more nearly the same rate as in the preceding year than was the case in any of the other provinces. New Brunswick was the only province to exceed its 1920 output although Saskatchewan came within one per cent of the quantity mined in the preceding year. The mine operators in the several provinces have been fully alive to the necessity of seeking markets for their coal and in all the coal producing provinces some attempt has been made to stimulate coal consumption. This statement is probably more particularly true of activities in Alberta where considerable work has been done with a view to establishing conditions under which Alberta coal might be moved east on a paying basis. An attempt was also made to obtain a share of the Pacific coast trade.

In point of value of production gold ranked second during 1921 among the mineral products. Ontario was again the principal producer, and although the production of the mines was curtailed during the early months of the year owing to a shortage of hydro-electric power consequent upon a deficient water supply the output reached a value considerably in excess of $16,000,000. The most attractive feature of gold production from the point of view of the producer was, of course, the fact that all gold sold to the Royal Mint at Ottawa was paid for in New York funds and the premium obtained added to the item "other income" very appreciably during the year. The recent rapid approach of the Canadian dollar towards par with the American dollar bids fair soon to wipe out this advantage. Nevertheless production of gold in Northern Ontario and in the other gold camps of Canada may be expected to continue to increase since there exists a considerable demand for gold in the world and if the countries of Europe are ever to get their currency back to anything like the gold basis large quantities of gold will be required. There was a considerable increase in the production of gold in British Columbia over the preceding year, and while the recorded output did not show an increase in the placer production of the Yukon reports received towards the close of the year indicated that the coming year would see considerable activity in the placer workings and a consequent increase in production.

Silver ranked third among the metals produced in Canada during 1921, and while the production of this metal did not quite equal the record set up in the preceding year the output was very creditable and accounted for more than $9,000,000 of the value of metals produced during the year, in spite of the fact that the average price throughout the year was less than two-thirds of that prevailing in the preceding year. Throughout the first six months the industry was assisted by declining costs in wages. The price of silver for the first half of the year averaged 59.81 cents and was fairly steady around this price. Later the price of silver advanced slightly and activity in its production was more pronounced especially in Ontario where the factor of declining costs had a greater effect than in the provinces where silver is produced principally as a by-product in the recovery of other metals. The four leading companies, the Nipissing, the Mining Corporation, the O'Brien and Coniagas were all active at the close of the year and other properties were increasing their operations. In British Columbia nearly 3,000,000 ounces was produced, more than one-third of which was contained in lead bullion from the Trail and Anyox smelters. The greater portion of the remainder was recovered from exported ores.

The copper industry passed through a very trying period particularly during the first half of the year. Outstanding features were the closing down of the principal producing mines in the United States due to the falling off in demand and the decline in sales to the lowest level since 1914. There was little change throughout the year in quotations. At the beginning of the year copper sold at 12.5 cents per pound, on the New York market; in August the metal was quoted at 11.75 cents per pound with but few buyers. Towards the end of the year a remarkable recovery featured the copper market and by mid-December quotations rose to 13.75 cents per pound with some sales at 14 cents so that the year closed with copper selling at its highest point. In spite of the exceptionally unfavourable conditions surrounding the copper industry, production of copper in Canada amounted to nearly 65 per cent of the production during the preceding year.

Foundations are being laid for large future developments and in Canada, as well as in the United States, the copper industry is patiently waiting the resumption of normal industrial conditions. When these come it will be found that the copper industry in this country is prepared to advance as quickly as industrial conditions will permit.

Throughout the year the marketing of nickel and copper was so difficult that operations at the mines were curtailed to approximately half the normal rate. From time to time the working forces were cut down. Early in the year the British America Nickel Corporation discontinued operations and later the International Nickel Company also found it necessary to close down. The Mond Nickel Company which operated throughout the year did so far below capacity. The surplus stocks of nickel continued to be a deterrent factor to production and even at the close of the year it was difficult to foresee how much longer the industrial depression would be reflected in a low output of nickel. Most of the nickel produced in Canada is used in the manufacture of nickel steels and the revival of the steel industry which has been looked for in recent months should materially assist in using up stocks which are still on hand.

In spite of the depressed condition of the industry the value of nickel produced during 1921 gave this metal fifth place. The decision of the Dominion Government to establish a nickel coinage is a step which has always been advocated by the members of the mining industry in Canada and there is no doubt that the use of pure nickel for coins in this country will prove very acceptable to the general public. The quantity of nickel used in the manufacture of coins will not be large, but it makes one additional use for the metal.

The next product of value in 1921 was natural gas, in the production of which three provinces participated in 1921 with Ontario in the lead and Alberta next with a production in excess of one-half the quantity produced in Ontario but with a value less than one-third of the natural gas sold in Ontario. New Brunswick also contri-

buted to the production. The decline in the production of natural gas in Ontario has been a matter of some concern to the residents of the western part of the province and steps have been taken by the Ontario Government to conserve the supply and to utilize it to the advantage of all concerned. A Natural Gas Commissioner has been appointed and charged with the duties of administering the supply by a special act of the Legislature put in effect last year to safeguard the interests of the people in this important field.

The mining and marketing of asbestos in 1921 declined to less than half the activity of the preceding year. Practically the whole of the Canadian production of asbestos in Canada is exported to the United States and thence to Europe. Owing to the adverse exchange situation between the countries of Europe and the United States trading in asbestos was almost at a standstill throughout the year and as a consequence the demand for this product was very slight. Operations were continued at some of the mines throughout the year but generally conditions were very dull. As pointed out in a further article in this report one of the principal difficulties confronting Canadian producers is the profitable disposal of low-grade product. The spinning fibre for which there is a constant demand represents only a very small proportion of the entire output, and ways and means have yet to be devised to find profitable markets for the large quantities of the low-grade material produced by the normal processes of working.

Lead and zinc ranked eighth and ninth respectively among the mineral products of Canada during the year and notwithstanding the general decline in prices during the past two years the quantity of lead recovered increased more than 86 per cent above the quantity produced in 1920 and was valued at almost 20 per cent more than the output of the preceding year. Practically the whole of the production was from the smelters at Trail which continued active throughout the year. Some lead was produced from Ontario and Quebec ores also, production from these provinces being about the same as in previous years. Zinc increased one-third in quantity but fell off 17 per cent in value as compared with the production in the preceding year. The output of both metals was however most outstanding when the mineral industry as a whole is taken into consideration.

Gypsum was the tenth product of value from the mines of Canada, the bulk of the production being from the Province of Nova Scotia, although Ontario, Manitoba and New Brunswick also contributed substantially.

During the final weeks of 1921 mining conditions throughout Canada were more hopeful than throughout the year, and the beginning of 1922 finds the industry for the most part, recovered from the depression consequent upon the war, and ready to enter upon an aggressive campaign for the promotion of industrial progress in the months to come.

Mineral Production by Provinces, 1920 and 1921

	1920		1921		Increase (+) or Decrease (−)
	Value of Production	Per cent of total	Value of Production	Per cent of total	
	$		$		$
Nova Scotia	34,130,017	14·98	32,569,352	18·9	− 1,560,665
New Brunswick	2,491,787	1·09	1,777,358	1·0	− 711,429
Quebec	28,886,214	12·68	14,679,087	8·5	−14,207,127
Ontario	81,715,808	35·86	54,505,770	31·6	−27,210,038
Manitoba	4,223,461	1·85	2,075,807	1·2	− 2,147,654
Saskatchewan	1,837,468	0·81	1,086,610	0·6	− 750,858
Alberta	33,586,456	14·74	28,927,968	16·8	− 4,658,488
British Columbia	39,411,728	17·30	34,776,894	20·3	− 4,634,834
Yukon	1,576,726	0·69	1,928,734	1·1	+ 352,008
Total	227,859,665	100·00	172,327,580	100·0	−55,532,075

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 peroid. In previous reports it has been customary to evaluate the metal production on prices offered in recognized markets. For this purpose prices on copper, gold, nickel, silver and zinc have been based on New York market quotations. In order more nearly to approach the true value of the metals to the Canadian producers and more particularly for the purpose of establishing values which might be comparable with those recorded for previous years when exchange was at par, the values given in this report which are computed on the basis of United States prices have been adjusted to take account of the average premium obtained on New York funds. A table has been prepared which shows the amount paid in Canadian dollars for one American dollar during each month of the years 1920 and 1921. The figures given were obtained as the average of the maximum and minimum quotations for the month. The total value for a given metal was computed from the total production of the metal multiplied by the average monthly price in New York, and this sum was then converted to Canadian funds on the basis of the average exchange premium shown in the table.

EXCHANGE TABLE

Showing the amount paid in Canadian dollars for one United States dollar by months, 1920-1921

Month	1920	1921
	$	$
January	1·1056	1·1437
February	1·1497	1·1362
March	1·1178	1·1337
April	1·1112	1·1216
May	1·1134	1·1164
June	1·1381	1·1294
July	1·1134	1·1328
August	1·1275	1·1168
September	1·1075	1·1106
October	1·1016	1·0931
November	1·1231	1·0904
December	1·1643	1·0687
Average for the year	1·1227	1·1161

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 in the smelters and the total quantities in each case have always been valued at the average market price of the refined metal in a recognized market. In the table given below the average prices of the principal metals for the past six years have been tabulated. The prices given for antimony, copper, and silver on the New York market, spelter on the St. Louis market, lead on the Montreal market, nickel and cobalt at the average Canadian quotations for 1921 are the prices which have been used in this report in computing the value of the production of these metals from Canadian ores in 1921. Gold was as usual valued at $20.671834 per fine ounce. The total values obtained by computing the production of metals on the basis of United States quotations were then raised sufficiently to take account of the average exchange premium prevailing throughout the year on New York funds as noted above in this section.

Metal Prices

(In cents per pound or ounce)

		1916	1917	1918	1919	1920	1921
Antimony (ordinaries)	Per pound	25·370	20·690	12·581	8·190	8·490	4·957
Copper, New York	"	27·202	27·180	24·628	18·691	17·456	12·502
Lead, "	"	6·858	8·787	7·413	5·759	7·957	4·545
" " London	"	6·715	6·626	6·270	6·211	8·219	4·942
" " Montreal	"	8·513	11·137	9·250	6·966	8·940	5·742
Nickel, New York	"	45·000	50·000	46·250	45·000	45·000	.....
Silver, "	Per ounce	65·061	81·417	96·772	111·122	100·900	62·654
Spelter, "	Per pound	12·804	8·901	8·159	7·338	.....	.....
Spelter, St. Louis	"	12·634	8·730	7·890	6·988	7·671	4·655
Tin, New York	"	43·480	61·802	(a) 88·750	63·328	48·273	28·576

Cobalt, Canadian price, 1921, per pound..... $3 00
Nickel, Canadian price, 1921, per pound..... 0 35

METALLICS

GOLD

The total production of gold in 1921 amounted to 924,374 fine ounces valued at $21,327,000 as against 765,007 fine ounces valued at $17,754,487 in 1920, the values for both years estimated in Canadian funds. Of the total 1921 production 77,621 ounces or 8.4 per cent was derived from placer mining in the Yukon and British Columbia; 708,369 ounces or 76.5 per cent was in the form of bullion; 52,672 ounces or 5.7 per cent was contained in lead bullion and blister copper, and 85,712 ounces or 9.26 per cent was estimated as recovered from residues, ores and concentrates exported.

Ontario was again the leading province and during the year produced 707,470 fine ounces valued at $16,322,629 in Canadian funds, or 76·45 per cent of the total Canadian output. As compared with the previous year the increase amounted to some 142,475 ounces or 25·2 per cent in quantity. The largest producer in Ontario was of course the Hollinger Mine in the Porcupine Gold Area, and were it not for the fact that during the first two or three months of 1921, serious shortages of electrical power occurred the output of gold for Ontario would have been considerably greater.

British Columbia ranked second among the gold producing provinces and during the year produced a total of 149,397 fine ounces valued at $3,446,862 in Canadian funds, which represented an increase of 19·7 per cent in quantity over the 1920 production. The year's output while very creditable in comparison with the output during the past four years was still much below the record previously established. Several principal operators, including the Nickel Plate Mine, were idle during the year, but with the opening up of such mines as the Premier and others in the Alice Arm District the output of gold will undoubtedly increase.

The Yukon Territory gold production amounted to 65,991 ounces valued at $1,522,533 as compared with 72,778 ounces valued at $1,689,051 in 1920.

The large dredge and hydraulic plants working the creeks within a fifty-mile radius of Dawson were responsible for practically all of the output. The Highest Creek dredge in the Mayo district, and rich new pay-streaks in the old Miller Glacier Districts added considerably to the year's yield. In former years a small amount was produced from the copper and gold ores of the Conrad and Whitehorse Districts, but during 1921 operations among these mines were at a standstill. Nova Scotia, Quebec, Manitoba and Alberta produced small quantities of gold. The outputs were as follows:—Nova Scotia, 375 ounces valued at $8,652, which represents a decrease of 45 per cent below 1920; Quebec, 913 ounces valued at $21,064, derived as formerly from the copper ores of the eastern townships; Manitoba, 173 ounces, valued at $3,991; Alberta, some 55 ounces of placer gold worth $1,269. The placer winnings came principally from prospectors operating along the Peace river.

Gold Production by Provinces, 1920-1921

Province	Production during 12 Months, 1920			Production during 12 Months, 1921			Increase + or Decrease −	
	Fine Ozs.	Value $	% Production of each Province	Fine Ozs.	Value $	% Production of each Province	Quantity	%
Ontario	504,995	13,112,555	73·9	707,470	16,322,629	76·45	+ 142,475	+ 25·21
British Columbia	124,808	2,896,577	16·3	149,397	3,446,862	16·14	+ 24,589	+ 19·7
Yukon	72,778	1,689,051	9·5	65,991	1,522,533	7·13	− 6,787	− 1·2
Quebec	955	22,164	0·3	913	21,064	0·28	− 965	− 39·7
Manitoba	781	18,125		173	3,991			
Nova Scotia	690	16,013		375	8,652			
Alberta				55	1,269		+ 55	
Canada	765,007	17,754,487	100·0	924,374	21,327,000	100·00	+ 159·367	+ 20·8

Exports of gold bullion, gold bars, dust, nuggets, gold in ore, etc., are reported by the Department of Customs for the past two years amounted in value to $4,642,909 in 1920, and $2,550,524 in 1921.

The placer gold from the Yukon contains on the average 80 per cent gold, 18 per cent silver, and 2 per cent base metals. These factors have been used in computing the fine gold contents of the placer production reported.

Recovery in crude ounces of placer gold in the Yukon by months for the past two years is shown in the following table, which was supplied through the courtesy of the Mining Lands and Yukon Branch of the Department of the Interior:—

Production of Placer Gold in the Yukon Territory, 1920-1921

(Quantities in crude ounces)

Month	Dawson		Whitehorse		Total	
	1920	1921	1920	1921	1920	1921
January	272·03	813·77	8·75		280·78	813·77
February	18·00	621·16		1·06	18·00	622·22
March	9,497·14			22·85	9,497·14	22·85
April	140·52	34·49		1·69	140·52	36·18
May	44·42				44·42	
June	10,505·24	14,713·60		3·40	10,505·24	14,717·00
July	11,018·56	13,585·40			11,018·56	13,585·40
August	12,856·76	14,725·05	8·50	17·43	12,865·26	14,742·48
September	8,516·76	11,739·43	58·65	34·30	8,575·41	11,773·73
October	32,243·666	22,034·25		71·75	32,243·666	22,106·00
November	3,992·30	3,152·44		30·75	3,992·30	3,183·19
December	1,756·72	791·75			1,756·72	791·75
Total	90,862·116	82,211·34	75·90	183·23	90,938·016	82,394·57

SILVER

Contrary to the expectations held at the end of June in 1921 the production of silver during the year did not quite equal that of the year 1920. The price of silver during 1921 while much below that obtaining throughout the previous year was fairly uniform and the absence of fluctuations had a tendency to stabilize the industry. Declining costs of materials and wages also contributed to the margin between costs of operation and value of the metal produced.

The total production for the Dominion during 1921 was 13,134,926 fine ounces valued at $9,185,007 as compared with 13,330,357 fine ounces valued at $15,100,685 in the preceding year, a decrease of only 1·46 per cent in quantity but 39·17 per cent in value.

Of the total production 9,210,698 ounces or 70·12 per cent was produced as bullion or refined silver; 1,133,284 ounces or 8·62 per cent was contained in blister copper and lead bullion and 2,790,944 ounces or 21·24 per cent was estimated as the total contained in gold bullion and recovered from ores exported.

The production in Quebec amounted to 57,737 ounces as against 61,003 ounces in 1920 and was derived as usual from the zinc-lead ores of Notre Dame des Anges, Portneuf county, and the pyritic ores from the Eastern Townships.

The production in Ontario was 9,877,465 ounces as against 9,907,626 ounces in 1920 and was derived as in past years mostly from the silver-cobalt ores of the Cobalt and adjacent districts. Of the total Ontario production, 5,326,015 ounces or 53·92 per cent was recovered in the mills and reduction works of Cobalt; 3,884,683 ounces or 39·32 per cent was recovered in the South Ontario silver smelters; 129,009 ounces or 1·30 per cent was the production from the gold mines and the nickel refineries and 537,758 ounces or 5·44 per cent was estimated as recovered from ores, residues, etc., exported to the United States.

Manitoba produced 28 ounces in 1921 as against 15,330 ounces in 1920. This quantity was derived from the crude gold bullion shipped during the year. The decrease in the production of silver was due to the fact that no copper ores were shipped during the year.

The British Columbia production was 2,806,079 ounces as against 3,327,028 ounces in 1920. This production included 1,089,993 ounces or 38·84 per cent of silver contained in lead bullion; 43,291 ounces or 1·54 per cent contained in blister and converter copper; 1,671,395 ounces or 59·56 per cent, the estimated recoveries from ores exported. There was also the small production of 1,400 ounces contained in gold bullion and in placer gold won during the year.

The production from the Yukon increased from 19,190 ounces in 1920 to 393,617 ounces in 1921. This was due principally to some important shipments of silver-lead ores from the Keno Hill area. These ores were high grade, and were treated at the Selby plant of the American Smelting and Refining Company. At the present time it costs in the neighbourhood of $100 a ton to land the ore at the smelters, so that only the richest properties will be developed. With better railway facilities this expense could be greatly reduced and the more rapid development of this area would undoubtedly result.

The exports and imports of silver are shown in the subjoined table:—

Exports	1920		1921	
	Ounces	$	Ounces	$
Silver in ore, concentrates, etc.	1,903,130	2,007,550	1,537,980	917,439
Silver bullion	9,931,374	10,230,659	7,258,954	4,611,288
Total	11,834,504	12,238,209	8,796,934	5,528,727
Imports				
Silver bullion in bars, etc.	.....	2,453,450	.....	499,169
Sterling silver	.....	314,869	.....	148,980
Total	.....	2,768,319	.....	648,149

COPPER

The total production of copper from all sources in Canada during the twelve months of 1921 was 53,461,795 pounds which at the average monthly price on the New York market for electrolytic copper of 12·502 cents would be worth in Canadian funds, $7,459,780, exchange being computed at $1·1161, the average monthly premium for the year. In 1920 when the average price of copper in New York was 17·456 cents a pound, Canadian production amounted to 81,600,691 pounds, and the value, computed on the same basis as before, but with exchange at $1.1227 was $15,091,982. From these data it will be seen that the copper industry has suffered a severe decline. This is more strikingly shown when the 1921 figures are compared with those of the year 1918 when a total of 118,769,434 pounds with a value of $29,250,536 was produced. In common with other copper producing countries the industry in Canada is passing through a quiescent period, and at the time of writing no immediate improvement can be observed.

Of the production during 1921 a total of 50,353,645 pounds was contained in blister copper and in matte produced in British Columbia and Ontario. The balance of 3,108,150 pounds was estimated as recovered from ores shipped to the United States for treatment, and as contained in copper sulphate. The total production of refined copper amounted to 4,286,740 pounds produced at the electrolytic refineries of the Consolidated Mining and Smelting Company at Trail, British Columbia, and by the British America Nickel Corporation, Deschênes, Quebec. The production by these companies during the period showed a decrease when compared with that of former years, but the output at Anyox by the Granby Mining, Smelting and Power Company remained about the same as formerly, namely, about 2,500,000 pounds of converter copper monthly.

The production from Quebec also showed a decline from that of former years. It amounted to 266,188 pounds valued at $37,141 (Canadian). The output was mainly from the copper-bearing ores which were first treated for their sulphur contents, and the resulting cinder then exported to the United States for the recovery of the copper. Seventy-five per cent of the copper contents of the exported product was estimated as recoverable.

Ontario's production amounted to 12,763,477 pounds valued at $1,780,948 as against 32,059,993 pounds valued at $6,283,069 in 1920.

The production was principally derived from the copper-nickel ores of the Sudbury District, and was mainly in the form of matte. During 1921 the copper contents of the matte produced by the Mond, International and British America companies amounted to 12,645,391 pounds. During the last half of the year the plants of the British America and the International Nickel companies were practically closed down owing to the dormant market prevailing and production fell off accordingly. The silver-cobalt ores or residues exported contained a further small amount from which it was estimated 27,819 pounds of copper would be recovered. The South Ontario silver smelters also produced and sold 361,068 pounds of copper sulphate the copper contents of which (or 25 per cent) was included as copper produced in the total for Ontario.

Manitoba did not produce any copper during the year. In 1920 the Mandy Mine shipped some 7,535 tons of ore to Trail, which had been mined during 1919. With the difficulties of transportation, increased freight rates, and a greatly curtailed market, the economic production of copper in the province was impossible.

The production from British Columbia was very creditable. The performances of both the Granby and Consolidated companies at Anyox and Trail, respectively, were excellent considering the difficulties confronting the industry. The total production amounted to 40,432,130 pounds valued at $5,641,690 as against 45,319,771 pounds valued at $8,881,701 in 1920. The output included 37,780,098 pounds as blister or converter copper, and copper in copper sulphate, and 2,652,032 pounds estimated as recovered from ores exported. The year was marked by the destruction

by fire of the large concentrating plant at Britannia, and the lessened activity of many copper producing mines.

In former years the Yukon Territory produced a few hundred thousand pounds from copper ores, but at the time of writing no ores had been reported as shipped for treatment.

Throughout the twelve months the price of copper was fairly uniform around 12 cents and for the period averaged 12·502 cents per pound. Considered in relation to the prices obtained during the first nine months of 1920 at the end of which time the price broke sharply, the drop was about five and one-half cents per pound. Comparative New York and London prices for each month of the past two years are given in tabular form below.

Prices of Copper (Electrolytic)

	New York		London	
	1920	1921	1920	1921
January	18·918	12·597	123·238	79·119
February	18·569	12·556	126·950	75·925
March	18·331	11·976	118·348	71·190
April	18·660	12·438	111·500	71·786
May	18·484	12·742	109·200	74·298
June	18·065	12·697	101·909	75·682
July	18·576	12·170	106·455	75·286
August	18·346	11·634	111·143	72·705
September	18·144	11·948	111·905	72·295
October	15·934	12·673	104·905	73·476
November	14·257	13·035	94·614	74·386
December	13·188	13·555	85·905	74·525
Average	17·456	12·502	108·839	74·223

NOTE.—New York quotations in cents per pound.
London quotations in pounds per long ton.

The range of prices given for 1921 is perhaps sufficient explanation of the decline in production.

The increased fabrication of copper products in Canada seems to offer the most attractive prospect at the present time. Plumbers' supplies, small hardware and electrical supplies, particularly those used in connection with small machines, tools and household machinery probably constitute a large portion of the Canadian consumption. The electrification of railways will probably not prove much more advantageous to copper producers in the near future than at present. Exports of copper from the United States declined last year to almost the 1919 level, and the future of the export market is hard to foresee particularly because of the recent developments in other countries as a result of which cheaper copper may be placed on the European market in large quantities. At the same time stocks have been considerably reduced so that the development of any considerable demand should be almost immediately reflected.

The imports and exports of copper and copper products as compiled in the Reports on the Trade of Canada here follow:—

Exports of Canadian Products During the Calendar Years 1920 and 1921

Item		1920		1921	
		Quantity	Value	Quantity	Value
			$		$
Copper, fine in ore, etc.	tons	23,665	5,917,782	5,255	1,029,220
Blister Copper	"	19,099	8,701,184	16,539	5,167,915
Copper in pigs, bars, sheets	"	1,332	710,978	1,627	497,383
Copper, old and scrap	"	387	113,265	785	161,378
Copper wire and cable	"	.....	433,097	.....	569,648
Total		.....	15,876,306	.....	7,425,544

Imports of Copper Products During the Calendar Years 1920 and 1921

Item	1920		1921	
	Quantity	Value	Quantity	Value
		$		$
Copper in cars 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..... cwt.	229,777	4,254,041	164,785	2,278,883
Copper in bars or rods, in coil or otherwise, in lengths of not less than six feet unmanufactured, n.o.p..... cwt.	8,003	189,532	7,894	140,422
Copper in blocks, pigs or ingots..... lbs.	9,236,575	1,784,370	925,452	135,563
Copper, old and scrap..... cwt.	24,811	404,161	3,079	37,955
Copper ore and concentrates..... "	24,400	57,640	27,500	48,015
Copper in strips, sheets or plates, not polished, planished or coated..... "	17,163	554,840	18,338	426,854
Copper tubing in lengths of not less than six feet and not polished, bent, or otherwise manufactured..... lbs.	723,625	272,641	788,079	196,907
Copper wire, plain, tinned or plated..... "	461,609	169,820	109,739	37,767
Total.....		7,687,045		3,302,366

NICKEL

Of the important metals for which Canada is famous, nickel has probably suffered the severest decline. This is entirely due to the overstocked condition of the world's nickel markets and to the slowness with which the large stocks held by all the warring countries have been absorbed. Owing to its extensive use as a war metal, nickel has moved towards normal even more slowly than the other metals. The total Dominion output in 1921 was 19,293,186 pounds or 31·4 per cent of the production during 1920, which amounted to 61,335,706 pounds. There was little or no selling and the quotations of 35 cents per pound used for calculating the total value given in this report was the average market quotation obtaining in Canada throughout the year. At this rate, the value of the Canadian output in Canadian funds would be $6,752,615. Practically all of Canada's nickel has been derived from the Sudbury district. During 1921, the Mond Nickel Company continued to operate at reduced capacity throughout the whole year but the British America closed down in March and the International Nickel soon followed. The total output from the Sudbury smelters amounted to 19,497 tons of matte which contained 12,645,391 pounds of copper and 19,256,900 pounds of nickel, the average contents of metals in the matte being about 32 per cent copper and 49 per cent nickel. The year's output included as usual, nickel metal produced as such from the smelting of silver-cobalt ores and some nickel contained in oxides and nickel salts. The nickel from these sources amounted to 36,286 pounds, all produced by the South Ontario Smelters.

The nickel refineries at Deschenes in Quebec, and Port Colborne, Ontario, treated 5,558 tons of matte from which they produced 5,419,174 pounds refined nickel in ingots and shot; 2,926,407 pounds of copper, two-thirds of which was contained in blister, the balance being electrolytically refined in Canada. As usual the Mond output was exported to Wales for refining. A small quantity of matte from the International Nickel Company's refinery at Port Colborne, was shipped to the United States from which together with the treatment of accumulated residues there was produced a small quantity of metals of the platinum group. The British America Nickel Corporation also produced some of the platinum group metals.

The exports of nickel metal, nickel-copper matte, etc., during 1920 and 1921 are shown below:—

Exports of Nickel, 1920-1921

	1920		1921	
	Quantity	Value	Quantity	Value
	Lbs.	$	Lbs.	$
Nickel, fine	8,498,300	2,982,717	4,794,500	1,684,454
Nickel contained in matte	51,701,000	9,006,140	8,064,600	1,418,490
Total	60,199,300	11,988,857	12,859,100	3,102,944

LEAD

Notwithstanding the general decline in prices during 1920 and 1921, the quantity of lead recovered by the Canadian smelters and contained in shipments exported showed a notable increase. Of the three producing provinces British Columbia made the most notable increase while normal production was maintained by Ontario and Quebec. The price of lead on the Montreal market, which was 11 cents per pound in March, 1920, had, by December of the same year, fallen to 6·75 cents per pound. During the calendar year 1921 the average price per pound on the Montreal market in car lots was 5·742 cents.

The Dominion production from all sources amounted to 67,146,011 pounds which at the average Montreal price for the year was valued at $3,855,524. Compared with 1920, the production showed an increase of 86·75 per cent in quantity above the 35,953,717 pounds produced in that year and 19·95 per cent above the value recorded, namely, $3,214,262 (8·940 cents per pound). The lead production included the refined lead and pig lead produced in Canada from the treatment of domestic ores together with the lead estimated as recovered from ores exported to the United States.

The 1921 production was comprised of 59,023,488 pounds of refined lead produced at Trail; 3,309,793 pounds pig lead from the lead smelters at Galetta, Ontario, and the estimated quantity of 4,812,730 pounds recovered from exported ores. The lead ores exported amounted to 4,835 tons, having a content of 5,360,000 pounds, 90 per cent of which was estimated as recovered. These exported ores were principally from the East and West Kootenays and the Yukon Territory, supplemented by small shipments from Notre Dame des Anges in Quebec. The total mine shipments of lead ores and concentrates were in the neighbourhood of 304,000 tons containing approximately 67,139,300 pounds of lead.

The record of lead contents of lead ores and concentrates shipped and recoveries made from domestic and imported ores are shown below together with a record of pig and refined lead produced.

Lead Production

	1918	1919	1920*	1921*
Lead contents of ores and concentrates shipped from Canadian Mines	46,843,602	32,147,989	33,802,270	67,139,303
Smelters production from Canadian ores and recoverable lead in ores exported	51,398,002	43,827,699	33,985,974	67,146,011
Total production of refined lead in Canada including the lead contained in imported ores	31,571,112	34,330,920	28,720,030	57,640,000

* Preliminary estimate figures.

The exports and imports of lead in ores and as pig and in other forms are shown below:—

Imports and Exports of Lead

	1920		1921	
	Quantity	Value	Quantity	Value
	Lbs.	$	Lbs.	$
Exports of Lead—				
Lead contained in ore	7,549,400	385,839	6,253,700	256,834
Pig lead	18,800	1,846	23,779,700	992,485
Total	7,568,200	387,685	30,033,400	1,249,319
Imports of Lead—				
Lead bars and sheets	768,726	67,872	179,818	10,552
Lead, pig and block	26,639,261	2,182,608	922,989	44,863
Lead pipe	48,766	5,185	55,429	3,116
Shots and bullets	117,224	10,497	12,502	844
Manufactures of lead, n.o.p.	.....	265,507	.....	100,541
Total	27,573,980	2,531,669	1,161,738	159,916

ZINC

Based on smelter recoveries, the production of zinc showed a remarkable increase in comparison with the record for 1920. The Canadian production in 1921 amounted to 53,095,600 pounds, which at the average St. Louis price for the year of 4·655 cents per pound was worth in Canadian funds $2,758,552, as against 39,863,912 pounds valued at $3,335,496, Canadian funds, in 1920. These data show an increase of 33·2 per cent in quantity but a decrease of 17·3 per cent in value. Of the total Canadian production of 53,095,600 pounds, the refined zinc produced by the Trail smelters amounted to 52,988,000 pounds and a total of 107,609 pounds was estimated as recovered from some 176 tons of ore and concentrates shipped to United States smelters (25 per cent of the zinc contents being allowed for smelter losses). The production in 1920 included 37,034,000 pounds of refined zinc and 2,829,900 pounds estimated as recovered from exported ores. The total zinc ore and concentrates shipped from the mines in 1921 amounted to approximately 297,400 tons having a metal content of about 78,920,300 pounds of zinc. These shipments also contained a large quantity of lead. As in other years, the production was derived entirely from British Columbia. Quebec, which formerly produced about a million pounds per year, did not report the shipment of a single consignment of zinc ore or concentrates, although ores containing lead were exported.

As a result of the decline in metal prices and the consequent closing down of nearly all the United States zinc smelters which formerly treated considerable amounts of Canadian ore, many small operators in British Columbia were compelled to discontinue for a time. The range of average yearly prices for the last four years on the St. Louis market, as published by the *Engineering and Mining Journal*, were as follows: 1917, 8·730 cents; 1918, 7·890 cents; 1919, 6·988 cents; 1920, 7·671 cents; and 1921, 4·655 cents. The New York quotations are usually about one-half a cent higher due to the difference in freight rates.

The average monthly prices of zinc on the Montreal and St. Louis markets are shown in the accompanying table, supplied through the courtesy of the Consolidated Mining and Smelting Company:—

Zinc Prices—1921

(In cents per pound)

Months	Montreal	St. Louis
January	6·561	5·413
February	6·607	4·928
March	6·686	4·737
April	6·588	4·747
May	6·809	4·848
June	6·556	4·421
July	6·311	4·239
August	6·126	4·186
September	6·19	4·235
October	6·454	4·605
November	6·55	4·665
December	6·673	4·837

Imports and Exports of Zinc

Imports	Twelve Months ending December 31			
	1920		1921	
	Lbs.	$	Lbs.	$
Zinc dust	379,186	50,597	434,981	46,440
Zinc in blocks, pigs, bars and rods	4,838	559	36,248	2,613
Zinc in sheets and plates	2,269,917	274,908	2,746,753	244,862
Zinc seamless drawn tubing	470	146	.....	.....
Zinc spelter	1,555,068	122,745	1,110,744	56,683
Zinc manufactures of n.o.p.	.....	96,961	.....	53,946
Total zinc and its products	.....	545,916	.....	404,544

Exports	Twelve Months ending December 31			
	1920		1921	
	Tons	$	Tons	$
Zinc ore	3,126	122,387	52	1,293
Zinc spelter	69,799	512,279	12,828	1,336,389
Total zinc and its products	.....	634,666	.....	1,337,682

With respect to the future demand for zinc it seems to be the consensus of opinion that within the next fifteen years and probably within the next ten years the world will call for double the present average output and a total of more zinc than the world has so far produced.

MOLYBDENUM

Of the many producers of molybdenum who operated during the war none reported any production during 1921, and one property only reported doing a little development work. During the year a total of 1,700 pounds of molybdenum was exported to the United States, this shipment being made from stocks left over from the previous years. The value of the shipment was $619. Some work was done during 1921 looking to the commercial development of the metal, and owing to the fact that molybdenum can be used commercially as an alloying element which adds to steel marked advantages not otherwise obtainable, the development of the molybdenum mining industry will likely follow the growth in steel production. Molybdenum is used in quantities never exceeding one per cent as an ingredient in the special steels used for the manufacture of automobiles and automobile parts and in the manufacture of die blocks, drop forge piston rods, shovels, pneumatic tools, railway parts, mill rods and seamless tubing.

Molybdenum ore, which was quoted during the war as high as $2.25 per pound of contained sulphide, declined in price until during the year just closed the average was in the neighbourhood of 45 to 50 cents a pound, New York quotations.

PLATINUM

Previous to 1919 no attempt was made in Canada to recover metals of the platinum group. The principal source of these metals is believed to be the nickel-copper ores from the Sudbury district, the matte from which was previously exported for refining either in the United States or Wales. Both the International Nickel Company and the Mond Nickel Company still export their product in the form of residues or nickel-copper matte containing precious metals. These latter are recovered at the refineries in New Jersey and Wales, respectively. No data regarding recovery of platinum metals at Swansea had come to hand at the time of writing, and as a consequence it was somewhat difficult to determine the quantity of platinum contained in ores produced in 1921. The British America Nickel Corporation, which commenced operating its refinery at Deschenes, Quebec, early in 1920, but which was closed down early in 1921, will be in a position to recover platinum and related metals when operations are resumed. A few ounces of native platinum are won every year from the alluvial sands in the Tulameen district of British Columbia, but to date no large scale working of these deposits has been attempted. Taking no account of the platinum contents of the Mond matte which was exported to Wales, regarding the platinum contents of which no data were available, the platinum production from Canadian ores in 1921 amounted to 269 ounces. Other associated metals were Palladium, 591 ounces; Iridium, Rhodium, Ruthenium, Osmium, 56 ounces. Only 8 ounces was reported as recovered during the year from the alluvials of British Columbia. The Ontario output was produced in part by the Deschenes plant refining Sudbury matte, and was partly recovered in New Jersey by the International Nickel Company, treating residues from the Port Colborne refineries. The total value for the above quantities as returned by operators was $57,356, as against 2,021 crude ounces with a value of $143,578 in 1920.

During the month of December reports were received of discoveries of gold and platinum-bearing sands along the Red Deer river, about nine (9) miles from the town of Erskine, in Alberta, and that considerable staking was being done. Test pits had been sunk 25 feet to bed rock, and an assay which was published in the press gave the mineral values per cubic yards as follows: gold, $3.96; platinum, $1.75. Press reports also mentioned the finding of native platinum in leaves or plates at a depth of about 500 feet in the Douglas Channel Mine formerly known as the Drum Lummon. No information as to the size of these occurrences was obtained nor was any further confirmation received.

The exports and imports as published in the Reports of the Trade of Canada were as follows:—

Platinum

	1920		1921	
	Quantity	Value	Quantity	Value
	Ozs.	$	Ozs.	$
Exports—				
Contained in concentrates	473	53,956	705	50,697
Platinum, old and scrap	317	31,784	111	6,982
Total	790	85,740	816	57,679
Imports—				
Platinum retorts	.....	6,487	.....	4,342
Platinum wire, and in bars, strips, etc	.....	105,718	.....	69,516
Platinum crucibles	.....	13,772	.....	3,785
Total	.....	125,977	.....	73,301

IRON ORE

The shipments of iron ore from Canadian mines which in 1920 were the lowest on record for twenty years again decreased by more than 50 per cent. The total quantity mined was 42,938 tons, and shipments amounted to 59,408 tons. The only producing mine in Ontario was the Magpie operated by the Algoma Steel Corporation, which accounted for 42,198 tons of the total mined. Other producers were the Wallbridge and Moose Mountain which together shipped a hundred tons of briquettes and ore. In British Columbia, some 900 tons principally magnetite was shipped from Texada Island and Mons to Seattle, Washington.

In Nova Scotia, the Dominion Iron and Steel Corporation and the Nova Scotia Steel and Coal Company as usual brought in Wabana ores from Newfoundland.

In former years small shipments of titaniferous ore were made from Baie St. Paul in Quebec but during 1921 no ore was mined and none was shipped from this locality.

Imports of iron ores during the year amounted to 661,168 tons valued at $2,109,094. Exports in the same period totalled only 4,261 tons valued at $13,373.

PIG-IRON

The average monthly output of pig-iron in Canada during the twelve months ending December was 50,000 tons or less than the average monthly record for any year since 1908. Throughout the entire period during which a total of 595,000 long tons of pig-iron was made, the market was decidedly quiet and the suspension of interest in iron was general. In the United States as in Canada the final weeks of 1921 were characterized by a quiet market and declining production. In spite of this there was evidence at the close of the year that there would be an early resumption of activities in the iron trade and the opinion was generally expressed that the first month of the new year would see the beginning of an upward movement in production.

The following table shows the production of pig-iron by grades, and ferro-alloys during the months of the calendar year:—

Pig-Iron and Ferro-Alloys Production

(Tons of 2,240 lbs.)

Total for the twelve months ending December, 1921

	In Blast Furnaces		In Electric Furnaces		Total Production
	For own use	For sale	For own use	For sale	
Pig Iron—					
Basic	459,580	1,998	.....	.....	461,578
Foundry	33,265	63,817	222	.....	97,304
Malleable	7,837	27,247	.....	.....	35,084
Castings	.....	.....	.....	388	388
Total Pig Iron	500,682	93,062	222	388	594,354
Total Ferro-Alloys	9,583	167	.....	12,743	22,493

STEEL INGOTS AND CASTINGS

During the twelve months ending December, 667,484 long tons of steel ingots and castings was produced as compared with 1,109,000 tons made during 1920. The average monthly production during the year was 56,000 tons as compared with 92,000 tons during the preceding year. Of the total production of steel ingots and castings, 645,075 tons was in the form of direct steel ingots comprising 641,882 tons of basic open hearth steel, 239 tons acid open hearth steel, 94 tons bessemer, and 2,860 tons made in electric furnaces. The whole basic and acid open hearth production of steel ingots was made by the operators for the use of their own mills. Of the bessemer ingots produced 37 tons was used directly and the balance was produced for sale. A total of 2,200 tons of electric steel ingots was used by the plants reporting and 660 tons was made for sale.

Steel castings produced during the year amounted to 22,409 tons, comprising 6,531 tons basic open hearth, 256 tons acid open hearth, 1,638 tons bessemer and 13,984 tons castings made from electric furnaces. Of the whole amount 18,495 tons was made for sale and 3,914 tons used by the firms reporting. An analysis of the 18,495 tons of direct steel castings made for sale shows 5,081 tons was made by the basic open hearth process, 252 tons in acid open hearth furnaces, 1,401 tons by the bessemer process and 11,761 tons from electric furnaces.

The low price of steel in December was not only the low for the year but was lower than at any time since January, 1916. While the production of steel during 1921 was less than for any preceding year since 1908 the sentiment prevailing in the steel trade at the end of December was favourable to an early resumption of activity and the hope was everywhere expressed that the early months of the new year would be marked by a resumption of construction work as a result of the more favourable purchasing market established and that as a consequence a considerable development in the production of steel might be expected.

Total Production of Steel Ingots and Castings

(Tons of 2,240 lbs.)

For the twelve months ending December, 1921

	For own use	For sale	Total Production
Steel Ingots—			
Open hearth—Basic	641,882	.....	641,882
Acid	239	.....	239
Bessemer	37	57	94
Electric	2,200	660	2,860
Total Steel Ingots	644,358	717	645,075
Steel Castings—			
Open hearth—Basic	1,450	5,081	6,531
Acid	4	252	256
Bessemer	237	1,401	1,638
Electric	2,223	11,761	13,984
Total Direct Steel Castings	3,914	18,495	22,409
Grand Total	648,272	19,212	667,484

NON-METALLICS

ACTINOLITE

The milling of actinolite was carried on during only 12½ days in 1921 during which time a total of 109 tons was milled and a total of 78 tons was ground and bagged for shipment. The crude ore was quoted at $6 a ton, but the mill product commanded a somewhat higher figure, the value of the shipments totalling $975, an average of $12.50 a ton.

Production of actinolite in Canada has been confined to Elzevir and Kaladar townships, in Hastings and Addington counties, province of Ontario, the centre of the industry being Actinolite.

Actinolite is used as an ingredient for coal-tar roofing compounds, the grinding of the crude material being done in such a way so as not to destroy the fibre.

The only shipper was the Actinolite Mining Company of Bloomfield, New Jersey, U.S.A. This company owns the deposit noted, and also a grinding mill at Actinolite.

	1920		1921	
	Tons	Value	Tons	Value
		$		$
Production	100	1,160	78	975

ASBESTOS

Complete returns received from the fourteen firms operating asbestos mines during 1921 showed that the value of sales during the year had declined to 48 per cent of those recorded for 1920, and that only 72 per cent of the 1921 output had been disposed of by the end of December.

As usual the production was derived from the well-known deposits in the Eastern Townships of the Province of Quebec.

The rock mined during the year amounted to 2,063,721 tons which was about the same as the quantity mined in 1917, but was a million tons lower than the 1920 record of 3,142,827 tons. Of the rock mined only 122 tons was sold as such during the year and 1,673,685 tons mined by the operators was milled for the recovery of fibre. There was very little trading in asbestos ore the mills purchasing only 276 tons during the period. The total output of all grades amounted to 123,709 tons of which 90,407 tons was sold or shipped at an average value to the operator of $53.17, the total sales value amounting to $4,807,052. By grades the output comprised 653 tons of crude No. 1 worth $1,234 a ton; 1,741 tons crude No. 2 valued at $592 a ton; 688 tons fiberized crude worth $421 a ton; 10,246 tons spinning stocks of which sales were made at $258 a ton; 19,325 tons shingle stocks valued at $94 a ton; 3,788 tons mill board stocks at $68 a ton; 36,405 tons paper stocks worth $43 a ton; 23,389 tons paper fillers at $16; 27,474 tons of by-products including asbestos, sands, finish and floats valued at $5 a ton.

Sales during the year totalled 90,407 tons consisting of No. 1 crude, 195 tons; No. 2 crude, 2,562 tons; fiberized crude, 141 tons; spinning stocks, 4,977 tons; shingle stocks, 10,990 tons; mill board stocks, 3,242 tons; paper stocks, 27,951 tons; paper fillers, 18,255 tons; by-products, 240,845.

Stocks on hand at the end of the year amounted to more than 50,000 tons.

A detailed statement of the description and disposition of the output is given in the following table:

Output, Sales and Stocks of Asbestos, 1921

Classification	Total output	Sold or Shipped			Quantity in stock on hand at end of period
		Quantity	Total sales value at mill	Average value per ton	
			$	$ cts.	
Crude No. 1	653	195	240,607	1,233 88	865
Crude No. 2	1,741	562	332,882	592 31	1,839
Fiberized Crude	688	141	59,350	420 92	1,043
Spinning Stocks	10,246	4,977	1,287,050	258 59	6,644
Shingle Stocks	19,325	10,990	1,031,634	93 87	11,530
Mill Board Stocks	3,788	3,242	222,343	68 58	1,893
Paper Stocks	36,405	27,951	1,216,866	43 53	11,500
Paper Fillers	23,389	18,265	294,837	16 14	9,448
By-Products (asbestos sand, finish, floats)	27,474	24,084	121,483	5 04	5,547
Total	123,709	90,407	4,807,052	53 17	50,309

Imports and Exports of Asbestos

	1920		1921	
	Tons	$	Tons	$
Imports—				
Asbestos in any form other than crude, and all manufactures of, n.o.p.	.....	1,047,031	.....	575,153
Exports—				
Asbestos	152,740	11,521,536	63,340	5,465,311
Asbestos sand and waste	36,303	365,920	22,054	215,961
Asbestos manufactures	.....	196,067	.....	261,274
Total	.....	12,083,523	.....	5,942,546

The following quotation regarding the asbestos industry in Canada is taken from *The Mineral Industry during 1919.*

"One of the important problems confronting Canadian producers is the profitable disposal of low-grade materials. In the normal process of mining, spinning fiber represents a small proportion of the entire output. There is a constant and keen demand for spinning fiber, while the market for the lower grades of mill stock is somewhat sluggish. In the endeavour to supply the demands for the high-grade profitable material, there is a tendency, therefore, to constantly increase stocks of low-grade materials that are produced at the same time. Thus the stock houses are gradually filled up with low-grade products that are difficult to market. For the lowest grade of asbestos in the Quebec district, there is an uncertain and fluctuating market, and at present it is largely discarded as waste. Obviously the most ready solution of this problem would be the development of new and more extended uses for low-grade fiber. The attention of manufacturers is directed to this problem, for the solution would be mutually beneficial to producers and consumers. The producer's operations would thereby be better balanced and thus more economical; he could dispose of his products at lower prices, and would be in a better position to increase his production of the high-grade fiber now so greatly in demand.

COAL

The output of coal from Canadian mines during the twelve months ending December, 1921, amounted to fifteen million short tons valued at $74,273,000, or $4.97 per ton. This quantity was 88 per cent of the amount mined during the preceding year, when the total output was 16·9 million tons. In 1919 a total of 13·9 million tons of coal was raised so that although the output of 1921 was 12 per cent lower than in the preceding year, it was more than a million tons in excess of the 1919 production. The highest monthly output recorded was for November when more than 1·5 million tons was mined; the lowest was in April, the total for the month being half a million tons less, or 941,000 tons.

Alberta held the premier position among the coal-producing provinces, with an output of 5·8 million tons. Nova Scotia followed closely with 5·7 million tons. The output of coal from the mines of British Columbia amounted to 2·8 million tons, while Saskatchewan mined 332,000 tons, and New Brunswick 180,000 tons.

An analysis of the disposition of coal during the year shows that 58·2 per cent was shipped; 22·1 per cent went to railroads for locomotive consumption; 7·2 per cent was used about the colliery for power purposes; 4·2 per cent was sold for ships' bunkers; 3·2 per cent was put on bank; 2·6 per cent was put on the waste dump; 1·5 per cent was supplied to employees for domestic consumption; 0·6 per cent was used in the manufacture of coke at the collieries; 0·4 per cent was used in making briquettes. Included in quantities referred to in the disposition was 541,820 tons, lifted from bank during the year.

While at time of writing, data regarding stocks on hand at the beginning and at the close of the year were incomplete, sufficient returns had been received to indicate that the amount of coal on bank at Canadian mines had decreased to less than half the amount of stock at the beginning of the year.

Table 1.—Output and Disposition of Coal During 1921

	Per cent of Total	Total	Total *Value	Average Value per ton
		Tons	$	$ cts.
1. Supplied to employees for domestic consumption	1·5	227,941	660,556	2 90
2. Used for power purposes (colliery boilers, company's railroads, etc.)	7·2	1,105,711	3,891,335	3 52
3. Ships' bunkers and railroads—				
(*a*) Ship's bunkers	4·2	650,650	4,698,115	7 22
(*b*) Railroads	22·1	3,425,538	17,854,581	5 21
4. Shipments of coal (exclusive of item 3)	58·2	9,014,325	46,518,277	5 16
5. Used in making coke at colliery	0·6	92,969	*585,700	*10 00
6. Used in making briquettes	0·4	58,044	484,086	8 34
7. Put on bank	3·2	502,805	2,065,217	4 11
8. Put on waste heap	2·6	406,255	323,984	0 80
9. Total disposition	100	15,484,238	77,081,851	4 98
10. Lifted from bank	.....	541,820	2,808,556	5 18
11. Total output	.....	14,942,418	74,273,329	4 97

*Value of coke manufactured.

In computing the values recorded in the preceding table the actual income from coal sold or shipped (see items 1, 3, 4) has been given. This value has in all cases been exclusive of delivery charges and has been based on the value obtained f.o.b. The values for the other items have been computed, for the various amounts given, at the same rate as was obtained for similar products sold by the operator.

The output of coal in Canada during each of the past three years has also been compiled by kinds and provinces. For convenience of reference the output during 1920 has in each case been taken as 100 and the corresponding percentage or index number has been calculated for the other two years. These data are given in Table 2:—

Table 2.—Output of Coal for Canada by Kinds and Provinces

Provinces	1919		1920		1921	
	Short Tons	Index No.	Short Tons	Index No.	Short Tons	Index No.
NOVA SCOTIA—						
Bituminous	5,790,196	90	6,437,156	100	5,734,653	89
NEW BRUNSWICK—						
Bituminous	166,377	97	171,685	100	180,358	105
SASKATCHEWAN—						
Lignite	379,347	113	335,222	100	332,117	99
ALBERTA—						
Anthracite	85,579	67	127,513	100	96,964	76
Bituminous	2,255,957	67	3,419,147	100	2,871,919	84
Lignite	2,562,124	76	3,361,105	100	2,885,537	86
Total Alberta	4,933,660	71	6,907,765	100	5,854,420	85
BRITISH COLUMBIA—						
Bituminous	2,649,516	86	3,095,011	100	2,840,870	92
TOTAL DOMINION						
Anthracite	85,579	67	127,513	100	96,964	76
Bituminous	10,892,046	83	13,122,999	100	11,627,800	89
Lignite	2,941,471	80	3,696,327	100	3,217,654	87
Grand total	13,919,096	82	16,946,839	100	14,942,418	88

In the period under review Canada exported nearly two million tons of coal or a little more than 13 per cent of the quantity actually mined. The amount exported was only 78 per cent of the total shipped for foreign trade in 1920, and even fell slightly below the amount exported in 1919.

Reference to the tables of exports herewith shows that more than 1.1 million tons of coal was exported through British Columbia ports during 1921. This was only one per cent less than in the previous year. It is to be remembered that these data do not show the province of origin but only the port of exit to the United States, and as the bulk of coal exported from Alberta is shipped through the Customs ports of Fernie and Cranbrook, it will be understood that the total exported coal credited to British Columbia ports was not all mined within that province. In the final report on coal statistics, the quantities shipped for export trade from the mines of each province will be shown. A total of 728,000 tons was exported through Nova Scotia ports and about 72,000 tons through New Brunswick ports. Exports from the other provinces of Canada were negligible. The total exports of Canadian coal have been compiled in Table 3, to show the quantities exported from each of the provinces of Canada during the past three calendar years. For convenience of reference as before the quantities have been reduced to percentages of the 1920 exports so that the reader may note the rise or fall of exports from each province in relation to the exports from that province in the two preceding years.

Table 3.—Exports of Canadian Coal by Provinces

Provinces	1919		1920		1921	
	Short Tons	Index No.	Short Tons	Index No.	Short Tons	Index No.
Nova Scotia	994,107	80	1,245,673	100	727,951	58
New Brunswick	59,090	52	113,050	100	71,534	63
Prince Edward Island	.....	.....	2	100	2	100
Quebec	929	68	1,372	100	85	6
Ontario	5	.....	.....	.....	10	.....
Manitoba	167	23	721	100	1,690	234
Saskatchewan	389	12	3,132	100	2,633	84
Alberta	1,022	33	3,106	100	843	27
British Columbia and Yukon	1,014,341	85	1,191,167	100	1,182,528	99
Total	2,070,050	81	2,558,223	100	1,987,276	78

Table 4.—Imports of Coal into Canada by Kinds and Provinces

Provinces	1919		1920		1921	
	Short Tons	Index No.	Short Tons	Index No.	Short Tons	Index No.
NOVA SCOTIA—						
Anthracite	60,095	133	45,334	100	62,245	137
Bituminous	4,076	134	3,044	100	1,875	62
Total	64,171	133	48,378	100	64,120	133
NEW BRUNSWICK—						
Anthracite	66,898	116	57,859	100	82,509	143
Bituminous	11,751	1,255	936	100	41,950	4,482
Total	78,649	134	58,795	100	124,459	212
PRINCE EDWARD ISLAND—						
Anthracite	9,574	173	5,544	100	6,643	120
Bituminous	142	28	513	100	238	46
Total	9,716	160	6,057	100	6,881	114
QUEBEC—						
Anthracite	1,378,460	89	1,544,456	100	1,311,712	85
Bituminous	2,673,819	76	3,503,410	100	2,684,566	77
Total	4,052,279	80	5,047,866	100	3,996,278	79
CENTRAL ONTARIO—						
Anthracite	2,978,472	101	2,945,782	100	2,808,327	95
Bituminous	7,700,935	74	10,373,324	100	8,733,828	84
Total	10,679,407	80	13,319,106	100	11,542,155	87
HEAD OF LAKES—						
Anthracite	465,676	157	295,682	100	260,890	88
Bituminous	1,547,784	79	1,963,579	100	1,975,918	101
Total	2,013,460	89	2,259,261	100	2,236,808	99
MANITOBA—						
Anthracite	12,906	74	17,509	100	33,473	191
Bituminous	62,746	144	43,547	100	76,833	176
Total	75,652	124	61,056	100	110,306	181
MANITOBA AND HEAD OF LAKES—						
Anthracite	478,582	153	313,191	100	294,363	94
Bituminous	1,610,530	80	2,007,116	100	2,052,751	102
Total	2,089,112	90	2,320,307	100	2,347,114	101
SASKATCHEWAN—						
Anthracite	.....	.....	206	100	254	123
Bituminous	1,406	263	535	100	2,127	398
Total	1,406	190	741	100	2,381	312
ALBERTA—						
Anthracite	66	13	517	100	66	13
Bituminous	1,131	186	607	100	1,829	301
Total	1,197	106	1,124	100	1,895	169
BRITISH COLUMBIA AND YUKON—						
Anthracite	136	181	75	100	251	335
Bituminous	66,700	51	13,137	100	17,086	130
Total	6,836	52	13,212	100	17,337	131
CANADA—						
Anthracite	4,972,283	101	4,912,964	100	4,566,370	93
Bituminous	12,010,490	76	15,902,632	100	13,536,250	85
Total	16,982,773	83	20,815,596	100	18,102,620	87

Table 5.—Total Output from Canadian Mines

Months	1919	Index No.	1920	Index No.	1921	Index No.
January	1,337,852	83	1,606,238	100	1,362,510	85
February	1,136,188	87	1,308,221	100	1,196,018	91
March	1,261,524	96	1,309,376	100	1,126,936	86
April	1,044,288	88	1,189,856	100	932,583	78
May	951,957	81	1,170,074	100	980,307	84
June	623,723	46	1,351,708	100	1,107,474	82
July	686,450	52	1,326,360	100	1,162,324	78
August	830,165	60	1,372,601	100	1,507,433	110
September	1,278,390	88	1,449,205	100	1,313,968	81
October	1,566,472	111	1,414,227	100	1,396,404	99
November	1,573,826	90	1,748,109	100	1,516,735	87
December	1,628,261	96	1,700,864	100	1,339,726	79
Total	13,919,096	82	16,946,839	100	14,942,418	88

Table 6.—Total Exports of Canadian Coal

Months	1919	Index No.	1920	Index No.	1921	Index No.
January	465,568	140	332,763	100	185,297	56
February	84,686	58	145,004	100	86,503	60
March	129,614	51	252,189	100	177,209	70
April	53,956	45	118,592	100	79,014	67
May	108,211	55	195,494	100	131,650	67
June	106,460	45	234,915	100	209,331	89
July	82,103	63	129,801	100	289,199	223
August	103,610	25	422,021	100	225,301	53
September	186,227	94	198,651	100	149,845	75
October	243,591	121	201,655	100	179,157	89
November	267,427	155	172,169	100	134,864	78
December	238,597	154	154,969	100	139,906	90
Total	2,070,050	81	2,558,223	100	1,987,276	78

Table 7.—Total Imports of Coal into Canada from the United States

Months	1919	Index No.	1920	Index No.	1921	Index No.
January	1,377,463	155	889,209	100	1,698,541	191
February	1,068,781	124	865,169	100	1,195,276	138
March	784,171	55	1,432,815	100	1,202,631	84
April	603,099	62	974,298	100	853,358	88
May	1,198,127	116	1,033,361	100	1,439,297	139
June	1,692,116	108	1,573,857	100	1,930,143	123
July	2,049,735	90	2,284,448	100	1,905,694	83
August	2,113,305	80	2,629,656	100	1,950,833	74
September	2,161,195	100	2,159,081	100	1,551,188	72
October	2,023,897	85	2,387,571	100	1,507,737	63
November	1,251,418	51	2,467,622	100	1,509,934	61
December	659,466	31	2,118,509	100	1,357,988	65
Total	16,982,773	82	20,815,596	100	18,102,620	87

Table 8.—Imports of Anthracite and Bituminous Coal from the United States

—	Months	1919		1920		1921	
		Short Tons	Index No.	Short Tons	Index No.	Short Tons	Index No.
Total Dominion Anthracite	Jan.	399,686	111	359,427	100	328,853	91
	Feb.	347,866	118	294,903	100	307,671	104
	Mar.	170,754	39	440,222	100	384,373	87
	April	209,958	80	263,077	100	274,502	104
	May	461,701	136	338,321	100	458,841	136
	June	430,812	91	472,157	100	506,592	107
	July	537,059	96	561,981	100	488,904	87
	Aug.	586,570	98	596,555	100	419,805	70
	Sept.	562,851	151	371,626	100	351,500	95
	Oct.	446,281	106	419,224	100	323,861	77
	Nov.	377,531	90	419,266	100	335,863	80
	Dec.	441,214	117	376,205	100	385,605	102
Total Anthracite		4,972,283	101	4,912,964	100	4,566,370	93
Bituminous	Jan.	977,777	185	529,782	100	1,369,688	259
	Feb.	720,915	126	570,266	100	887,605	156
	Mar.	613,417	62	992,593	100	818,258	82
	April	393,141	55	711,221	100	578,856	81
	May	736,426	106	695,040	100	980,456	141
	June	1,261,304	114	1,101,700	100	1,423,551	129
	July	1,512,676	88	1,722,467	100	1,416,790	82
	Aug.	1,526,735	75	2,033,101	100	1,531,028	75
	Sept.	1,598,344	89	1,787,455	100	1,199,088	67
	Oct.	1,577,616	80	1,968,347	100	1,183,876	60
	Nov.	873,887	43	2,048,356	100	1,174,071	57
	Dec.	218,252	13	1,742,304	100	972,383	56
Total Bituminous		12,010,490	76	15,902,632	100	13,536,250	85

In Table 9, entitled *Canadian Coal Supply*, the total quantities of coal mined in each month have been added to the total quantities imported as shown on the records supplied by the Department of Customs. From this aggregate there has been deducted the quantity of coal exported through the ports of Canada during the month. The quantity remaining has been called the *Canadian Coal Supply*, and while this figure is not absolutely equivalent to the quantity of coal made available for consumption during each of the months reported it is an approximation which as nearly corresponds to the actual coal supply as it is possible to obtain. Reference to Table 9 will show that the coal supply in the months of the period varied from 69 per cent of the amount available during the same month of the preceding year to 133 per cent, and that the total coal supply for the year 1921 was 88 per cent of that available at the end of December, 1920, but was in excess of the coal supply at the end of 1919. Table 9 follows:—

Table 9.—Canadian Coal Supply

Months	1919	Index No.	1920	Index No.	1921	Index No.
January	2,249,747	104	2,162,684	100	2,875,754	133
February	2,120,283	105	2,028,386	100	2,304,791	114
March	1,916,081	77	2,490,002	100	2,152,358	86
April	1,593,431	78	2,045,562	100	1,706,927	83
May	2,041,873	102	2,007,941	100	2,287,954	114
June	2,209,379	82	2,690,650	100	2,828,286	105
July	2,654,082	76	3,481,007	100	2,778,819	80
August	2,839,860	79	3,580,236	100	3,232,965	90
September	3,253,358	95	3,409,635	100	2,715,311	80
October	3,346,778	93	3,600,143	100	2,724,984	76
November	2,557,817	63	4,043,562	100	2,891,805	72
December	2,049,130	56	3,664,404	100	2,557,808	70
Total	28,831,819	82	35,204,212	100	31,057,762	88

FELDSPAR

The production of feldspar in Canada in 1921, while somewhat below that of recent years was still very creditable, the tonnage mined amounting to 33,597 tons. During the period slightly more than 2,000 tons was milled. Shipments, all from Ontario and Quebec, totalled 30,540 tons, valued at $223,000, an average of $7·31 a ton. Of this quantity all but 200 tons was sold in the crude state. Two-thirds of the crude feldspar sold came from Ontario deposits.

Complete returns were received from the six operators in Quebec and from fifteen producers in Ontario. Three small Ontario firms had not been heard from at the time of going to press.

Imports of feldspar during 1921 were valued at $25,120, while exports in the same period totalled $169,864 in value. The quantity of feldspar exported reached a total of 27,292 tons, while the imports amounted only to 1,050 tons.

Canadian feldspar has been in considerable demand in the United States in recent years, and the erection of further grinding plants in Canada will permit of the export of Canadian feldspar at a much higher price than is now obtainable for the crude product. One new grinding plant has been opened during the past year, so that it appears the Canadian producers are fully alive to the desirability of preparing the Canadian product in its most valuable marketable form.

FLUORSPAR

The production of fluorspar in Canada in 1921 declined to less than half the amount recorded for 1920 and reached about the same level as in 1919. The total shipments during the year amounted to 5,519 tons valued at $136,267. The principal producer during the year was the Consolidated Mining and Smelting Company who operated the Rock Candy Mine at Archibald, near Grand Forks, B.C. At this mine a total of 6,742 tons of fluorite ore was raised and 5,772 tons was milled in the decrepitation plant located at the mine. Rejects from the Rock Candy mill were retreated by flotation at Trail and during the year a total of 6,291 tons was handled in this way. From these two processes concentrates were produced. The shipments of concentrates from the mill amounted to 3,367 tons valued at $82,811 or an average of $24.50 a ton. The concentrates shipped from the flotation plant amounted to 1,909 tons and were valued at $4,963, an average of $26 a ton. The total shipments from Trail thus amounted to 5,276 tons. A small tonnage was also used for experimental purposes.

Ontario was the only other fluorite producing province, but no ore was mined during the year. Shipments amounting to 116 tons were made by two of the operators in the Madoc District, the value of these shipments being $1,744, an average of about $15 per ton.

A part of the fluorspar produced in Canada was used in this country and during the year considerable shipments were made to steel plants in the United States. The continued depression in the steel industry was reflected in the production of fluorspar, this being due partly to the fact that fluorspar is an essential material in the manufacture of basic open-hearth steel.

In 1920 Ontario produced 3,750 tons out of a total of 11,235 tons, the balance being made up from the mines of British Columbia. Thus it will be seen that the great drop in the production of fluorspar in Canada during the past year was very largely due to the absence of production in Ontario as the shipments from British Columbia amounted to over 5,000 tons as compared with a total of about 7,400 tons in the preceding year. Explanation of the decline in Ontario is of course to be found in the diminished demand for fluorite as a flux in steel furnace work. A revival in the steel industry would probably be closely followed by an increased fluorspar production. The principal statistics relating to the production and trade in fluorspar are given on the following page.

Production, Exports and Imports of Fluorspar

	1920		1921	
	Tons	Value	Tons	Value
		$		$
Production:—				
Ontario	3,758	68,475	116	1,744
British Columbia	7,477	171,971	5,403	134,523
	11,233	240,446	5,519	136,267
Exports	6,900	109,683	4,625	51,470
Imports:—				
Hydro-fluo-silicic acid	1·2	409	1·05	212
Fluorspar	6,812	113,818	3,867	43,752

GRAPHITE

The production of graphite in Canada during 1921 was practically negligible, the entire mine output being only 1,500 tons, all of which was produced from the Black Donald mine at Calabogie, Ontario. The total shipments from all graphite properties in Canada during 1921 amounted to 398 tons and were valued at $25,696. By grades these shipments consisted of 6 tons No. 1 flake, valued at $2,059; 17 tons No. 2 flake, valued at $3,398; 375 tons No. 3 flake and dust, valued at $20,239.

The Black Donald was the only shipper in Ontario and the Quebec Graphite Co. was the only company in that province to ship graphite during the year. None was mined by the latter company, shipments being made from stock. At the close of the year stocks aggregating 700 tons remained unsold at the mines.

Imports of graphite and its products during 1921 showed a considerable decline as might be expected from the records for the preceding years. At the same time a total of $75,390 worth of graphite products was imported during the twelve months ending December. Exports during the same period were valued at $40,809, and the quantities reported by the Department of Customs totalled 614 tons. While this amount is considerably in excess of the tonnage shown as shipped from the mines it is probable that considerable quantities were moved to Canadian warehouses in the United States early in the year in anticipation of adverse tariff legislation being put into effect in that country.

The collapse of the graphite industry in Canada was but a reflection of the conditions prevailing in this industry throughout the world, for probably never before in the history of the industry were conditions so deplorable. The demand for crucible steel for war purposes created an unusual demand for graphite crucibles and many new graphite mines were developed in all parts of the world. At the close of the war many steel manufacturers had large supplies of crucibles on hand, manufacturers were carrying excessive stocks, and graphite producing companies found themselves with supplies of refined and crude graphite sufficient to meet even the inflated needs of war-time for months and in some cases years. The surplus has not yet been exhausted, and as a consequence no demand has developed.

Graphite Statistics

	1920		1921	
	Quantity	Value	Quantity	Value
	Tons	$	Tons	$
Ore mined			1,500	
Refined Graphite sold:—				
No. 1 Flake	196	40,382	6	2,059
No. 2 Flake	225	28,572	17	3,398
No. 3 Flake and Dust	1,769	96,663	375	20,239
Total	2,190	165,617	398	25,696
Imports		283,631		75,390
Exports	2,142	159,817	614	40,809

GYPSUM

The production of gypsum during 1921 showed a decline from the quantity produced during the preceding year and totalled 357,183 tons valued at $1,725,730 as against 429,144 tons valued at $1,893,991 in 1920.

Nova Scotia was the largest producer of gypsum in Canada producing 191,519 tons valued at $412,295. By provinces the production for the remainder of the country was as follows: Ontario 84,765 tons valued at $433,053; Manitoba 40,859 tons valued at $480,282; New Brunswick 40,000 tons valued at $400,000; and British Columbia 40 tons valued at $100.

The statistics collected showed that 410,193 tons was mined during the year of which 92,024 tons was calcined. The exports of gypsum or plaster in the crude form during 1921 were 230,011 tons valued at $417,502 and gypsum ground 66,064 cwt. valued at $56,954.

The imports of gypsum and plaster of paris during the same period amounted to 41,222 cwt. valued at $41,377.

MAGNESITE

Magnesite was another industry in which there was a great decline in production during 1921. While shipments in 1920 amounted to 18,378 tons valued at $512,756 the amount marketed during 1921 was approximately 3,700 tons having a total valuation of $81,320. Shipments included 1,600 tons of the crude ore worth $15,000, and 2,057 tons of calcined, clinkered and dead burned magnesite having a total value of $66,296. The quantities shipped included 684 tons of calcined magnesite at $25 per ton; 562 tons clinkered magnesite at $32 a ton and 811 tons of dead burned magnesite at $38.35 per ton. Shipments were made to various points in Canada, in the United States and Great Britain and at the close of the year only about 3,000 tons was held in stock by the producers. As usual the bulk of the production of magnesite was produced by three firms operating in Argenteuil County in Quebec, but one firm in British Columbia made a small shipment of less than 1,000 tons of crude ore during the year.

Exports of crude magnesite were practically negligible, but calcined and dead burned magnesite exported was valued at $16,453.

Imports of magnesite and magnesium products including magnesite, magnesia pipe covering, magnesium sulphate, and magnesite fire brick amounted in all to $187,245. Details of these imports and exports are given below:—

—	1920		1921	
Imports—	Tons	$	Tons	$
Magnesia	287	84,339	220	87,530
Magnesite	1,521	49,799	185	8,000
Magnesite firebrick	.....	446,445	.....	61,728
Magnesium sulphate	.....	72,709	.....	29,987
Total	1,808	653,292	405	187,245
Exports—				
Magnesia	.....	.....	.....	.....
Magnesite	220,281	426,710	27,032	63,608
Magnesite firebrick	.....	.....	.....	.....
Magnesium sulphate	743	3,737	119	4,562
Total	221,024	430,447	27,151	68,170

MAGNESIUM SULPHATE

Only one firm produced magnesium sulphate in Canada during 1921, and shipments of about 1,000 tons were made. The value of the products shipped varied according to the grades, that sold to the tanning industry being quoted at $28 per ton, while the C.P. product was quoted at $94.60 per ton. Some of the product was sold locally, but shipments were also made to points in the United States and as far east in Canada as Ontario and Quebec.

MICA

Practically the same amount of mica was marketed in 1921 as in the preceding year, the total being in the neighbourhood of 700 tons. The mica sold by the 20 firms producing during the year was valued at $76,773. The principal producing province was Quebec in which 14 operators worked during the year. Only six firms in Ontario reported production. The shipments of mica by quantities and classes with the total value f.o.b. shipping point are shown below:—

Mica Shipments, 1921

Grade	Quantity	Value F. O. B. Shipping Point	Price per pound
	Pounds	$	$ cts.
(*a*) Rough cobbed	290,510	27,879	0·09
(*b*) Ground mica	20,000	15	0·007
(*c*) Thumb-trimmed—			
1 × 1 inches	41,463	6,126	0·14
1 × 2 "	19,687	4,276	0·21
1 × 3 "	15,800	4,966	0·31
2 × 3 "	5,090	2,677	0·52
2 × 4 "	5,740	5,341	0·93
3 × 5 "	1,843	2,915	1·58
4 × 6 "	766	1,604	2·09
Splitting only	20,350	15,365	0·75
Scrap	991,683	5,301	0·005
Pattern	277	305	1·10
Total	1,413,208	76,773	0·05

Mica Production, 1920-1921

Province	1920		1921	
	Tons	Value	Tons	Value
		$		$
Quebec	737	281,460	488	47,882
Ontario	1,466	94,562	218	28,891
Total	2,203	376,022	706	76,773

Mica Exports, 1920-1921

	1920		1921	
	Tons	Value	Tons	Value
		$		$
Rough cobbed and thumb trimmed	42	55,724	12	12,942
Mica splittings	522	725,946	135	195,479
Mica, scrap and waste	2,739	33,963	967	12,061
Mica, plate and manufactures of (micanite)	.....	8,474	.....	4,201
Total	.....	824,107	.....	224,683

MINERAL WATER

The value of the production of mineral waters in Canada in 1921, as compiled from all records received at the time of writing was $18,600, as compared with the total valuation of $24,582 for 1920. The greater part of the production of mineral water was from springs in Quebec, but Ontario followed closely.

Mineral and aerated waters valued at $128,229 were imported during the year. This value was some $50,000 less than the value of imports in the preceding year.

Exports of mineral and aerated waters from Canada in 1921 were valued at $44,022, an increase of more than three times the value of the similar products exported in 1920.

NATURAL GAS

The production of natural gas in Canada in 1921 amounted to 15,043,944 thousand cubic feet, valued at $4,902,000. In 1920 the production amounted to 16,845,518 thousand cubic feet, and was valued at $4,232,642. While, therefore, the quantity produced decreased 1,800,000 thousand cubic feet, the value of the output rose nearly $700,000.

Ontario contributed 9,256,157 thousand cubic feet, valued at $3,658,200, as compared with 10,529,374 thousand cubic feet in the preceding year, valued at $2,920,731. It will be noted that most of the increase in the value of natural gas produced was credited to Ontario.

Returns from Alberta showed a production of 5,079,044 thousand cubic feet, valued at $1,104,444, a decrease from the preceding year of 600,000 thousand cubic feet in quantity, and a decrease of about $75,000 in value.

The production of natural gas by provinces for the past two years is shown in the following table:—

Natural Gas Production, 1920-1921

	1920		1921	
	M cu. ft.	Value	M cu. ft.	Value
		$		$
Production—				
New Brunswick	682,502	130,506	708,743	139,375
Ontario	10,529,374	2,920,731	9,256,157	3,658,201
Alberta	5,633,442	1,181,345	5,079,044	1,104,444
Manitoba	200	60	.....	.....
Total	16,845,518	4,232,642	15,043,944	4,902,020

PETROLEUM

From practically complete returns covering the production of petroleum in all provinces, the output for the Dominion was computed to be 190,000 barrels, valued at $580,842, an average of $3.05 per barrel. The total production of crude oil in 1920 was only 6,000 barrels higher, but the value reported was considerably in excess of that for 1921, and amounted to $822,235.

The production in New Brunswick amounted to 7,479 barrels, of which 6,300 barrels was sold for $24,500.

Returns relating to the production of petroleum in Alberta were incomplete at the time of writing, but it was estimated that 11,000 barrels was produced during the year, which according to an average taken from reports received from this province, would be worth in the neighbourhood of $76,000.

Ontario was as usual the principal producer, and during the year a total of 172,859 barrels was produced, valued at $468,447, an average of $2.71 per barrel.

Through the courtesy of the Supervisor of Crude Petroleum Bounties at Petrolia, a table has been included in this report showing the quantity of oil from Ontario wells on which bounty was paid together with the total value of the oil. Division of value has been made to show the value less bounty and the amount of bounty paid, and the data have been arranged to show the production from each of the principal fields. The table follows:—

Crude Petroleum Production, Ontario* For the Year Ending December 31, 1921

Field	Quantity in Barrels	Value less Bounty	Bounty Paid	Total Value
		$ cts.	$ cts.	$ cts.
Petrolia and Enniskillen	68,483 32/35	185,591 40	35,954 09	221,545 49
Oil Springs	40,966 22/35	111,019 57	21,507 31	132,526 88
Moore Township	7,536 4/35	20,422 86	3,956 47	24,379 33
Sarnia Township	4,068 20/35	11,025 82	2,135 96	13,161 78
Plympton Township	480 21/35	1,302 43	252 30	1,554 73
Bothwell	26,877 1/35	72,836 75	14,110 46	86,947 21
Tilbury East	1,002 20/35	2,716 96	526 35	3,243 31
West Dover	7,473 10/35	20,252 62	3,923 46	24,176 08
Raleigh Township	3,320 13/35	8,998 21	1,743 20	10,741 41
Dutton	.....	.....	.....	.....
Onondaga	566 6/35	1,534 32	297 24	1,831 56
Belle River	.....	.....	.....	.....
Moza Township	10,764 3/35	29,170 69	5,651 16	34,821 85
Thamesville	1,319 20/35	3,576 03	692 78	4,268 81
Total	172,858 32/35	468,447 66	90,750 78	559,198 44

* Supplied by the Supervisor of Crude Petroleum Bounties, Petrolia, Ont.

Petroleum and its Products

IMPORTS FOR 12 MONTHS ENDING DECEMBER 31, 1921
Crude, Fuel and Gas Oils

—	1920		1921	
	Gals.	$	Gals	$
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	290,736,366	20,814,899	355,300,352	20,010,091
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than ·8325 but not less than ·775 specific gravity at 60 degrees	178,641	28,869	222,241	18,737
Petroleum (not including crude petroleum imported to be refined, or illuminating or lubricating oils) ·8325 specific gravity or heavier at 60 degrees temperature	122,750,650	7,790,137	61,176,430	3,796,977
Petroleum, imported by miners or mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments	16,249	1,344	18,022	3,579
Kerosene and Illuminating Oils				
Coal oil and kerosene, distilled, purified or refined	14,971,509	2,359,621	10,544,281	790,468
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon	176,340	127,889	120,416	62,323
Lubricating Oils				
Lubricating oils, composed wholly or in part of petroleum, and costing less than 25 cents per gallon	881,102	175,478	2,032,361	374,596
Lubricating oils, n.o.p.	4,376,192	2,267,611	3,008,095	1,559,965
Other Oils				
Gasoline under ·725 specific gravity at 60 degrees temperature	8,515,545	2,404,488	21,101,146	4,605,200
Gasoline, n.o.p.	.....	.....	19,163,561	2,946,258
All other oils, n.o.p.	222,041	113,681	57,667	39,040
Total, Petroleum, Asphalt and their Products	.....	48,587,123	.....	37,487,807

EXPORTS FOR 12 MONTHS ENDING DECEMBER 31, 1921

—	Gals.	$	Gals.	$
Oil, coal and kerosene, crude	2,684,427	293,325	5,384,751	375,820
Oil, coal and kerosene, refined	1,243,335	205,999	1,466,422	209,282
Oil, gasoline and naphtha	160,433	59,432	762,080	212,638
Oil, mineral, n.o.p.	.....	.....	105,499	31,279
	Cwt.		Cwt.	
Wax, mineral	26,915	230,172	821	7,552
Total petroleum and its Products	.....	788,928	.....	836,571

PHOSPHATE

The mining of phosphate or apatite rock in Canada has been of very small amount in recent years and in 1921 only 80 tons was mined in the province of Quebec. Thirty tons of crude rock was sold for $450 during the year. There was no production from any other province in Canada. Imported phosphate rock, principally Florida phosphate, amounted to 13,710 tons and was valued at $86,630. Importations in the previous year were practically the same at 13,476 tons valued at $14,480. It will be noted that there was a considerable decrease in the valuation of the 1921 imports from the figures quoted for 1920.

PYRITES

The shipments of pyrites (both iron and copper) as sulphur ores have decreased very considerably since 1918. The total shipments during 1921 amounted to 28,001 tons valued at $124,116 and included 21,004 tons from Ontario, 80 tons from Quebec and 4,607 tons from British Columbia. From reports at hand the 1921 production was less than 20 per cent of the production for the preceding year.

The percentage sulphur in the ore varied from 33.6 per cent to 42 per cent. At the average of 34·7 per cent the sulphur content amounted to 3,531 tons.

A shipment of 516 tons of copper ore was exported from Quebec to United States smelters, which contained about 400,000 pounds of sulphur. During 1920 the customs records showed exports of pyrites as 119,136 tons valued at $458,403.

SALT

Of sixteen firms normally engaged in the salt industry in Canada eleven reported production for 1921, nine of these being in Ontario, one in Nova Scotia and one in Saskatchewan.

The output of salt from all sources during the year amounted to 125,864 tons, but the sales were in excess of this figure and were given as 127,108 tons valued at $1,641,935, an increase of about $100,000 more than the value of sales in the preceding year. The quantity sold was however considerably less, the amount sold during 1920 being 209,855 tons. The value of the sales as given above is exclusive of the value of packages sold with the goods. These latter were stated to be worth $639,507. Sales by grades including table and dairy, 40,638 tons; common fine, 36,467 tons; common coarse, 30,107 tons; land salt, 3,314 tons; other grades 2,989 tons, and the salt equivalent of brine used for chemical works as 13,593 tons.

The principal producing province was Ontario as already noted. The sales from this province alone amounted to $1,617,876. Less than one thousand dollars worth of salt was produced in Saskatchewan but practically the entire output was sold during the year.

The production of rock salt from the Malagash Mine in Nova Scotia was carried on throughout the year, and considerable quantites of common coarse salt were produced. Some table and dairy salt as well as land salt and rock salt were also produced.

Summary statistics of the salt industry in Canada are given in the following table:—

—	Quantity Manufactured Tons (2,000 lbs.)	Quantity Sold Tons (2,000 lbs.)	Value of Salt Sold (Not including packages)	Stocks on hand at end of year Tons (2,000 lbs.)
5. Production and sales of salt during the year—				
Table and dairy	40,688	40,638	740,829	5,185
Common fine	15,696	36,467	459,555	12,306
Common coarse	33,061	30,107	326,500	5,628
Land salt	3,402	3,314	39,762	160
Other grades	3,017	2,989	27,713	28
Brine for chemical works (Salt equivalent sold or used)	x x x	13,593	47,576	x x x
6. Value of packages	.....	.....	639,507	.....
Total	125,864	127,108	2,281,552	23,307

SODIUM SULPHATE

Only one firm in Saskatchewan produced sodium sulphate during the year, the total quantity mined being less than 300 tons. Two firms, however, made shipments amounting to approximately 600 tons during the period. The value of the shipments was in the neighbourhood of $9,500, an average of $16.28 per ton.

TALC

Talc was produced from the Henderson Mine at Madoc during 1921 and a total of 7,916 tons was raised, all of which was milled in the plant operated by Messrs. Geo. H. Gillespie & Company, Limited, of Madoc. The sales of the milled product to various points in Canada and the United States amounted to 7,900 tons having a total value of $115,200 and comprising 2,000 tons high-grade, 4,000 tons medium grade, and 1,900 tons of low-grade material. The price obtained for the high-grade product was in the neighbourhood of $22 a ton; medium grade, $14; and low-grade, $8. Compared with the shipments in 1920, the sales in 1921 were considerably lower. At the time of writing returns had not been received from two or three small producers, but the amount produced by these companies would in any event be very small.

TRIPOLITE

Tripolite is a silicious material closely related to quartz which is used very extensively as an abrasive product. Its production was carried on by only one firm in Canada during 1921, operating a deposit in Nova Scotia. Some 300 tons was mined and milled and a total of 341 tons valued at $11,268 was shipped during the year.

QUARTZ

The quantity of quartz shipped during 1921 amounted to 57,917 tons valued at $169,304. This mineral is used as a flux in the smelting of many non-ferrous metals, in the iron industry, and also for the manufacture of sanitary ware of all kinds. In 1920, the total shipments were 128,295 tons valued at $467,821. The record for 1921 was therefore less than 50 per cent of that of 1920, due probably to the general quietness of the metallurgical industry as a whole.

STRUCTURAL MATERIALS AND CLAY PRODUCTS

CLAY PRODUCTS

(Other than kaolin and fireclays)

Clay products manufactured during 1921, of which a record is included in the total of the mineral production of Canada, comprised building brick of the several kinds, except sand-lime brick, drain tile made from clay, sewer pipe and similar products. The total value of these clay products sold during the year amounted to $8,335,000, consisting of $5,600,000 worth of brick, $1,327,000 worth of sewer pipe, $325,000 worth of drain tile, and $1,000,000 for all other clay products included in the above category.

Ontario produced more than 50 per cent of the products listed above and Quebec was credited with about one-half as much. Every province in the Dominion was represented in this industry, the products of which are largely made in the districts in which they are used.

KAOLIN AND OTHER CLAYS

Shipments of kaolin in 1921 amounted to only 124 tons valued at $1,888 as compared with 683 tons in the preceding year valued at $15,022. Other clays shipped amounted to 22,000 tons and were valued at $320,000. During the period approximately 31,000 tons was mined including 520 tons of kaolin. A total of 27,500 tons including the whole of the kaolin was treated and shipments of the treated clays amounted to 19,796 tons valued at $312,000 including the 124 tons of kaolin mentioned above, and 19,772 tons of clays treated in Alberta. Crude clays sold without further treatment amounted to 3,800 tons valued at $9,400.

The whole of the kaolin production was obtained from the deposits in the township of Amherst in the province of Quebec operated by the Canadian China Clay Company of Toronto. Some forty tons of fireclay was also produced and has been included in the record above. The plant for refining the clay is situated two miles from St. Remi d'Amherst, and seven miles from Hurberdeau, the terminus of the Montfort branch of the Canadian National Railway, forty-six miles northwest of Montreal.

Two firms operated in Alberta, one treating both Saskatchewan and Alberta clays, and the other digging only Alberta clays. Records of the quantities produced from each province were not shown separately in the reports received, but the quantity treated amounted in all to 27,000 tons. Shipments of treated clays amounting to 19,672 tons were made to points in Western Canada, the value of the shipments being $310,468. About three thousand tons of crude clay was sold for $5,000. One firm in Nova Scotia produced about 800 tons of fireclay valued at $4,000, all of which was shipped during the year for use within the province.

Kaolin and Other Clays, 1921

	Quantity	Value
	Tons	$
Mined:—		
Kaolin	520	.....
Other clays	30,814	.....
Treated:—		
Kaolin	520	.....
Other clays	27,053	.....
Shipped:—		
Treated kaolin	124	1,888
Other treated clays	19,672	310,468
Untreated clays	3,800	9,400

CEMENT

The decline in the production of cement in Canada in 1920 was not as noticeable as in some of the other building materials. The total output of Portland cement from Canadian mills amounted to 6,327,000 barrels and was valued at $16,526,000. Sales during the year amounted to a total of 5,800,000 barrels having a selling value of $14,277,000 as compared with 6,652,000 barrels valued at $14,798,000 in the preceding year. The decline in output was only about 100,000 barrels, but the falling off in sales was in the neighbourhood of 800,000 barrels, the decline in the value of sales amounting to about $520,000. Stocks on hand at the mills increased from 1,000,000 barrels at the beginning of the year to 1,500,000 barrels at the end of the year.

The principal producing provinces were Ontario and Quebec, the sales of cement from the former province being valued at approximately $6,000,000, while the cement from mills in Quebec amounted to almost $5,500,000. The cement manufactured in the province of Quebec amounted to 2,748,000 barrels, while Ontario produced 2,507,000 barrels.

Exports of cement during the year amounted to 848,208 cwt., equivalent to 242,345 barrels of 350 pounds each, valued at $650,658.

Imports of cement and manufactures of cement were negligible, the total importations during the year amounting to only $82,615.

CEMENT PRODUCTS

While cement products have not been included in the report of the mineral production of Canada, statistics relating to the manufacture of these products are of some interest to the cement producing industries, and a note has therefore been included. At the time of going to press returns were incomplete from the makers of cement bricks, blocks, tile, etc., but sufficient returns were in hand to indicate that the 1921 production would aggregate about one million dollars in value, most of which was produced in Ontario, although a number of makers in Quebec and New Brunswick also reported appreciable quantities.

LIME

The production of lime during 1921 amounted to 4,619,000 bushels valued at $1,821,200. In addition to this a total of 34,000 tons of hydrated lime valued at $418,700 was also made during the period. The total value of the lime produced during the year was therefore $2,239,900 as compared with a valuation of $3,818,553 for the 1920 production.

The decline in the production of lime was almost directly proportional to the decrease in the construction industries of Canada throughout the year. The average price obtained for the product remained in the neighbourhood of 40 cents per bushel, although there was the customary variation in the prices obtained in the several provinces of the Dominion.

Nearly a million dollars' worth of lime was produced in Ontario during the year and more than half a million dollars' worth in Quebec. Ontario was the leader in the production of hydrated lime, nearly 29,000 tons being produced in the twelve months. The production of quicklime in Ontario was a little more than one and one-half million bushels and in the province of Quebec it was only slightly less.

Scarcely any lime was imported into Canada during the year, the total value of the imports as shown by the Customs records amounting to $19,512. More lime was exported, the Customs figures showing a total of $247,112 as the value of lime exported during the period.

Summary statistics covering lime sold or used, by provinces, are given in the following table (Data subject to revision).

Lime Sold or Used, 1921

Provinces	Quicklime		Hydrated Lime		Total Value
	Quantity	Value	Quantity	Value	
	Bushels	$	Tons	$	$
Nova Scotia	25,914	6,085	.....	.....	6,085
New Brunswick	581,423	199,987	.....	.....	199,987
Quebec	1,461,382	522,121	3,495	36,131	558,252
Ontario	1,645,596	596,776	28,853	365,074	961,850
Manitoba	610,085	212,532	.....	.....	212,532
Saskatchewan	.....	.....	.....	.....	.....
Alberta	100,571	44,446	.....	.....	44,446
British Columbia	194,136	239,293	1,681	17,497	256,790
Dominion Total	4,619,107	1,821,240	34,029	418,702	2,239,942

SAND AND GRAVEL

Incomplete returns at the time of writing indicated that the value of sand and gravel produced during the year for all purposes except railway ballast would be about one-third lower than 1920. The value of reported production was in the neighborhood of $1,500,000 as compared with $2,290,000, the value in 1920 of sand, and sand and gravel produced.

Ontario was by far the principal producer, more than 75 per cent of the sand shipped being from the pits of this province. British Columbia was second, and Manitoba and Quebec ranked equal.

SAND-LIME BRICK

A record of the production of sand-lime brick has always been included in the reports of mineral production, but as a detailed record of this industry will appear in the general report on manufactured products, only a few notes are here included. The number of sand-lime bricks produced during 1921 was 43,165,000 having a total value of $679,358. In 1920 the total number made was 48,926,000, of which 45,459,000 were sold or used and were valued at $724,918. The decline in production was therefore in the neighborhood of 5,000,000 bricks and the falling off in value of production amounted to about $50,000.

Three-quarters of the production of sand-lime brick was credited to Ontario the value of the production in this province amounting to $456,700. Manitoba ranked second with a production of 10,000,000 bricks valued at $202,000. At time of going to press returns were incomplete and some of the data in the foregoing statement were estimated. No returns had been received from Alberta or Saskatchewan at the time of writing.

The production of stone for building, monumental and ornamental purposes, for paving, curbstones and flagstones and for the other purposes in which quarry stone is used amounted in 1921 to a total value of $3,668,000, a decline to less than 50 per cent of the value of the output in the preceding year.

Ontario was the principal producing province leading with a production value of $1,691,000. Quebec came second with $1,343,000, while British Columbia, New Brunswick, Nova Scotia and Alberta followed in the order named.

The kinds of stone quarried included granite (trap rock, syenite and other igneous rocks), limestone, sandstone, and marble. In this industry as in the manufacture of lime the decline in the construction industries accounted for the notable decrease in the year's production.

The value of the stone quarried and sold or used is given in the following table which shows the value of the output by provinces for the past two years.

Value of Stone Sold or Used, 1920-1921

Province	1920	1921
	$	$
Nova Scotia	420,175	58,000
New Brunswick	280,167	86,117
Quebec	2,189,325	1,342,699
Ontario	4,035,478	1,690,526
Manitoba	374,286	278,873
Saskatchewan		
Alberta	4,415	25,625
British Columbia	276,505	186,369
Dominion Total	7,580,351	3,668,209