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CANADA
DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
CENSUS OF INDUSTRY
MINING, METALLURGICAL & CHEMICAL BRANCH

THE MICA MINING INDUSTRY
IN
CANADA
1944

NOV 1945



OTTAWA
1945

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THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

1914

RESEARCH REPORT ON THE CHEMISTRY OF

THE ALKYL GROUPS

BY

ROBERT M. HARRISON

1914

THE UNIVERSITY OF CHICAGO

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THE MICA MINING INDUSTRY, 1944

Canadian production (primary shipments) of mica (all grades) in 1944 totalled 6,684,846 pounds valued at \$841,026 compared with 8,050,692 pounds worth \$553,856 in 1943. The value of the 1944 production established an all-time high record in the Canadian mica mining industry. Of the total output in 1944, mines in the province of Quebec contributed 2,274,634 pounds valued at \$178,899 and Ontario deposits 3,486,212 pounds worth \$646,745; shipments from mines in British Columbia amounted to 924,000 pounds worth \$15,332. Comprising the total 1944 output for the Dominion were 275,946 pounds of muscovite (white) mica valued at \$579,134 and 6,403,900 pounds of phlogopite or amber worth \$261,892.

The number of Canadian primary mica producers reporting commercial shipments in 1944 totalled 68 and \$359,797 were distributed in salaries and wages to 400 employees. The total net value of shipments was estimated at \$784,402.

Table 1 - PRINCIPAL STATISTICS OF THE MICA MINING INDUSTRY IN CANADA, 1943 and 1944

	1 9 4 3		1 9 4 4	
	CANADA (x)	Quebec	Ontario	CANADA (x)
Number of firms or operators	78 (b)	49	19	70 (a)
Capital employed	\$ 458,402	(c)	(c)	(c)
Number of employees—On salary	39	6	16	22
On wages	391	138	240	378
Total	430	144	256	400
Salaries and wages—Salaries	\$ 57,307	8,328	31,259	39,537
Wages	\$ 300,685	115,094	205,116	320,210
Total	\$ 357,992	123,422	236,375	359,797
Selling value of products (gross)	\$ 553,856	178,899	646,745	841,026
Cost of fuel and electricity	\$ 24,757	14,627	8,959	23,586
Cost of process supplies used	\$ 29,638	20,928	12,110	33,038
Selling value of products (net)	\$ 499,461	143,344	625,676	784,402

(x) Does not include general statistics for 2 operating plants in British Columbia in 1943 for which data are not available, also 2 in British Columbia in 1944.

(a) Includes 68 producing.

(b) Includes 71 producing.

(c) Not recorded in 1944.

Table 2 - NUMBER OF WAGE-EARNERS ON PAYROLL OR TIME RECORD ON THE LAST DAY OF EACH MONTH OR NEAREST WORK DAY, 1943 and 1944

Month	1 9 4 3				1 9 4 4			
	Mine		Shop (x)		Mine		Shop (x)	
	Surface	Under-ground	Male	Female	Surface	Under-ground	Male	Female
January	94	40	55	68	72	55	65	241
February	84	39	53	85	77 (f)	63	65	228
March	100	36	72	103	75 (f)	70	64	210
April	107	33	79	113	72 (f)	75	59	202
May	114	29	61	106	71 (f)	64	64	160
June	163	29	80	122	73	72	65	155
July	156	23	66	159	78	79	65	151
August	138	27	64	157	66	74	57	186
September	132	35	56	133	64	72	48	179
October	123	37	62	267	69	68	41	128
November	102	31	64	312	73	63	38	90
December	104	30	60	282	76	60	32	79
AVERAGE	130	33	69	159	80	68	59	171

(x) Includes outside workers.

(f) Includes one female.

Table 3 - WAGE-EARNERS WORKING NUMBER OF HOURS SPECIFIED DURING ONE WEEK IN MONTH OF HIGHEST EMPLOYMENT, 1944 (Including overtime)

Number of Hours Worked	Number of Employees		Number of Hours Worked	Number of Employees	
	Male	Female		Male	Female
30 hours or less	11	10	49-50 hours	46	7
31-43 hours	42	46	51-54 hours	15	31
44 hours	15	53	55 hours	10	1
45-47 hours	14	25	56-64 hours	23	9
48 hours	47	73	65 hours and over	6	...
Grand Total number of employees in week specified				229	255
Total wages paid in week specified				5,194	3,290

Table 4 - FUEL AND ELECTRICITY USED DURING THE YEAR, EXCLUSIVE OF THAT SUPPLIED TO EMPLOYEES, 1943 and 1944

Kind	Unit of measure	1 9 4 3		1 9 4 4	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal: From Canadian mines	ton	50	528	29	314
Imported	ton	262	2,880	172	2,074
Anthracite coal: From United States	ton	35	591	36	516
Coke	ton	...	...	30	545
Gasoline	Imp.gal.	31,605	9,577	33,179	9,459
Kerosene or coal oil	Imp.gal.	138	46	2,880	915
Fuel oil and diesel oil	Imp.gal.	85	12	1,410	235
Wood (cords of 128 cubic feet of piled wood)	cord	1,031	5,506	886	3,553
Electricity purchased for power and lighting, including service charges	K.W.H.	206,250	5,367	229,200	5,975
TOTAL .....	...	...	24,757	...	23,586
Electricity generated for own use	K.W.H.	...	...	...	...

Table 5 - POWER EQUIPMENT (INCLUDING STAND-BY OR EMERGENCY EQUIPMENT) USED DURING 1944

	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total horse power (x)	Number of units	Total horse power (x)
Steam engines	1	50	...	152
Steam turbines .....	...	...	...	...
Diesel engines	1	75	...	...
Gasoline, gas and oil engines, other than Diesel engines	29	963	1	3
Hydraulic turbines or water wheels .....	...	...	...	...
Electric motors operated by purchased power	9	215	2	30
TOTAL	40	1,303	9	185
Stationary boilers	4	135	1	40

(x) According to manufacturers' rating.

Table 6 - MICA PRODUCTION (PRIMARY SALES) IN CANADA, BY CLASSES, 1943 and 1944

Grade	1 9 4 3		1 9 4 4	
	Pounds	Total value f.o.b. shipping point	Pounds	Total value f.o.b. shipping point
		\$		\$
Rough, mine-run or rifted	1,429,365	54,450	314,878	22,733
Mica sold for mechanical splitting	190,209	26,048	427,426	62,842
Splittings	73,691	53,820	44,350	32,123
Ground or powdered				
Scrap: Mine or shop waste and mica) mined and sold for grinding	6,065,551	63,210	5,381,779	66,167
Flake (mica schist): Natural or recovered by milling .....	...	...	...	...
Trimmed mica	291,876	356,328	516,413	657,161
TOTAL MICA SHIPMENTS	8,050,692	553,856	6,684,846	841,026
Varieties: Phlogopite mica (amber)	7,498,578	309,803	6,408,900	261,892
Muscovite mica (white)	552,114	244,053	275,946	579,134
Total Mica Shipments ..	8,050,692	553,856	6,684,846	841,026

Mica

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Table 7 - PRODUCTION (SALES) OF MICA IN CANADA, BY PROVINCES AND VARIETIES, 1944

Province	Phlogopite		Muscovite		T O T A L	
	Pounds	\$	Pounds	\$	Pounds	\$
Quebec	2,272,531	177,526	2,103	1,373	2,274,634	178,899
Ontario	3,212,369	68,984	273,843	577,761	3,486,212	646,745
British Columbia (x)...	924,000	15,382	...	...	924,000	15,382
TOTAL CANADA	6,408,900	261,892	275,946	579,134	6,684,846	841,026

(x) Variety uncertain.

Table 8 - PRODUCTION(x) OF MICA IN CANADA, 1933-1944

Year	Short tons	\$	Year	Short tons	\$
1933	944	49,284	1939	1,068	147,321
1934	998	97,071	1940	975	237,145
1935	628	82,038	1941	1,743	335,288
1936	801	74,556	1942	3,010	383,567
1937	945	133,731	1943	4,025	553,856
1938	519	80,989	1944	3,342	841,026

(x) Sales.

The total value of mica produced in Canada from the first official recording of mica statistics in 1886 to the end of 1944 amounted to \$10,192,552.

Table 9 - IMPORTS AND EXPORTS OF MICA, 1943 and 1944

	1 9 4 3		1 9 4 4	
	Pounds	Value \$	Pounds	Value \$
Imports -				
Mica and manufactures of, n.o.p. ....	...	220,356	...	135,986
Vermiculite, crude .....	...	18,482	...	21,166
Exports -				
Mica, rough and trimmed (a)	863,100	422,710	...	...
Mica, scrap and waste	4,279,500	34,660	4,879,200	36,072
Mica splittings	65,900	47,108	75,800	56,211
Mica manufactures (c) .....	...	16,540	...	994
Mica, rough, untrimmed .....	...	...	955,600	133,149
Mica, trimmed (b) .....	...	...	282,100	572,541
Mica, ground, (b) .....	...	...	600,900	18,340
Total Mica Exports .....	...	521,018	...	817,307

(a) To December 31, 1943.

(b) From January 1, 1944.

(c) Included mica ground prior to 1944.

Table 10 - CONSUMPTION OF MICA IN CANADA, BY INDUSTRIES, AS REPORTED TO THE ANNUAL CENSUS OF INDUSTRY, 1942 and 1943

	1 9 4 2		1 9 4 3	
	Quantity tons	Cost at works \$	Quantity tons	Cost at works \$
In electrical apparatus industry	102	180,740	145	324,919
In rubber industry	112	10,960	111	12,314
In roofing (x)	436	25,340	395	23,160
In mica manufacturing industry	196	35,151	36	41,050
TOTAL ACCOUNTED FOR .....	...	252,191	...	401,443

(x) Includes mica used in manufacture of wall paper.

The following information is taken from a report "Mica in 1944" as prepared by the Bureau of Mines, Ottawa:

"Canada is one of the two leading world sources of phlogopite, or amber mica, the other most important producer being Madagascar. Numerous occurrences of muscovite, or white mica, also are known in Canada, but only since the discovery in 1942 of exceptionally rich deposits in the Eau Claire area, Ontario, has there been a substantial production of this variety. Preliminary figures indicate that in 1944 the value of muscovite shipments from this field amounted to about 70 per cent of the total Canadian production of all classes and qualities of mica, and exceeded the entire value of the country's output in 1943. In 1943, also, the deposits furnished about 8 per cent of the total Canadian and American production of strategic muscovite, supply of which was drawn from many hundreds of mines.

"Although Canada has a substantial export trade in sheet mica, it also imports considerable quantities of muscovite splittings, block, and manufactured mica, the value of which in 1944 was \$185,986.

"The general supply situation in respect to mica of all classes showed a considerable and progressive improvement during 1944, particularly in reference to strategic qualities of muscovite and phlogopite required for capacitor and aviation spark plug use.

"In 1942, Colonial Mica Corporation, the United States Government mica purchasing agency, was empowered to extend its muscovite buying program to Canada. It established a special schedule of prices, entered into contracts, and in 1943 opened a Canadian office at North Bay, Ontario, and appointed a resident agent. During 1944, Colonial extended assistance to Canadian producers of both strategic-quality muscovite and phlogopite in the form of loans of drill-compressor units and other equipment on a rental basis, and similar assistance was also given mica operators by the Department of Mines and Resources, Ottawa, in 1943 and 1944. Colonial terminated its Canadian buying program on December 31, 1944, leaving producers of all types and qualities of mica free to sell in the open market.

"Of technical interest was the development in 1943 of improved instruments for readily determining the power factor and the electrical conductivity of sheet mica. Appraisal solely by visual means caused the rejection of important amounts of sound mica. The new instruments are, respectively, the direct-reading Q-meter and the point-electrode conductivity tester, both developed by the Bell Telephone Laboratories. They are not intended to supplant visual inspection, but by their use it is expected that important amounts of mica of a quality hitherto rejected on account of appearance will become available for capacitor and other more exacting electrical needs. Instruments of the above type are now available in the Bureau of Mines, Ottawa, for the testing of mica samples.

"Most of the phlogopite mined in Canada has come from a belt of pyroxenite rocks that extends from Kingston to Ottawa, in Ontario, and thence northward into Quebec, between the Gatineau and Lièvre Rivers. The productive belt is from 60 to 70 miles wide and about 200 miles long. Scattered, outlying mica deposits occur also in Pontiac and Argenteuil counties, Quebec, and as far east as Quebec City; and in Ontario, similar deposits have been mined to the west in Hastings and Haliburton counties.

"In Quebec, the Nallis mine at Cantley, in Hull township, and the Phosphate King mine, in Templeton township, both of which are operated by Blackburn Bros., Blackburn Building, Ottawa, continued to be the chief sources of production in that province. Consideration was being given by New Calumet Mines, Limited, to the possibility of recovering a marketable flake mica product from mill tailings at this company's lead-zinc property on Calumet Island, Pontiac county. It is estimated that about 10 tons a day of plus 65-mesh mica can be recovered by screening the tailings discharge from 450 tons of ore milled. Tests were run in the Bureau of Mines, Ottawa, to remove impurities from the crude tailings by tabling, followed by wet-grinding in a ball mill. Samples of the resulting 200-mesh product were submitted to various consuming industries, but no decision was made by the company in regard to entering into production.

"In Ontario, the chief operator in 1944 continued to be Kingston Mica Mining Company, with mine near Godfrey, in Bedford Township, Frontenac county. The output of this property is exported in the form of rifted rough sheet to the United States for trimming and punch use, and is of special heat-resistant, sparkplug quality. Canadian deposits yielding this class of phlogopite are comparatively few, the chief other sources being the Ericson mine, in Denholm township, Quebec, and a property at Petit Pré, near Quebec City. The last-named mine has been idle since 1942.

"At mid-year, operations were undertaken by Sydenham Mining Company to unwater and reopen the old Lacey mine of the General Electric Company, near Sydenham, in Frontenac county. Assistance for this work, in the form of a loan of equipment, was given by Colonial Mica Corporation. Considerable progress was made, and several consignments of rough, mine-run mica were shipped to the United States for trimming and punch use.

"In 1944, Micaspar Industries, Limited of Hamilton did some work on the old Richardson mine, in Loughborough township, and erected a small grinding plant. The plant was operated for only a short time, producing a few tons of ground mica, part of which was made from scrap off the property and part from purchased muscovite waste.

"Muscovite, the occurrence of which in commercial sheet form is confined to granite pegmatite dykes, is far more widely distributed in Canada than phlogopite, and deposits are known in many sections of Quebec and Ontario, as well as in Manitoba and British Columbia, and in the Baffin Island section of the Eastern Arctic. Spasmodic attempts at development of certain of these occurrences have been made, but it was not until the discovery in 1942 of deposits in the Eau Claire region that serious production of muscovite was undertaken. Following the original discovery of the Eau Claire deposits on what is now the Purdy Company's property, several groups of claims were staked on adjacent ground by various syndicates, but none of these contain encouraging amounts of mica, and the quality, in general, is too low for profitable mining.

"In Quebec, there are deposits of ruby muscovite mica of strategic quality in Petain township, Abitibi county, and in Bergeronnes township, Saguenay county, the production from which has been small.

"In British Columbia, production consists only of schist or other micaceous rock, the sources of the output in 1944 being a deposit near Oliver, operated by R. C. McKay, and a deposit in the Albreda area that was opened by George Campbell. A number of pegmatitic occurrences of sheet muscovite are known in British Columbia, most of which lie in the Tête Jaune, Big Bend, and Fort Grahame areas. Small quantities of mica were taken from some of these deposits years ago, but for the most part the occurrences lie at high altitudes, above timber line, and they could be worked only for brief periods during the summer months.

"Ontario and Quebec continued to furnish practically all of the mica production, comprising sheet or block, splittings, ground, and scrap. The output in Ontario declined about 18 per cent in quantity, but increased nearly 110 per cent in value, while the output in Quebec decreased 50 per cent in quantity and 35 per cent in value. The above percentages of quantity, however, do not afford a true index of the sheet mica industry, since they include a large amount of scrap or waste sold for grinding use. For example, over 70 per cent of the total quantity of mica exported in 1944 was grinding scrap, having only 4 per cent of the total export value. In addition, nearly 9 per cent of the exports comprised ground mica having 2 per cent of the value.

"As a large part of the output is exported, export figures afford a fair index of the industry by types of products. The total quantity of mica exported amounted to 6,793,600 pounds valued at \$816,313. About 14 per cent of the exports by quantity, and 17 per cent by value, was rough phlogopite that was shipped to the United States and Mexico for trimming, splitting, or punching; 5 per cent by quantity, and 70 per cent by value, was trimmed block muscovite and phlogopite; 1 per cent by quantity, and 7 per cent by value, was phlogopite splittings; and 9 per cent by quantity, and 2 per cent by value, was ground phlogopite.

"Scrap mica, which was all consigned to American grinding plants, comprised 71 per cent of the quantity, and 4 per cent of the value. About 28 per cent of the exports of scrap was muscovite, having 34 per cent of the declared value, and 72 per cent was phlogopite, with 66 per cent of the value. Most of the scrap phlogopite is shipped to United States Mica Manufacturing Company, East Rutherford, New Jersey, and Forest Park, Chicago. In 1944, most of the scrap muscovite from the Purdy mine was shipped to Concord Mica Corporation, Concord, New Hampshire. Average calculated unit value of the muscovite scrap was \$17.75 per ton, and of the phlogopite scrap, \$12.80 per ton.

"About 500,000 pounds of the rough phlogopite, valued at nearly \$85,000, that was exported, comprised small sizes and was mostly recovered from old waste dumps. It was shipped to the United States for making heavy, random-thickness splittings by mechanical means.

"Sheet mica exported in the form of rough, mine-run material, trimmed block, and splittings, amounted to 1,313,500 pounds valued at \$761,901. Of this, 80 per cent by quantity and 90 per cent by value was consigned to the United States; 6 per cent by both quantity and value went to the United Kingdom; and 13 per cent by quantity and 3 per cent by value was shipped to Mexico for making into splittings.

"In general, Canadian phlogopite deposits tend to be of an erratic, impersistent, and pockety character, and this factor makes underground mining difficult and expensive and for the most part precludes any sustained, systematic attempt to develop ore-bodies. Only in comparatively few instances have workings been carried to depths greater than 100 feet, a great part of the production having been derived from a large number of small, scattered, and intermittently operated surface pits. Reserves, however, are probably sufficient to maintain output at present levels for a considerable period.

"The larger producers of phlogopite operate their own mica shops, and sell direct to the trade, but a substantial volume of business is done also by dealers who purchase small lots of mine-run or trimmed block from small operators and grade, trim, or split the material for sale. Most of the splitting work is farmed out in small rural communities and is done on a piecework basis.

"Madagascar, the other chief source of phlogopite, started to produce on an important scale around 1920, and since then has had an annual output of sheet mica about equal to that of Canada. Ceylon, Korea, Tanganyika, and Portuguese East Africa have also furnished small amounts of phlogopite, and a few years ago development of deposits in Mexico was commenced. Recently, the discovery of occurrences in the Northern Territory of Australia was reported.

"Muscovite mica is widely distributed, and many countries produce small quantities. India has long been the chief source of supply, and production there since 1942 has exceeded all previous records. Indian "ruby" muscovite, obtained from Bihar Province, is the world standard for exacting electrical uses, particularly for magneto and radio condenser films. India also supplies green muscovite, which is produced in Madras. In 1942 and 1943, the United States obtained about 70 per cent of its imports of strategic mica from India, where more than 100,000 persons were employed in the industry.

"Brazil also produces muscovite of ruby quality, and is second to India as a source of supply. Brazilian mica exports in 1943 totalled $1\frac{1}{2}$ million pounds.

"The United States holds third position as a producer of muscovite, the chief producing States being North Carolina, South Dakota, New Hampshire, and Connecticut. American production has increased substantially during the present war, largely as a result of assistance furnished to operators by the Government, coupled with enhanced prices offered for official purchase.

"Mica possesses a combination of properties that make it of outstanding value as an insulating material in all forms of electrical equipment and appliances, and almost the entire production of sheet muscovite and phlogopite is used in the electrical industry.

"Vermiculite, a variety of mica which has the unique property of swelling enormously into exceedingly light-weight, accordion-like form when heated, is used extensively for thermal and acoustic insulation. The expanded product, also termed "Zonolite", has a specific gravity of only 6 to 8 pounds per cubic foot, is comparatively refractory, and has low thermal and sound conductivity. In the form of loose-fill, it is a valuable insulator in the walls and roofs of dwellings, industrial buildings, furnaces, ovens, and refrigerators, in which fields it competes with rock and glass wool. Combined with various bonding materials, it is fabricated into pipe covering, insulating blocks, plasters, tiles, and structural roof slabs, and it is also widely employed as a light-weight aggregate in concrete, including cast slabs for pre-fabricated houses. Such slabs are also being used for the decks, roofs, and fire-walls of ships and buildings subject to bombing attack. Plastic insulation made with vermiculite is used as a heat insulator on the outside of boilers and refinery columns, and as a sound-proofing agent in automobiles and aircraft.

"Most of the world supply of vermiculite is produced and used in the United States, where production in 1943 totalled 46,645 tons valued at \$471,595.

Prices: "Phlogopite—Dealers' quotations for the various trade sizes in 1944 were approximately as shown below, according to quality as based on colour, hardness, and splitting properties:

<u>Knife-trimmed Block or Sheet</u>		<u>Splittings</u>	
Size, Inches	Per Pound	Size, Inches	Per Pound
1 x 1 and 1 x 2	\$0.35 to \$0.50	1 x 1	\$0.75
1 x 3	0.50 to 0.60	1 x 2	0.85
2 x 3	0.70 to 0.80		
2 x 4	0.95 to 1.00		
3 x 5	1.50 to 2.00		
4 x 6	1.75 to 2.50		
5 x 8	2.75 to 3.25		

(Splittings prices in U.S. funds)

"Ground phlogopite sold as follows, according to fineness: 20 mesh, \$30 per ton; 60 mesh, \$40; 150 mesh, \$65; all prices f.o.b. Ottawa, in ton lots, bags extra. Scrap phlogopite, for export, had an average declared value of \$12.80 per short ton, in carload lots.

"Muscovite--Most of the small domestic consumption of muscovite is in the form of splittings for mica manufacture, prepared films for condensers, and punched disks, segments, and washers, nearly all of which are imported. There are thus no established trade quotations for trimmed sheet muscovite, and little is handled by Canadian mica dealers. The scale of prices set up by Colonial Mica Corporation for Canadian muscovite in 1943 remained in effect throughout 1944 and was as follows, quotations being in Canadian funds, f.o.b. shipping point:

<u>Size of Grade</u> Inches	<u>No. 1 Quality</u> \$	<u>No. 2 Quality</u> \$	<u>No. 3 Quality</u> \$
1 x 1	1.54	0.66	0.55
1 $\frac{1}{4}$ x 1 $\frac{1}{4}$	2.09	0.88	0.44
1 $\frac{1}{2}$ x 2	2.75	1.485	0.77
2 x 2	4.125	2.31	1.21
2 x 3	5.225	2.97	1.54
3 x 3	5.775	3.41	1.76
3 x 4	6.16	3.96	2.09
3 x 5	6.60	4.62	2.42
4 x 6	7.70	5.17	2.75
6 x 8	8.80	6.05	3.19
8 x 10	11.00	8.25	4.40
10 x 12	13.20	9.90	5.28

"Prices set for "thins" (under 7 mils) ranged from \$0.50 to \$2.50 per pound, according to size and quality.

"The above schedule of sizes was set up specifically to meet Canadian conditions, more especially the output of the Purdy mine, and does not conform to any regular trade standards. With the termination of Colonial Mica Corporation's buying program in Canada on December 31, 1944, Purdy Mica Mines went over to the Indian standard system of grading, and established a new scale of prices for subsequent sales.

"Montana cleaned and screened crude vermiculite was quoted in 1944 at \$12 a short ton, f.o.b. mine, and North Carolina crude at \$9.50. The expanded product weighs only 6 pounds per cubic foot, as compared with 60 pounds for the natural mineral. It is usually marketed in 24-pound bags, and American quotations averaged \$75 to \$80 a ton f.o.b. plant. Value of sales in the United States in 1943 is estimated at about \$3,250,000."

DIRECTORY OF OPERATORS IN THE CANADIAN MICA MINING INDUSTRY, 1944

- (x) Active, but no shipments made.
- (a) Markets dressed mica.
- (b) Operates a grinding mill.
- (c) Mines muscovite mica.

<u>Name of Operator</u>	<u>Head Office Address</u>	<u>Location of Mine or Plant</u>
<u>Quebec -</u>		
Blackburn Bros. Ltd. (a)(b)	Blackburn Bldg., Ottawa, Ont.	Cantley and Perkins Mills
Blood, A. P. (a)	635 Greenwich St., New York 14, N.Y.	Denholm Tp.
Charbonneau, Regina	Perkins	Perkins
Charbonneau, N.	Perkins	Perkins
Charbonneau, Hector	Perkins	Perkins
Chenier, Z. E.	Rockland, Ont.	Grenville Tp.
Constantineau, Marguerite (a)	Pointe au Chene	Grenville Tp.
Cross, Walter C. (a)	209 Bridge St., Hull	Hull Tp.
Cross, Leslie B.	Cascades	Cascades
Delisle, Jos.	Mistassini	Hudon Tp.
Gagne, Louis	St. Michel de Wentworth	Argenteuil Co.
Girouard, Edmond	Perkins	Perkins
Marier, Louis (a)(c)	Huberdeau	Argenteuil Co.
Mica Laurentian Ltd. (c)	Box 189, Hull	Bergeronnes Tp.
Mineault, Claude	Perkins	Papineau Co.
McLaurin Mica Ltd. (a)	Aldred Bldg., Montreal	Cantley
Mica Company of Canada Ltd. (a)	Hull	Hull
Perkins Mining Co.	Gatineau Pointe	Templeton Tp.

DIRECTORY OF OPERATORS IN THE CANADIAN MICA MINING INDUSTRY, 1944 (Concluded)

Name of Operator	Head Office Address	Location of Mine or Plant
<u>Quebec (Con.) -</u>		
Palement, B.	Perkins	Perkins
Poirier, A. (a)	Wilson's Corner	Wilson's Corner
Rainville, Paul de	Perkins	N. Templeton Tp.
Renaud, J.	Perkins	Perkins
Sabourin, V.	Perkins	Perkins
Severin, J.	3452 Shuter St., Montreal	Charlevoix Co.
Simard, E. (c)	Bergeronnes	Bergeronnes
Sigouin, Frank (a)(c)	Bourmont, via Monet	Abitibi Dist.
Teegee Ltd. (a)	room 1201 Royal Bank Bldg., Montreal	Montreal
Thompson, Wm. E.	Cantley	Cantley
Trudeau, Wm. (a)	Old Chelsea	Old Chelsea
Victory Mines (a)	517 Booth St., Ottawa, Ont.	W. Hull Tp.
Wallingford, W. M. (a)	Gatineau Pointe	Templeton Tp.
Wallingford, John H.	Perkins	Perkins
Wallingford, E., Ltd.	Perkins	Templeton Tp.
Wallingford, J. N.	Glen Almond	Glen Almond
White, A. W., Mica Ltd. (a)	room 407 .. 67 Yonge St., Toronto, Ont.	Notre Dame du Laus
Wilson, Wm. S.	Cascades	Thorne Tp.
<u>Ontario -</u>		
Bancroft Mica & Stone Products	c/o S. H. Orser, Bancroft	Bancroft
Cross, Walter C. (Finlan) (c)	209 Bridge St., Hull, Que.	Davis Tp.
Kingston Mica Mining Co. Ltd.	Godfrey	Godfrey
Lee, W. W. (a)	R.R. 1, Perth Road	Perth Road
Loughborough Mining Co. Ltd. (a)	Sydenham	Sydenham
Marston Minerals Ltd. (a)(c)	drawer 214 .. Madoc	Effingham Tp.
Micaspar Industries Ltd. (a)	16 James St. S., Hamilton	Loughborough Tp.
Orser and Smith (a)	c/o J. L. Smith, Cataraqui	Bedford Tp.
Purdy Mica Mines Ltd. (a)(c)	North Bay	Eau Claire
Verona Rock Products Ltd.	Verona	Verona
Watts, R. W. (a)	Perth	Perth
<u>British Columbia -</u>		
Fairey & Co. (b)	661 Taylor St., Vancouver	Vancouver
McKay, R. C.	Oliver	Similkameen Dist.
Richmond, Geo. W. (b)	4190 Blenheim St., Vancouver	Vancouver

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