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THE FELDSPAR AND QUARTZ MINING INDUSTRY

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NOTICE

The annual reports prepared by the Industry and Merchandising Division of the Bureau of Statistics are divided into 4 volumes, as follows: **Volume I**—The Primary Industries, including mining, forestry and fisheries; **Volume II**—Manufacturing; **Volume III**—Construction; **Volume IV**—Merchandising and Services. The volumes are made up of parts, and the parts in turn are subdivided according to the industries which they comprise.

Volume I consists of the following parts:

Part I—Mineral Statistics
Part II—Forestry Statistics—Operations in the Woods
Part III—Fisheries Statistics

Part I includes the following reports which constitute the complete series on Mineral Statistics of Canada. Individual reports are issued as the information becomes available; they are arranged in a form suitable for binding.

A—General Review of the Mining Industry, 50¢.
B—The Gold Mining Industry, 50¢.
C—The Silver-Lead-Zinc Mining Industry, 25¢.
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S—The Sand and Gravel Industry, 25¢.
T—The Stone Industry, 25¢.
U—Contract Diamond Drilling in the Mining Industry, 25¢.

THE FELDSPAR AND QUARTZ MINING INDUSTRY

1951

Owing to the very close physical association of feldspar and quartz in many Canadian deposits (pegmatites), it is difficult for some operators to make a separation of all data pertaining to the mining of each individual mineral; for this reason, the general statistics relating to employment, fuel and electricity, etc., have been combined in this report. Since 1936, corresponding statistics relating to the production of nepheline syenite have been included with those pertaining to the commercial production of feldspar and quartz.

Production during 1951 as measured by the sales of feldspar, nepheline syenite and quartz, but excluding containers, was valued at $3,909,967 compared with $3,021,555 in the preceding year.

Feldspar production came entirely from Ontario and Quebec; nepheline syenite came from Ontario only; and quartz (silica) in various forms was produced in Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia.

The industry employed 532 persons and distributed $1,402,294 in salaries and wages. Fuel cost $263,586 and 7,663,356 k.w.h. of electricity was purchased for $78,702; process supplies, containers and freight amounted to $477,985.

TABLE 1. Principal Statistics of the Feldspar and Quartz Mining Industry, by Provinces, 1950 and 1951

	Quebec		Other provinces [1]		Canada	
	1950	1951	1950	1951	1950	1951
Number of active firms [2]	19	20	17	13	36	33
Number of shipping mines	17	17	16	13	33	30
Number of employees:						
Administration	10	12	35	38	45	50
Workmen	186	189	245	293	431	482
Total	**196**	**201**	**280**	**331**	**476**	**532**
Earnings:						
Administration $	24,292	32,229	124,490	150,046	148,782	182,275
Workmen $	377,445	429,823	529,902	790,196	907,347	1,220,019
Total $	**401,737**	**462,052**	**654,392**	**940,242**	**1,056,129**	**1,402,294**
Gross value of shipments, f.o.b. shipping points $	887,634	1,061,889	2,133,921	2,864,634	3,021,555	3,926,523
Cost of fuel and purchased electricity $	70,447	86,008	108,998	177,578	179,445	263,586
Cost of process supplies, freight and containers $	193,332	242,126	95,191	235,859	288,523	477,965
Net value of production $	623,855	733,755	1,929,732	2,451,197	2,553,587	3,184,952

1. Includes data relating to nepheline syenite. Includes plants in Ontario, Saskatchewan, Alberta and British Columbia.
2. Small shippers whose production is recorded from consumers' returns are sometimes not included in the total.

TABLE 2. Principal Statistics of the Feldspar and Quartz Mining Industry[1], 1942-1951

Year	Number of shipping mines	Number of employees	Salaries and wages	Cost of purchased fuel and electricity at works	Cost of process supplies at works	Gross value of shipments, f.o.b. works
			$	$	$	$
1942	34	533	782,903	124,100	287,928	1,998,996
1943	34	535	768,199	134,247	322,605	2,138,229
1944	41	529	772,385	166,501	241,400	2,104,030
1945	27	483	767,517	180,799	220,873	2,093,880
1946	30	517	876,034	161,208	180,207	2,168,673
1947	31	593	1,134,107	221,166	376,570	2,641,857
1948	34	562	1,184,257	214,580	340,733	3,265,065
1949	27	442	946,268	146,379	216,206	2,742,703
1950	33	476	1,056,129	179,445	173,123	3,021,555
1951	30	532	1,402,294	263,586	318,493	3,184,952

1. Includes nepheline syenite.

TABLE 3. Number of Workmen, by Months, 1951

Month	1950	1951				
	Total	Surface		Underground	Mill	Total
		Male	Female	Male	Male	
January	326	253	1	30	122	406
February	327	260	1	30	110	401
March	341	263	1	30	129	423
April	337	312	1	30	121	464
May	467	341	1	35	134	511
June	490	354	1	34	132	521
July	528	347	1	37	139	524
August	495	362	1	36	143	542
September	508	361	1	38	149	549
October	476	340	1	39	150	530
November	410	274	—	28	163	465
December	407	245	—	28	170	443
Average	**431**	**316**	**1**	**33**	**132**	**482**

FELDSPAR

Feldspar, crude and ground, produced in 1951 amounted to 40,749 tons valued at $551,097 compared with 35,548 tons valued at $428,401 in 1950. The output in Quebec declined from 29,788 tons to 28,000 tons, but in Ontario the shipments increased from 5,760 tons in 1950 to 12,749 in 1951.

The greater part of the production of feldspar is used in the pottery, glass, enamelware and other ceramic trades, and the remainder mainly in scouring soaps and cleansers, and for bonding of fired abrasive wheels and other shapes. Some coarsely crushed spar, usually made from impure waste or quarry fines, is sold for stucco dash, artificial stone, chicken grit, etc. Small tonnages of specially selected crude (dental spar) are used in the manufacture of artificial teeth, and such material commands a large premium.

Most of the feldspar used is of the high-potash type, though some high-soda spar is used for blending purposes and in low-fired enamels and glazes. Practically all colours are equally acceptable for ceramic uses, but for cleanser purposes the pale shades of white to buff are demanded.

TABLE 4: Production of Feldspar, Crude and Ground, by Provinces, 1942-1951

	Quebec		Ontario		Canada	
	Tons	$	Tons	$	Tons	$
1942	16,802	164,588	5,468	49,353	22,270	213,941
1943	17,199	176,222	6,659	61,549	23,858	237,771
1944	17,842	177,271	5,667	50,361	23,509	227,632
1945	26,389	247,242	3,857	35,414	30,246	282,656
1946	29,758	330,981	5,485	53,696	35,243	384,677
1947	29,146	320,964	6,958	60,396	36,104	391,360
1948	42,800	464,926	12,051	99,511	54,851	564,437
1949	31,848	384,892	5,100	43,610	36,948	428,502
1950	29,788	378,782	5,760	49,619	35,548	428,401
1951	28,000	425,370	12,749	125,727	40,749	551,097

TABLE 5. Consumption of Ground Feldspar, 1948-1951

	1948	1949	1950	1951
	Tons			
(a) By uses				
Glass	2,744	2,902	4,286	3,484
Scouring powders	3,817	3,164	2,831	3,127
Abrasives	42	15	9	32
Clay products (pottery, tile, insulators, etc.)	8,443	7,111	6,911	6,786
Enamelling	1,815	1,966	1,849	1,660
Total	**16,861**	**15,158**	**15,886**	**15,089**
(b) By provinces				
Quebec	6,846	7,227	8,921	8,558
Ontario	8,853	7,503	5,868	6,125
Alberta	1,162	428	1,097	406
Canada	**16,861**	**15,158**	**15,886**	**15,089**

TABLE 6. Imports and Exports of Feldspar, 1949-1951

	1949		1950		1951	
	Tons	$	Tons	$	Tons	$
Imports:						
Crude feldspar	1	31	2	59	6	621
Ground feldspar	227	4,524	142	3,643	188	4,294
Exports:						
Feldspar	**17,570**	**111,915**	**15,465**	**112,757**	**19,832**	**173,821**

TABLE 7. World Production of Feldspar, by Countries[1], 1947-1950

(Taken from the Minerals Yearbook published by the United States Bureau of Mines)

Country[1]	1947	1948	1949	1950
	Metric tons			
Argentina (shipments)	5,000	2	2	2
Australia[3]	8,566	9,767	10,902	8,759[4]
Austria	951	1,144	1,912	2
Brazil	2	189	—	2
Canada (shipments)	32,753	49,760	33,518	29,187
Chile	217	885	—	2
Czechoslovakia	2	2	2	2
Eritrea	150	300	200	2
Finland	6,781	6,064	10,074	8,000
France	44,104	55,343	45,000	42,000
Germany: Federal Republic	21,251	32,921	49,544	2
India	1,750	1,003	863	2
Israel and Jordan	19	2	2	2
Italy	9,582	13,469	10,901	14,254
Japan	21,496	25,077[5]	20,055[5]	18,187[5]
Kenya	36	10	20	2
Madagascar	—	—	2	2
Norway	22,140	33,117	21,932[6]	20,846[6]
Peru	29	210	2	2
Portugal	1,137	1,560	2	2
Southern Rhodesia	—	—	—	3,520
Spain (quarry)[7]	3,333	6,600	396	1,650
Sweden	37,953	38,687	38,959	2
Union of South Africa (sales)	1,676	2,101	3,259	5,147
United Kingdom	—	—	—	2
United States (sold or used)	467,292	468,107	375,307	414,472
Uruguay	843	4,877	811	710
Total	**700,000**	**768,000**	**640,000**	**671,000**

1. In addition to countries listed, feldspar is produced in China, Romania and U.S.S.R. but data are not available.
2. Data not available; estimate included in total.
3. Includes some china stone.
4. Excluding South Australia.
5. In addition the following quantities of aplite and other feldspathic rock were produced: 1948, 35,840 tons; 1949, 50,943 tons and 1950, 45,679 tons.
6. Exports.
7. There is some additional production of feldspar, but comparable figures are not available.
8. Estimated. No estimates included for countries listed in footnote 1, except Romania.

NEPHELINE SYENITE

During 1951 the shipments of nepheline syenite were valued at $1,114,943 compared with $842,886 in 1950. Exports of crude and milled nepheline syenite were 59,777 tons valued at $857,236 compared with 54,351 tons worth $619,202 in the preceding year. In Canada the sole producer is the American Nepheline Corporation Limited with mine and mill near Lakefield, Ontario.

Nepheline syenite is a quartz-free rock consisting essentially of nephelite and albite and of microline feldspar. It usually contains small amounts of iron-bearing impurities chiefly magnetite, hematite and biotite mica, as well as such minor accessory minerals as sodalite, cancrinite, corundum, zircon, muscovite, mica, calcite, etc. In the developed Canadian deposits, iron-bearing impurities are of coarse sizes and can be readily removed from the crude rock by magnetic means. Other objectionable minerals, notably corundum and muscovite, can be extracted by flotation methods with the recovery of commercial grades of such products. Nepheline syenite is relatively high in alumina (24 per cent in average Canadian commercial rock) compared with straight feldspar (17 to 20 per cent) and for this reason it is used as a feldspar substitute in a number of ceramic industries more especially in the glass trade.

TABLE 8. Production[1] of Nepheline Syenite, 1942-1951

Year	Selling value f.o.b. shipping point	Year	Selling value f.o.b. shipping point
	$		$
1942	246,893	1947	341,635
1943	292,010	1948	506,462
1944	217,989	1949	623,002
1945	275,766	1950	842,886
1946	229,198	1951	1,114,943

1. Only one or two producers in recent years; quantity not available for publication.

TABLE 9. Consumption of Ground Nepheline Syenite, 1948-1951

—	1948	1949	1950	1951
	Tons			
(a) By uses				
Glass and glass wool	10,916	12,589	12,523	13,849
Pottery	518	1,081	1,289	1,767
Total	**11,434**	**13,670**	**13,812**	**15,616**
(b) By provinces				
Quebec	2,031	1,925	2,137	2,918
Ontario	7,734	10,150	9,914	10,889
Other	1,669	1,595	1,761	1,809
Total	**11,434**	**13,670**	**13,812**	**15,616**

QUARTZ (SILICA)

Production of quartz or siliceous material during 1951 totalled 1,904,885 tons valued at $2,258,468 compared with 1,730,695 tons worth $1,740,268 in 1950. Output included crude and crushed quartz, quartzite and sandstone as well as natural silica sands and gravels.

In Nova Scotia shipments of silica were made to steel plants chiefly for use in making silica brick; the quantity and value of this material are not shown in this review but are included in the silica-brick industry. In Quebec substantial tonnages of silica rock were crushed and screened for use in the manufacture of ferrosilicon or further milled to produce sand for silicon carbide. In Ontario most of the shipments were for use in making silica brick, silicon carbide and ferrosilicon and for the fluxing of nickel-copper ores. In Saskatchewan the output consisted of low-grade natural silica sands or gravels for use as flux at the Flin Flon smelter of the Hudson Bay Mining and Smelting Co., Ltd.

TABLE 10. Production of Quartz (Silica), 1942-1951

Year	Tons	$	Year	Tons	$
1942	1,738,174	1,538,162	1947	1,836,428	1,796,812
1943	1,776,749	1,608,448	1948	2,017,262	2,082,573
1944	1,740,262	1,658,409	1949	1,722,476	1,588,531
1945	1,513,628	1,535,458	1950	1,730,695	1,740,268
1946	1,413,378	1,554,798	1951	1,904,885	2,258,468

TABLE 11. Production of Quartz, by Provinces, 1950 and 1951

	1950		1951	
	Tons	$	Tons	$
Production (Shipments)[1]:				
Quebec	182,727	498,852	220,698	579,633
Ontario	1,386,833	1,027,791	1,545,137	1,497,811
Saskatchewan and Alberta	141,565	91,697	120,769	67,631
British Columbia	19,570	121,928	18,281	113,393
Canada	**1,730,695**	**1,740,268**	**1,904,885**	**2,258,468**

1. Includes both crude and crushed quartz, crushed sandstone and quartzite, and natural silica sands.

TABLE 12. Production[1] of Natural Low-Grade Silica Sand and Silica Gravel as Non-Ferrous Smelter Flux, 1949-1951

	1949		1950		1951	
	Tons	$	Tons	$	Tons	$
Ontario	634,321	91,487	704,717	110,252	683,954	131,379
Saskatchewan	127,297	63,649	141,265	88,997	120,769	67,631
Canada	**761,618**	**155,136**	**845,982**	**199,249**	**804,723**	**199,010**

1. Included in totals shown in Tables 10 and 11.

TABLE 13. Imports and Exports of Silica, 1950 and 1951

	1950		1951	
	Tons	$	Tons	$
Imports:				
Ground flint stone	939	31,081	1,231	36,705
Ganister	128	1,517	144	2,091
Silica sand for manufacturing	573,362	1,564,948	692,937	1,991,033
Silex or crystallized quartz	24,757	407,883	30,398	2,869,578
Silica fire brick	—	1,012,041	—	2,054,816
Exports:				
Quartzite	195,430	540,940	281,379	838,227

TABLE 14. Available Statistics on the Consumption of Silica Sand and Ground Quartz 1948-1950

	1948	1949	1950
	Tons of 2,000 pounds		
By industries			
Paints, pigments and varnishes	1,897	1,668	1,630
Soaps and cleaning compounds	5,907	6,304	5,988
Clay products	8,002	7,630	7,505
Asbestos products	87	2,974	5,164
Miscellaneous non-metallic minerals	5,160	1,908	1,031
Roofing paper	2,608	3,020	3,221
Glass	175,594	156,914	181,976
Artificial abrasives	85,061	82,820	72,336
Fertilizers	—	—	—
Iron castings	7,164	4,433	4,328
Cooking and heating apparatus	1,748	1,697	1,332
Boilers, tanks and plate work	416	170	222
Farm implements	931	1,065	818
Railway rolling stock	8,162	2,970	4,546
Matches	361	1	1
Sweeping compounds	4	1	1
Disinfectants	34	1	1
Primary iron and steel	85,276	98,477	67,358
Heavy chemicals	20,556	18,128	19,889
Miscellaneous chemicals	149	556	1,008
Stone products	992	314	908
Machinery	1,225	1,679	2,794
Electrical apparatus	541	485	681
Cement manufacturing	47,749	48,124	52,509
Cement products	701	939	805
Miscellaneous iron and steel	43	—	44
Total	**460,368**	**442,275**	**436,093**
By provinces			
Nova Scotia	2,774	2,312	2,210
New Brunswick	443	494	112
Quebec	213,971	185,752	200,204
Ontario	186,040	199,466	174,419
Manitoba	25,672	26,203	29,037
Saskatchewan	15	4	4
Alberta	26,849	22,942	25,114
British Columbia	4,604	5,102	4,993
Canada	**460,368**	**442,275**	**436,093**

1. Included in miscellaneous chemicals.

List of Firms in the Feldspar and Quartz Mining Industry, 1951

Name of firm	Head office address	Location of mine or mill
Nova Scotia:		
Dominion Steel & Coal Corp. Ltd.[1]	Sydney	Chegoggin Point
Nairn, J.[1]	24 Whitney Ave., Sydney	Leitches Creek
Quebec:		
Assad, Adélard[2]	Box 322, Buckingham	Buckingham
Bigelow, Gordon[2]	Glen Almond	Derry Tp.
Bigelow, Robt.[2]	Buckingham	Portland East Tp.
Bigelow & McDowell	Glen Almond	Derry Tp.
Bon Ami Ltd.[2,3]	13719 Notre Dame St. E., Montreal	Montreal
Broullet Sand & Gravel Co. Ltd.[1]	Rawdon	Rawdon
Buckhill Minerals Ltd.[1,2]	7 Brule Terrace, Toronto 3, Ontario	Buckingham
Burke Bros[2]	R. R. No. 1, Thurso	Buckingham Tp.
Canadian Carborundum Co. Ltd.[1,3]	Box 57, Niagara Falls, Ontario	St. Canut
Canadian Flint & Spar Co. Ltd.[1,2,3]	Room 512, Victoria Bldg., Ottawa, Ontario	Buckingham
Clement, Hormidas[2,1]	Glen Almond	Derry Tp.
Donaldson, Gordon[1,2]	Glen Almond	Buckingham
Goyer, E., & Son[1]	St. Bruno	St. Hilaire
H.C.F. Sands Ltd.[1]	Noranda	St. Bruno de Guigues
Grenier & Fortin[2]	61 Murray St., Ottawa, Ontario	Portland Tp.
Laroque & Hébert[1,2]	Glen Almond	Buckingham
Lachaine, Régis[2]	St. Pierre de Wakefield	Wakefield
Mullen, A. W. H.[2]	191 Powell Ave., Ottawa, Ontario	Buckingham
Parcher, Earl[1,2]	Glen Almond	Derry Tp.
McGill, Lawrence[4]	Pointe-au-Chêne	Grenville
St. Lawrence Alloys & Metals Ltd.[1,3]	Beauharnois	Beauharnois Co.
Suzorite Co. Ltd.[2]	907 Dominion Square Bldg., Montreal	Shawinigan Falls
Valley, Percy[2]	Buckingham	Buckingham Tp.
Wallingford, E.[1,2]	Perkins	Templeton
Wallingford, Wm. & A.O.[1,2]	Gatineau Point	Templeton
Ontario:		
American Nepheline Corp.[3,5]	Lakefield	Methuen Tp.
Algoma Steel Corporation Ltd.[1]	Sault Ste Marie	Deroche Tp.
Bowser Bros[2]	Box 73, Madawaska	Madawaska
Burks Falls Feldspar Syndicate Ltd.[2]	Burks Falls	Chapman Tp.
Bancroft Mica & Stone Products[2,3]	Bancroft	Faraday Tp.
Bathurst Feldspar Mines Ltd.[2]	Room 508-21 King St. E., Toronto	Bathurst Tp.
Buffalo Ankerite Gold Mines Ltd.[6]	Box 533, South Porcupine	Deloro Tp.
Brandt, W.E.[2]	R.R. #3, Burks Falls	Burks Falls
Canadian Flint & Spar Co. Ltd.[2]	512 Victoria Bldg., Ottawa	Bedford Tp.
Canadian Silica Corp. (Ltd.)[1]	100 Adelaide St. W., Toronto	Little Current
Cameron and Aleck[2]	Box 16, Madawaska	Murchison
Falconbridge Nickel Mines Ltd.[1]	Falconbridge	Falconbridge
Freeman & Marcelio[2]	96 Nelson St., Kingston	Loughborough
Jessup, Wesley[2]	Maynooth	Monteagle Tp.
Dominion Mines & Quarries Ltd.[1,3]	Canada Life Bldg., Toronto	Killarney
International Nickel Co. of Canada Ltd.[1]	Copper Cliff	Lawson Tp.
Kingston Silica Mines Ltd.[1,3]	R.R. No. 1, Kingston	Pittsburg Tp.
Laurentian Feldspar Corp, Ltd.[2]	104 Sparks St., Ottawa	Perth
Opeongo Mining Co.[2]	1631 Benjamin Ave., Windsor	Dickenson Tp.
Quartz Crystals Mining Corp. of Canada[1]	29 Melinda St., Toronto	Lynhurst
Verona Rock Products	36 King St. W., Toronto	Verona
Saskatchewan:		
Hudson Bay Mining & Smelting Co.[1]	Flin Flon, Manitoba	Flin Flon
Alberta:		
May, Wallace[6]	Elkwater Lake	Elkwater
British Columbia:		
Consolidated Mining & Smelting Co. Ltd.[1]	Trail	Fairview

1. Produces silica.
2. Produces feldspar.
3. Operates a mill.
4. Produces scapolite.
5. Produces nepheline syenite.
6. Produces grinding pebbles.

EDMOND CLOUTIER, C.M.G., O.A., D.S.P., Queen's Printer and Controller of Stationery, Ottawa, 1953.