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MINING INDUSTRY AND STATISTICS OF THE PROVINCE OF QUEBEC FOR THE YEAR 1937

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PROVINCE OF QUEBEC, CANADA

Department of Mines and Fisheries

Honourable ONÉSIME GAGNON, *Minister*

L.-A. RICHARD, *Deputy-Minister*

BUREAU OF MINES

A.-O. DUFRESNE, *Director*

MINING INDUSTRY AND STATISTICS OF THE PROVINCE OF QUEBEC

for the year

1937



QUEBEC
RÉDEMPTI PARADIS
PRINTER TO HIS MAJESTY THE KING
—
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PREFATORY NOTE

In the statistical tables, and in the review of the mining industry of the Province during the year, the term "production" is synonymous with "quantity sold, shipped, or used", and does not necessarily represent "output". The ore and other mineral products remaining as "stock on hand" at the end of the year are not included in the production figures.

Unless otherwise stated, the ton used throughout is that of 2,000 pounds, and the year referred to is the calendar year, ending December 31st. Values are given in Canadian funds.

The present report was preceded on March 4th by a statistical statement, giving provisional figures of production, subject to revision. The figures in the present volume supersede the provisional ones.

The values given in this report for production of metals, whether these are smelted or refined in Canada or not, are calculated at the average prices of the metals in some recognized market — London, New York, or Montreal. They do not necessarily represent the actual amounts paid to the mining companies, which may be considerably less than shown in the tables. This applies particularly to our zinc and lead, which at present are shipped to Europe in the form of ore concentrates, as there are no zinc or lead smelting plants in eastern Canada.

Beginning with the year 1937, the Bureau of Mines will publish its Annual Report under the title "Mining Industry and Statistics".

A new series of publications designated "Geological Reports", each with a serial number, will be issued separately, with the accompanying maps, presenting the results of the field work of the geological staff. This series will also include any special reports on mineral resources, metallurgy, laboratory research, and allied subjects.

The issue of Preliminary Reports presented in the form of 'photo-litho' pamphlets will be continued.

QUEBEC BUREAU OF MINES,
DEPARTMENT OF MINES AND FISHERIES,
JUNE, 1938

TABLE OF CONTENTS

	PAGE
General Review	5
Table of Mineral Production	7
Mining Titles Issued and Revenues Received	10
Geological Field-work and Reports	12
Chemical and Research Laboratories	13
Draughting and Map-Making	13
Legislation	14
Mining Villages	14
Mine Roads	15
Scholarships and Plans for Training Schools	16
Lecture Courses for Prospectors	17
Publications	17
Exhibitions	19
Company Incorporations	19
Mining Operations in 1937	23
Metals:	
Copper	23
Gold and Silver	24
Lead	25
Selenium	25
Zinc	26
Miscellaneous (Chromite, Tellurium, Titaniferous Iron Ore)	26
Non-metallics:	
Asbestos	27
Feldspar	39
Garnet	40
Kaolin	40
Lime, Limestone, and Marl (industrial)	40
Magnesitic-dolomite	41
Mica	42
Ochres and Iron Oxides	43
Oil and Gas	43
Peat	44
Phosphate	44
Quartz and Industrial Sand	44
Soapstone	45
Building Materials:	
Cement	46
Clay and Shale Products	46
Granite	46
Lime and Limestone (building)	48
Marble	49
Sand and Gravel	49
Sandstone and Shale	50
Mining Operations and Development in Western Quebec in 1937	51
Employment, Wages, and Accidents	102
List of Mining Companies and Operators	110
Alphabetical Index	133

ILLUSTRATION

Figure 1.—Graph showing Employment and accident frequency in mineral industry of the province for the years 1928-1937	104
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PLATES

(After page 132)

- Plate I.—A.—The mill of the Canadian Kaolin Silica Products Limited, St-Rémi d'Amherst. Mine in the background, 1937.
B.—Canada China Clay Company, St-Rémi d'Amherst, Papineau County. Mill under construction, headframe of the shaft and Power House, 1937.
- Plate II.—A.—Canadian Refractories Limited, Kilmar, Argenteuil County. Headframe of the shaft.
B.—The mill of the Canadian Corborundum Company, St-Canut, Deux-Montagnes.
- Plate III.—A.—Waite mine, Duprat Township, September 1938.
B.—Powell-Rouyn Gold Mines, Rouyn Township. Headframe of the shaft. July 1938.
- Plate IV.—A.—Mill of the Francœur Gold Mines in Beauchastel Township. August 1938.
B.—Power House and 25-tons mill of the Lake Rose Mines, Currie Township. August 1938.
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MINING OPERATIONS

IN THE

PROVINCE OF QUEBEC

DURING THE YEAR 1937

GENERAL REVIEW

Products of the mines and quarries of the Province of Quebec during 1937 had a value of \$65,203,976. This established for the second year in succession a new high level, being an increase of \$15,447,991, or 31 per cent, over the value of the record 1936 production. Generally improved conditions, and also expansion, in the industry have been continuous since 1932, which year marked the low point of the recession that set in late in 1929.

Substantial increases were recorded in each of the three main subdivisions of the mineral production, the value increase for metals being 26 per cent, for non-metallics 39 per cent, and for building materials more than 36 per cent. For both metals and non-metallics, the 1937 figures constitute a record. It may be noted, also, that for the first four months of 1938 the output of gold was 29 per cent higher than in the corresponding period of 1937.

The development of metal mining in Quebec has played a most important part in mitigating, in the Province — and, indeed, in the Dominion generally — the distressing effects of the world-wide depression from which we are but now emerging. Throughout this critical period, while practically all other basic industries were declining, and manufacturing plants were shutting down or curtailing their operations, the value of our metal output mounted rapidly and continuously from \$12,367,932 in 1931 to \$38,615,175 in 1937. Gold has been the main factor in this rise, with an increase during this period from \$6,203,101 to nearly \$25,000,000.

SUBDIVISION OF QUEBEC'S MINERAL PRODUCTION
FOR THE YEARS 1933-1937

YEAR	METALS	%	NON-METALLICS	%	BUILDING MATERIALS	%
1933.....	\$16,360,011	58	\$ 6,043,308	22	\$ 5,761,221	20
1934.....	19,258,094	61	6,579,453	21	5,473,205	18
1935.....	23,804,792	61	8,324,178	22	6,512,764	17
1936.....	30,643,787	62	12,388,178	25	6,724,020	13
1937.....	38,615,175	59	17,232,860	27	9,355,941	14

The production of non-metallics experienced a remarkable recovery during 1937. The asbestos industry was particularly active. Fibre marketed totalled 410,024 tons, exceeding by 34 per cent the previous

record of 306,055 tons, attained in 1929. Substantial gains were achieved also by feldspar, industrial lime and limestone, mica, ochre, and other items in the list.

There was an appreciable improvement in the production of mineral building-materials, with an output valued at \$9,355,941, as compared with \$6,724,020 in 1936. In normal times, the figures are of the order of 15 to 18 million dollars. It is evident that the building industry is recovering much more slowly than most of the other major industries.

During the first six months of the year under review, unprecedented activity in prospecting prevailed in northern Quebec, particularly in the region of the headwaters of Harricana and Bell rivers, where the successful development and bringing into production of new mines, as the Lamaque and Sigma, and the zinc-gold discoveries on the Quebec Manitou property, attracted many prospectors. The number of claims recorded during the calendar year attained the high record of 18,641, and the number of miners' certificates issued was 5,496, as compared with 17,505 claims and 5,471 miners' certificates in 1936. During the second half of the year, the activity abated considerably, and the figures for the first four months of 1938 also were much below those for the corresponding period of 1937.

Construction work on the Canadian National Railways branch line connecting Senneterre with Rouyn and Noranda, to serve the townships of Senneterre, Pascalis, Louvicourt, Bourlamaque, Dubuisson, Fournière, Malartic, Cadillac, Bousquet, Joannès, and Rouyn, proceeded actively throughout the year. Early in December, 1937, the section between Senneterre and Val d'Or was completed, and a regular train service between the two towns was inaugurated before the close of the year. Val d'Or, although incorporated as a town only last year, is already one of the largest and busiest mining centres in western Quebec. It is expected that the balance of this railway branch, from Val d'Or to Noranda, will be completed in 1938.

TABLE OF ANNUAL VALUE OF MINERAL PRODUCTION
SINCE 1898

YEAR	VALUE	YEAR	VALUE
1898.....	\$ 1,673,337	1918.....	\$18,707,762
1899.....	2,083,272	1919.....	20,813,670
1900.....	2,546,076	1920.....	28,392,939
1901.....	2,987,731	1921.....	15,522,988
1902.....	2,985,463	1922.....	18,335,153
1903.....	2,772,762	1923.....	21,326,314
1904.....	3,023,568	1924.....	18,952,896
1905.....	3,750,300	1925.....	23,824,912
1906.....	5,019,932	1926.....	25,740,002
1907.....	5,391,368	1927.....	29,124,110
1908.....	5,458,598	1928.....	37,325,237
1909.....	5,552,062	1929.....	46,454,820
1910.....	7,323,281	1930.....	41,158,740
1911.....	8,679,786	1931.....	36,051,368
1912.....	11,187,110	1932.....	25,683,066
1913.....	13,119,811	1933.....	28,164,540
1914.....	11,732,738	1934.....	31,310,752
1915.....	11,765,873	1935.....	39,141,734
1916.....	13,287,024	1936.....	49,755,985
1917.....	16,189,179	1937.....	65,203,976

TABLE OF THE MINERAL PRODUCTION OF
THE PROVINCE OF QUEBEC DURING 1937

SUBSTANCE	NO. OF WORKMEN	WAGES	QUANTITY	VALUE IN 1937	VALUE IN 1936
		\$		\$	\$
METALLICS					
Chrome, tons			210	3,286	8,508
Copper, lb.	2,325	3,526,179	94,653,135	12,378,737	6,287,058
Gold, oz.	6,646	8,122,628	711,482	24,894,755 (1)	23,361,682 (1)
Molybdenite	15	6,387			
Lead, lb.			1,521,182	77,732	80,126
Selenium, lb.			208,531	360,759	298,098
Silver, oz.			908,590	407,784	326,872
Tellurium, lb.			26,439	45,739	34,519
Titaniferous iron ore, tons	30	2,812		4,229	18,318
Zinc, lb.	217	56,219	8,566,927	419,951	228,606
Assessment work on claims	928	967,463			
Sub-totals	10,161	\$12,681,688		\$38,615,175	\$30,643,787
NON-METALLICS					
Asbestos, tons	3,694	3,708,061	410,024	14,505,541	9,958,183
Feldspar, tons	82	38,421	12,285	105,612	75,703
Garnet	6	3,142			
Industrial lime, tons	290	200,866	141,676	796,970	630,436
Industrial limestone, tons			176,488	210,828	149,909
Kaolin	75	47,336			
Magnesian dolomite	178	256,126		677,207	768,742
Marl, tons			32,927	13,171	10,874
Mica, lb.	263	88,034	1,092,105	124,594	63,123
Mineral water, gals.	16	2,810	198,319	19,697	17,399
Ochre and iron oxide, tons	62	26,599	5,698	77,883	65,630
Peat, tons	29	5,260	578	17,121	7,106
Petroleum	14	3,637			
Phosphate, tons			100	900	4,927
Pyrite, tons			56,760	194,496	282,743
Quartz and industrial sand, tons	169	125,820	127,535	448,327	320,634
Soapstone	43	20,856		40,513	32,769
Sub-totals	4,921	\$ 4,526,968		\$17,232,860	\$12,388,178
BUILDING MATERIALS					
Building lime, tons			14,357	110,173	87,341
Building limestone, tons	1,192	501,261	1,455,776	1,272,567	915,475
Cement, barrels	417	516,095	2,578,623	3,537,798	2,945,074
Clay products:					
Brick, M.	713	322,029	53,453	825,596	516,248
Other products				226,996	175,517
Granite, tons	733	286,851	218,742	611,023	429,281
Marble, tons	57	30,230	3,322	39,423	120,582
Sand and gravel, tons	5,505	1,585,421	9,476,000	2,637,495	1,418,231
Sand-lime brick, M.	10	2,036	2,465	28,415	13,029
Sandstone, tons	100	18,839	70,726	65,424	102,056
Slate and shale, tons	8	78	693	1,031	1,186
Sub-totals	8,735	\$ 3,262,846		\$ 9,355,941	\$ 6,724,020
TOTALS	23,817	\$20,471,502		\$65,203,976	\$49,755,985

(1) Value in Canadian funds. The value at the standard rate of \$20.671834 amounts to \$14,707,638 for 1937 and \$13,786,149 for 1936.

Work also proceeded normally on the highway from Mont-Laurier to Rouyn-Noranda. This road forks in Louvicourt township, one branch going north to Senneterre, and the other westward to Noranda. It was hoped that it would be completed in 1938, but the remaining stretch of fifty miles is through difficult rock country, and it may not be possible to open this highway to traffic before 1939.

The completion of the railway branch and of the highway will greatly facilitate communication between Western Quebec and the older, southern sections of the Province, particularly the Montreal district, which will then have direct connection with all the mining centres of the north.

METALS

It is very gratifying to record that expansion in metal mining continued unabated throughout the year. Metal production in 1937 had a value of \$38,615,175, 26 per cent above the record of the previous year and more than three times that of 1931. Mines in western Quebec were responsible for over 98 per cent of the total. Gold, with a value of nearly \$25,000,000, easily maintained the leading position it has held since 1931.

Increases both in quantity and value were recorded for all metals in the list with the exception of lead and chrome. The value increases were in part accounted for by the notably higher market prices of the base-metals, as shown in the accompanying table.

AVERAGE YEARLY PRICES OF METALS, 1932-1937
(Figures from Report of Dominion Bureau of Statistics)

METAL	MARKET	UNIT	1932	1933	1934	1935	1936	1937
Copper.....	New York...	Cents per lb.....	5.555	7.025	8.428	8.649	9.474	13.167
	Montreal....	" " " " " " " "	7.516	8.684	8.220	8.488	10.070	13.469
	London.....	£ per long ton.....	35.962	36.359	33.319	35.430	42.650	59.339
Lead.....	New York...	Cents per lb.....	3.180	3.869	3.860	4.065	4.710	6.009
	Montreal....	" " " " " " " "	3.511	3.705	4.488	3.925	4.642	5.799
	London.....	£ per long ton.....	11.913	11.670	10.935	14.238	17.599	23.326
Zinc.....	St. Louis....	Cents per lb.....	2.876	4.029	4.158	4.328	4.901	6.519
	Montreal....	" " " " " " " "	3.724	4.488	4.059	3.992	4.153	5.593
	London.....	£ per long ton.....	13.545	15.666	13.657	14.082	14.920	22.258
Silver.....	New York....	Cents per fine oz..	27.892	34.727	47.973	64.273	45.087	44.881
Gold.....	Can. funds....	\$ per fine oz.....	23.48	28.60	34.50	35.19	35.03	34.99

NOTE.—The average London prices of base-metals in 1937, transposed into Canadian funds, were, per pound: copper, 13.078 cents; lead, 5.110 cents; zinc, 4.902 cents.

METAL PRODUCTION OF WESTERN QUEBEC, 1927-1937

YEAR	ORE MILLED (Tons)	SHIPMENTS						VALUE \$
		COPPER (Pounds)	GOLD (Ounces)	SILVER (Ounces)	ZINC (Pounds)	SELENIUM (Pounds)	TELLURIUM (Pounds)	
1927...	7,570	463,471	741	2,611	.....	.....	.....	\$ 76,674
1928...	271,614	33,019,311	53,397	185,579	.....	.....	.....	6,022,692
1929...	498,280	51,101,054	86,162	333,792	.....	.....	.....	11,210,882
1930...	980,419	75,435,415	141,747	555,578	9,754,160	.....	.....	13,286,327
1931...	1,100,121	62,018,221	299,869	509,571	.....	.....	.....	11,814,979
1932...	1,331,104	60,584,116	401,005	605,258	.....	.....	.....	13,472,311
1933...	1,886,617	63,417,206	382,834	451,732	.....	22,131	.....	15,864,182
1934...	2,436,233	69,057,942	390,061	455,022	.....	48,764	.....	18,869,825
1935...	2,809,654	74,471,124	469,560	504,985	.....	206,421	1,708	23,056,076
1936...	3,390,412	62,746,930	665,930	556,745	.....	168,417	19,502	29,857,913
1937...	4,189,618	92,040,922	710,638	789,124	5,102,330	208,531	26,439	37,913,117
TOTAL.	18,901,642	644,355,712	3,601,944	4,949,997	14,856,490	654,264	47,649	\$181,444,978

The higher prices of base-metals led to a renewal of activity at several mines where the deposits consist of complex ores containing these metals, the outstanding example of which in Western Quebec is the Horne mine of Noranda Mines, Limited, which hoists and treats 6,000 tons of ore a day, recovering copper, gold, silver, selenium, and tellurium. Some 40 per cent of the ore goes direct to the smelter and the balance is concentrated before smelting.

Mines of this class which resumed production in 1937 following intermittent periods of idleness when prices of base-metals were too low for profitable operation, were: the Aldermac, in Beauchastel township (copper, gold, and pyrite); the Waite and Amulet mines, operated by Waite Amulet Mines, in Dufresnoy; and the Normetal mine, in Desmeloizes. Considerable work was done on another deposit of complex ore, of zinc and gold, discovered in the spring of 1937 by diamond drilling on the property of Quebec Manitou Mines, Limited, in Bourlamaque township. At the end of 1937 a three-compartment shaft had been sunk to a depth of 372 feet and lateral work was under way at the 210- and 360-foot horizons. It is reported that results were satisfactory, confirming the diamond-drill indications of the presence of a deposit of gold-bearing zincblende.

The Beattie mine started operating its roasting plant in October, 1937. The arsenical concentrate is now treated entirely at the mine instead of being shipped to the Tacoma smelter in Washington State. The mine is at present hoisting 1,750 tons of ore a day.

Several mines increased their mill capacity during the year. These included the Lamaque, to 1,000 tons; Sigma, to 520 tons; Stadacona, to 300 tons; and Canadian Malartic, to 700 tons.

Full details of mining operations in Western Quebec are given in the report of R. H. Taschereau, Inspector of Mines (see page 51).

DIVIDENDS PAID BY
MINING COMPANIES OPERATING IN WESTERN QUEBEC
(TO JANUARY 1ST, 1938)

COMPANY	AUTHORISED CAPITAL (shares)	DATE OF FIRST DIVIDEND	DIVIDENDS, 1937		TOTAL DIVIDENDS (To end of 1937)
			TOTAL	RATE PER SHARE	
Noranda Mines, Ltd.	2,250,000	Jan. 2nd, 1930	\$7,279,259.00	\$ 3.25	\$35,979,208.13
Siscoe Gold Mines, Ltd.	5,000,000	March 31st, 1932	1,021,293.20	\$ 0.22	4,984,761.46
McWatters Gold Mines, Ltd.	2,000,000	Dec. 18th, 1935	.....	.....	279,075.90
Beattie Gold Mines, Ltd.	5,000,000	June 1st, 1936	239,632.40	\$ 0.05	479,251.60
Sullivan Consolidated Mines, Ltd.	4,000,000	June 15th, 1937	200,000.00	\$ 0.05	200,000.00
Sigma Mines, Ltd.	3,000,000	Sept. 1st, 1937	30,000.00	\$ 0.01	30,000.00
Canadian Malartic Gold Mines, Ltd.	4,000,000	Sept. 8th, 1937	180,092.75	\$ 0.05	180,092.75

NON-METALLICS

Non-metallic minerals, commonly designated 'industrial minerals', produced in 1937 had a total value of \$17,232,860, the highest ever recorded.

To this total, asbestos contributed \$14,505,541, only slightly less than the record, established in 1920, of \$14,749,048. The high value in 1920, however, was due to the abnormally high prices that prevailed during, and in the years immediately following, the war. On a quantity basis, the 1937 sales and shipments of fibre, amounting to 410,024 tons, were far the largest in the history of the industry, exceeding by 34 per cent the previous peak of 306,055 tons in 1929.

There was great activity in all the asbestos mines. In the Thetford district, the general tendency is to change from open-cast to underground methods of mining, the hoisting being done by vertical shafts. The method favoured is that of 'block caving', as practised at the King mine of the Asbestos Corporation.

Increased production of non-metallics was by no means confined to asbestos. It featured almost the entire list, only 3 of the 14 items appearing in the table showing a lower output than in 1936.

BUILDING MATERIALS

The total value of mineral building-materials produced in 1937 was \$9,355,941, as compared with \$6,724,020 in 1936. Although this very substantial increase is encouraging as indicating improved conditions in the building industry, the output still remains far below the level of a decade ago, when it had a value of the order of \$17,000,000. Of last year's production, sand and gravel, used for road building, accounted for \$2,637,495.

MINING TITLES ISSUED and REVENUES RECEIVED

The accompanying tables, prepared by J. X. Mercier, chief of the Administrative Division of the Bureau, give the number of the various mining titles issued by the Bureau of Mines during the fiscal years 1935-36 and 1936-37, ending June 30th, and a statement of the statutory work done on lands held under claims and development licenses (1).

TABLE OF VARIOUS TITLES ISSUED BY THE BUREAU OF MINES, 1935-1937
(Fiscal years ending June 30th)

DESIGNATION OF TITLE	FISCAL YEAR 1935-36	FISCAL YEAR 1936-37
Claims recorded, Amos	5,595	13,116
" " Noranda	3,964	6,470
" " Quebec	3,403	4,237
TOTAL	12,962	23,823
Miners' certificates issued	4,043	7,099
Mining licenses issued	525	954
" renewed	1,245	1,313 (1)
Development licenses issued		131 (1)
" renewed		
Mining concessions	5	2
Transfer of titles	1,078	2,400
Reports of work, days reported	528,202	867,479
" " " diamond drilling, feet	127,784	295,840

(1) In conformity with the amendments to the Mining Act, beginning with May 27th, 1937, the Bureau of Mines ceased to issue "mining licenses". These titles have been replaced by "development licenses".

The statement relating to the revenue collected by the Bureau of Mines in the fiscal years 1934-35, 1935-36, and 1936-37, was compiled by Robert Samson, accountant.

TITLES ISSUED SINCE 1920-21
(Fiscal years)

FISCAL YEAR	NUMBER OF MINERS' CERTIFICATES	NUMBER OF CLAIMS RECORDED	NUMBER OF MINING AND DEVELOPMENT LICENSES	MINING CONCESSIONS		TRANSFERS OF MINING RIGHTS
				NUMBER	ACRES	
1920-21.....	493	335	212	5	464	41
1921-22.....	509	321	195	4	801	33
1922-23.....	1,973	1,183	238	8	602	210
1923-24.....	1,928	1,750	635	9	1,517	430
1924-25.....	2,239	5,143	1,045	17	3,698	729
1925-26.....	3,315	9,407	1,074	8	1,733	1,152
1926-27.....	3,799	12,686	1,467	33	7,249	1,155
1927-28.....	4,090	13,707	2,290	20	6,640	1,227
1928-29.....	3,086	9,544	2,177	16	5,803	839
1929-30.....	2,500	8,245	1,607	2	1,049	640
1930-31.....	1,981	6,034	1,341	3	967	855
1931-32.....	2,324	8,108	906	4	1,940	425
1932-33.....	3,178	11,211	1,065	4	2,578	908
1933-34.....	3,002	10,915	1,557	4	2,627	940
1934-35.....	3,395	11,397	1,680	9	3,541	987
1935-36.....	4,043	12,962	1,770	5	2,233	1,078
1936-37.....	7,099	23,823	2,398	2	990	2,400

COMPARATIVE STATEMENT OF STATUTORY WORK DONE ON CLAIMS AND DEVELOPMENT LICENSES, 1931-1937
(Calendar years)

CALENDAR YEAR	NUMBER OF DAYS' WORK	FOOTAGE OF DIAMOND-DRILL HOLES
1931.....	124,050	23,486
1932.....	184,815	44,873
1933.....	263,900	49,899
1934.....	500,502	123,237
1935.....	542,094	146,425
1936.....	730,295	202,623
1937.....	910,088	434,903

COMPARATIVE STATEMENT OF REVENUE COLLECTED BY THE BUREAU OF MINES, 1934-37
(Fiscal years ending June 30th)

SOURCE OF REVENUE	1934-35	1935-36	1936-37
Miners' certificates.....	\$ 34,440.00	\$ 39,185.00	\$ 72,720.00
Mining licenses.....	170,434.79	174,306.51	297,385.10
Mining concessions.....	28,581.45	5,550.96	16,200.10
Transfer of titles.....	9,870.00	10,780.00	25,570.00
Dues on mining concessions.....	2,026.68	1,742.77	5,802.10
Dues on village lots.....	5,677.13	16,701.25	13,053.25
Dues on profits of mines.....	370,895.26	619,341.70	1,009,891.12
Miscellaneous:			
Sale of maps and blue-prints.....	1,371.77	1,604.17	3,375.37
Mineral collections.....	618.00	681.86	714.50
Assay fees.....	1,042.55	3,445.82	2,611.35
Casual revenue.....	32.35		

GEOLOGICAL FIELD-WORK and REPORTS

During the field season of 1936, geological work was carried on in various sections of the Province by ten Bureau of Mines parties under the general direction of Dr. John A. Dresser. The officers in charge of these parties, and the areas studied, are indicated in the list below. Reports, with accompanying maps, giving the results of these investigations were included in Parts *B*, *C*, *D*, and *E* of the Annual Report of the Bureau for 1936, with the exception of one, which was issued separately as an advance Preliminary Report early in the year.

- L. V. Bell*..... Mining properties and development in the Rouyn-Bell River district (Publication *P.R. No. 116*).
- Bertrand T. Denis*..... Simard (Expanse) Lake map-area, Témiscamingue county (Part *B*).
- I. W. Jones*..... Mount Alexander area, Gaspé county (Part *D*).
- G. S. MacKenzie*..... Mining properties in the District of Abitibi (Part *A*).
- G. Vibert Douglas*..... Bruneau map-area, Abitibi district (Part *B*).
- W. W. Longley*..... Grevet (Kamshigama Lake) map-area, Abitibi district (Part *B*).
- Abbé J. W. Laverdière*... Sainte-Anne River area, Portneuf county (Part *D*).
- Carl Faessler*..... Suzor-Letondal map-area, in Laviolette, Saint-Maurice, and Abitibi counties (Part *B*).
- F. Fitz Osborne*..... Lachute map-area: I.—General and economic geology (Part *C*).
- Magnésitic-dolomite, Grenville township (Part *C*).
- II. W. McGerrigle*..... Lachute map-area: II.—The lowland area (Part *C*).
- Sand and gravel resources (including moulding sand) of Verchères, Saint-Hyacinthe, Bagot and surrounding counties (Part *E*).

The programme of geological field-work carried out during 1937 is indicated below. Reports on the several areas examined will be issued separately as a new series of publications designated "Geological Reports", each with a serial number. These volumes will be accompanied by geological maps.

- Bertrand T. Denis*..... Geology of mineral deposits of central part of Bourlamaque, and examination of mining properties in vicinity, Abitibi county.
- I. W. Jones*..... Detailed geological structure of York River area, Gaspé South, with reference to oil possibilities.
- II. W. McGerrigle*..... Detailed geological structure of Saint-John River area, Gaspé South.
- G. Vibert Douglas*..... Geology of ore deposits of Ascot township, Sherbrooke county.
- Carl Faessler*..... Geology of Marlow and Risborough townships, Brome and Frontenac counties.
- Paul E. Auger*..... Geology of Bigniba River area, Abitibi Territory.
- W. W. Longley*..... Geology of Fraser-Laas area, Abitibi Territory.
- Abbé J. W. Laverdière*... Study of certain geological structures of Appalachian folding between Lévis and Gaspé.
- G. S. MacKenzie*..... Geology of southwestern part of Beauchastel township, Témiscamingue county.
- S. H. Ross*..... Geology of Launay township and examination of mining properties adjacent to Canadian National railway, Abitibi county.



CHEMICAL and RESEARCH LABORATORIES

During the fiscal year 1936-37, the laboratories of the Bureau of Mines analysed or examined 7,400 mineral samples, which entailed 11,741 assays, analyses, and determinations. This work was carried out in the three laboratories, located respectively in Quebec City, Montreal, and Thetford Mines, under the general direction of Maurice Archambault, chemical engineer.

TABULAR STATEMENT OF LABORATORY WORK,
FISCAL YEAR 1936-37

	SAMPLES RECEIVED	ASSAYS AND ANALYSES	QUALITATIVE EXAMINATIONS
Bureau of Mines, Quebec.....	3,829	3,312	3,314
Ecole Polytechnique, Montreal.....	3,295	3,820	583
Bureau of Mines, Thetford.....	276	712	.....

The main laboratory, in Quebec City, was moved in December, 1936, to its new quarters, in Annex *E* of the Parliament Buildings. This annex is located on Saint-Augustin Street. The re-installation of this laboratory entailed the suspension of analytical work during the first three months of 1937. The new laboratories, comprising eight separate rooms, occupy 4,000 square feet of floor space on the seventh floor of the building. One of them is specially equipped for work in spectrography. The lighting of the laboratories is of the 'day-light' type. A most modern system of ventilation has been installed that will renew the air throughout the laboratories within the space of three to four minutes. All incoming air is filtered and its temperature can be closely regulated.

The Montreal laboratory of the Bureau of Mines, at 1430 Saint-Denis Street, was opened in July, 1911, and has been operating continuously since then.

The Thetford Mines laboratory functions almost exclusively for checking and standardizing mechanical testing equipment used in the classification of asbestos fibre and allied products.

DRAUGHTING and MAP-MAKING

In the course of the fiscal year 1936-37, the draughting staff was increased to nine by the appointment of five additional draughtsmen. Three are assigned to the compilation and drawing of maps and the preparation of sketches, diagrams and figures to illustrate the geological reports issued each year. The other six maintain up to date, on 275 tracings of townships, the staking and the surveying of mining claims, and are assigned to varied work, such as draughting in connection with mine roads, preliminary maps, etc. Following is a list of the geological and sketch maps made during the year, mostly for Parts *B*, *C*, *D*, and *E* of the Annual Report of the Bureau for 1935:

- 357—Consolidated Chibougamau Goldfields, main mineralized zones.
- 358—Consolidated Chibougamau Goldfields, plan of 250-ft. level.
- 359—Consolidated Chibougamau Goldfields, plan of 500-ft. level.

- 361—Greene-Stabell mine, surface geology.
- 362—Greene-Stabell mine, geology of 600-ft. level.
- 363—Sullivan mine, geology of 250-ft. level.
- 364—Sullivan mine, geology of 350-ft. level.
- 365—Shawkey mine, geology of 325-ft. level.
- 366—Shawkey mine, shaft section.
- 367—Gale mine, surface geology.
- 368—McIntyre Porcupine mine in Guillet township, vein No. 2.
- 369—McIntyre Porcupine mine in Guillet township, vein No. 11.
- 370—Lake Rose Mines, Ltd., surface geology.
- 383—Bruneau area (preliminary), Abitibi Territory.
- 384—Quévillon area (preliminary), Abitibi Territory.
- 385—Area north and east of Guillet township (preliminary), Témiscamingue county.
- 386—Survey of the Lake Rose Mines property, Abitibi Territory.
- 387—Mineralized zone on lot 65, range III, Bartouille township, Abitibi.
- 388—Mineralized zone in lots 25, 26, range V, township of Delestre, Abitibi.
- 390—Mining properties in Western Quebec. This map shows the location of 290 mining properties in the Rouyn-Bell River area.

LEGISLATION

During the fiscal year 1936-37, the Legislature held two sessions, in October, 1936, and February, 1937, at both of which important Acts respecting the mining industry were presented and adopted.

Of these Acts, one provides for the organization of a Department of Mines and Fisheries, of which the Honourable Onésime Gagnon, K.C., P.C., is the Minister. A second amends article 31-a of the Mining Act, which deals with the establishment of villages in mining regions. A third relates to the oil resources of Gaspé, and a fourth to the encouragement of the utilization of the peat bogs of the Province, this last measure being in charge of the Minister of Municipal Affairs, Trade and Commerce. All these Acts were sanctioned in the course of the last session of 1936.

At the end of the spring, 1937, session of the Legislature, the Lieutenant-Governor sanctioned five other laws which concern the mining industry. One of these, relating to the natural resources of the Province, states that after March, 1937, a company which is not wholly incorporated in virtue of a law of the Province, may not acquire any rights pertaining to the public domain, or which may revert to the Crown. A second law improves various dispositions of the Mining Act. A third is concerned with municipalities in mining districts, amending articles 31-a and 31-c, and adding 31-d. A fourth provides for a bounty on titaniferous iron ore mined and smelted in the Province. A fifth relates to the training of the youth of the Province, whereby they may be enabled to fill openings arising from the expansion of our mining industry.

MINING VILLAGES

The rapid development of mining operations in the Province has given rise to numerous problems and needs in new mining districts. Among these, the problem of housing a fast-growing population is one that calls most urgently for attention.

Burroughs Pelletier, civil engineer on the staff of the Bureau of Mines, supervises the work of the Department in the establishment of villages

and settlements in mining regions. The following have been the object of particular attention during the fiscal year 1936-37:

A special Bill was adopted in 1936, during the last session of the Legislature, incorporating the new town of *Val d'Or*.

The increase in population of the town of *Bowlamaque* made necessary the provision of additional building lots.

A village, named *Malartic*, was established on a section of the Canadian Malartic concession, in the vicinity of the Canadian Malartic and Sladen Malartic mines. The site was furnished by Canadian Malartic Gold Mines.

The development of several mines in Cadillac township—the O'Brien, Thompson Cadillac, Kewagama, and others—rendered urgent the establishment of a village in that area. A site between the provincial highway and the railway to the south of it was decided upon as being the most suitable. This village has been named *Cadillac*.

To the south of Rouyn, an agglomeration of houses and other construction has arisen, which locally is known as *Stadacona* village. This state of affairs should be regularized, and the Department is now studying the question.

MINE ROADS

During the fiscal year 1936-37, the Bureau extended appreciably the network of roads built to serve the mining regions of the Province. By the end of June, 1937, the mileage of these roads had reached a total of 724.55 miles, or 194 miles more than in June, 1936. Expenditure for this purpose during the year was \$586,403.46, which brought the total cost of mine roads constructed to the end of June, 1937, to \$3,137,168.10.

The mine roads constructed, improved, and maintained during the year may be classed as follows:

(1) Roads constructed and improved with funds from Bureau of Mines appropriations.

(2) Roads constructed and improved in virtue of an agreement between the Federal Government and the Government of the Province of Quebec, whereby the former paid two-thirds of the cost and the latter one-third.

(3) Winter roads opened and maintained at the expense of the Bureau of Mines.

ROADS CONSTRUCTED WITH PROVINCIAL APPROPRIATIONS:

Under this item, the Bureau of Mines spent \$12,946.16 for the construction and the improvement of the following roads:

Lemieux Township.—Maintenance of Federal Mine road.

Malartic Township.—Maintenance of road to Pan Canadian mine.

Bousquet Township.—Cutting of road to Mooshla mine.

Louvicourt Township.—Maintenance of road to Cournor mine.

Cadillac Township.—Maintenance of road to Dempsey-Cadillac mine.

Portland-West Township.—Construction of road to High Rock mine.

Desmeloizes Township.—Maintenance of road to Normetal mine.

ROADS CONSTRUCTED BY FEDERAL-PROVINCIAL AGREEMENT:

The amount spent in virtue of this agreement was \$472,750.34, of which sum the Federal Government contributed \$315,166.89, and the Provincial Government \$157,583.45. Mine-road construction under this appropriation was as follows:

Latulipe, Blondeau, and Guillet Townships.—From the village of Latulipe to Belleterre mine, in Guillet township, Témiscamingue county.

Malartic Township.—Malartic section of the Rouyn-Louvicourt road, Abitibi county.

Fourrière, Dubuisson, Bourlamaque, and Louvicourt Townships.—Construction in three sections of the Rouyn-Louvicourt highway, Abitibi county.

Louvicourt Township.—Cutting and clearing road connecting Cournor, Perron, and Beaufor mines with the Rouyn-Louvicourt highway, Abitibi county.

MAINTENANCE AND CONSTRUCTION OF MINE WINTER-ROADS:

(a) *Construction of Winter Roads.*—In the course of the fiscal year 1936-37, the Bureau of Mines cut, cleared, and opened to winter traffic the two roads following, at the total cost of \$92,706.63:

Duverny Township.—Cutting and clearing a road along the line between the ranges V and VI.

From Dufferin Township to McKenzie Township.—Cutting and clearing a road connecting Notre-Dame-de-la-Doré, Lake Saint-Jean, with the Chibougamau region, for a length of approximately 135 miles.

(b) *Maintenance of Winter Roads.*—During the winter 1936-37, the Bureau of Mines expended the sum of \$7,000 on maintenance of the road which connects Amos with Val d'Or, in Abitibi county, and of the road which connects Arntfield-Rouyn and Val d'Or, counties of Témiscamingue and Abitibi.

In the course of the fiscal year, the Department of Mines and Fisheries formed its own organization for the construction of mine roads. This branch, which is in charge of Léon A. St-Pierre, civil engineer, will in future superintend all road work intended to further the development of the mineral resources of the Province.

SCHOLARSHIPS and PLANS FOR TRAINING SCHOOLS

Convinced that mining is destined to fill an increasingly important rôle in the industrial and economic life of the Province, and having noted also that there is at present available in the Province a totally inadequate number of mining engineers to take advantage of, and assist, this development, the Department of Mines and Fisheries, in September, 1936, took definite steps to encourage the training of mining engineers by granting a number of scholarships. Provision was made for thirty bursaries, which were awarded on recommendation of a Committee appointed by the Minister of Mines. The members of this Committee were: A. O. Dufresne, Director of the Bureau of Mines, chairman; Abbé J.-W. Lavergnière, D. Sc., Professor of Geology at Laval University; Adrien Pouliot, Professor at Laval University; T.-C. Denis, Technologist of the Bureau of Mines; and Charles Bilodeau, secretary. Applicants for bursaries were required to furnish recommendations from the colleges or institutions from which they had graduated, and also to produce certificates from

responsible persons, declaring that the financial resources of their parents did not permit them to send their sons to a university where they might continue their engineering studies. Of the thirty students to whom bursaries were awarded, ten entered École Polytechnique; eight the École Supérieure de Chimie, eight Queen's University, and four McGill University.

As a further part of this educational scheme, the Bureau of Mines, in 1937, was considering the organization of a *Mine-School* for the purpose of training unemployed young men in manual mining work, with a view to their qualifying themselves to obtain remunerative employment as hard-rock miners in the mines of the Province. The realization of this project may necessitate the acquisition, by the Bureau of Mines, of a mining property, which would then have to be equipped for carrying on practical training in underground operations such as mucking, drilling, timbering, drifting, raising, stoping and tramming—in brief, all the work required of a practical miner. Such a mine-school has already been established in Nova Scotia and is giving excellent results.

Of special interest is the announcement that, in the closing months of 1937, the Provincial government was giving serious thought to the expediency of assisting in the foundation of a *School of Mines and Geology* in connection with one of the Universities in the Province, where French-Canadian students could take a full mining and metallurgical course and graduate as mining and metallurgical engineers.

LECTURE COURSES FOR PROSPECTORS

As has been the practice now for a number of years, the Bureau conducted, in the first six months of the year, a series of courses for prospectors. In these classes, instruction is given in elementary mineralogy and in the principles of geology, particularly as applied in the search for mineral deposits.

The lecturers were B. T. Denis and Henri Girard, of the Bureau of Mines staff; Paul d'Aragon, mining engineer; Abbé J.-W. Laverdière, Professor of Geology at Laval University; Professor A. Mailhiot, of École Polytechnique; and Léo Brossard. In all, 343 lectures were given, in 28 centres distributed through 17 counties. Some 1,510 individuals took these courses, and the aggregate attendance was 14,036.

In order to aid prospectors and others in the study of mineralogy and geology, the Bureau of Mines supplies, at a nominal price, a collection of 40 minerals and 30 rocks, together with a bound volume of *The Prospectors' Handbook*, and a pamphlet entitled *Notions Elementaires de Minéralogie*.

PUBLICATIONS

The main publication of the Bureau is the *Annual Report*. Formerly a single volume, this report was issued during the years 1929 to 1936, inclusive, in five separate parts. Part *A*, the administrative report, reviewed mining operations during the year and contained statistics of production, employment, accidents, etc. Parts *B*, *C*, *D*, and *E* were devoted to reports on the geology of the various areas examined during the year by officers of the Bureau.

LECTURE COURSES FOR PROSPECTORS
FEBRUARY TO JULY, 1937

LOCALITY	NUMBER OF LECTURES	TOTAL ATTEND- ANCE	LECTURER
Amos, Abitibi.....	27	512	Paul d'Aragon
Amos, Abitibi.....	3	38	B. T. Denis
La Reine, Abitibi.....	12	190	Léo Brossard
Macamic, Abitibi.....	12	244	Léo Brossard
Senneterre, Abitibi.....	12	181	Léo Brossard
Val d'Or, Abitibi.....	3	430	B. T. Denis
Matapédia, Bonaventure.....	12	331	Léo Brossard
Saint-Charles de Caplan, Bonaventure.....	12	182	Léo Brossard
Bagotville, Chicoutimi.....	12	576	Abbé J. W. Laverdière
Chicoutimi, Chicoutimi.....	12	575	Abbé J. W. Laverdière
Mégantic, Frontenac.....	16	635	Henri Girard
Mont-Louis, Gaspé-North.....	6	211	Abbé J. W. Laverdière
Sainte-Anne-des-Monts, Gaspé-North.....	6	346	Abbé J. W. Laverdière
Chandler, Gaspé-South.....	6	405	Abbé J. W. Laverdière
Saint-Jérôme-de-Métabetchouan, Lac Saint-Jean.....	12	541	Abbé J. W. Laverdière
La Tuque, L'avoilette.....	12	826	Abbé J. W. Laverdière
Matane, Matane.....	12	215	Léo Brossard
Mont-Joli, Matane.....	12	376	Léo Brossard
Amqui, Matapédia.....	12	655	Léo Brossard
Thetford Mines, Mégantic.....	9	105	Henri Girard
Saint-Félicien, Roberval.....	12	428	Abbé J. W. Laverdière
Montreal.....	17	2,490	Adhémar Mailhiot
Montreal.....	3	650	B. T. Denis
Trois-Rivières.....	12	1,032	Paul d'Aragon
Quebec City.....	12	992	Abbé J. W. Laverdière
Lorrainville, Témiscamingue.....	12	219	Léo Brossard
Rouyn, Témiscamingue.....	24	202	Paul d'Aragon
Rouyn, Témiscamingue.....	3	140	B. T. Denis
Témiscamingue-Nord, Témiscamingue.....	12	139	Léo Brossard
D'Israeli, Wolfe.....	10	170	Henri Girard
TOTALS: (28 localities, 17 counties).....	343	14,036	6 lecturers

Starting with 1937, the Bureau changed the mode of publication of these reports, in order to facilitate their issue as promptly as possible after the close of the year and at the same time to ensure their more effective distribution to the interested public. The report on mining activities and the statistics of mineral production will in future be published in a volume entitled *Mining Industry and Statistics* for the year concerned. The results of the geological field investigations and of allied work will be issued in separate volumes, each report as soon as ready, these volumes constituting a consecutively numbered series of *Geological Reports*.

Other publications of the Bureau include *Preliminary Reports* on areas of particular importance, prepared and made available as soon as possible after the close of the field season; and monthly and quarterly *Bulletins* on mineral production. These will be issued as heretofore.

Besides these official publications, officers of the Bureau contribute each year, to newspapers and technical and other journals, numerous articles relating to the mining industry of the Province. In the fiscal year 1936-37, thirty-seven or more such articles appeared, representing a total of some 34,000 words.

All Bureau publications are issued in both French and English. The work of editing and translating the reports, and preparing them for publication, is carried out by Albert Côté, Raymond Lesage, J. T. Laroche, and R. Graham.

EXHIBITIONS

During the fiscal year, the Bureau of Mines took part in the following exhibitions:

The Canada Great Eastern Exhibition, held at Sherbrooke from August 28th to September 4th, 1936.

The Provincial Exhibition, held at Quebec City from September 5th to the 12th.

Exhibition of *L'Association Canadienne-Française des Aveugles*, Montreal, October 15th to 24th.

Commercial and Industrial Exhibition of Trois-Rivières, November 18th to 26th.

It is gratifying to mention that the public attending these exhibitions take a keen interest in our mineral resources. They realize the constantly increasing importance of their development, and the remarkable growth of our mining industry.

COMPANY INCORPORATIONS

One hundred and thirty-three new mining companies were incorporated in the Province of Quebec in 1936. In addition, fifty-four mining companies that were incorporated in the Province of Ontario in 1936 acquired mining rights in the Province of Quebec, as also did five companies that were incorporated in 1936 by Letters Patent of the Federal Government.

Particulars of these incorporations are given in the accompanying tables.

MINING COMPANIES INCORPORATED IN THE PROVINCE OF QUEBEC
IN 1936

NAME OF COMPANY	HEAD OFFICE	DATE OF INCORPORATION	NO. OF SHARES
Abitibi Explorers, Ltd.	Amos	June 25th, 1936	19,000
Acme Cadillac Gold Mines, Ltd.	Montreal	Oct. 26th, 1936	3,000,000
Amos Duverny Gold Mines, Ltd.	Montreal	Sept. 24th, 1936	3,000,000
Arnceur Gold Mines, Ltd.	Arntfield	Sept. 28th, 1936	3,000,000
Atlas Mines, Ltd.	Montreal	May 2nd, 1936	99,000
Auriac Mines, Ltd.	Montreal	May 19th, 1936	3,000,000
Bapoma Bousquet Gold Mines, Ltd.	Montreal	Oct. 31st, 1936	3,000,000
Barraute Mining Co. Ltd.	Montreal	Oct. 15th, 1936	199,999
Barry Lake Gold Mines, Ltd.	Quebec	Oct. 11th, 1936	1,900
Basin Gold Mining Corporation	Montreal	Aug. 25th, 1936	3,500,000
Bayside Malartic Mines, Ltd.	Montreal	Dec. 23rd, 1936	3,000,000
Beaucourt Gold Mines, Ltd.	Montreal	Oct. 10th, 1936	3,000,000
Bell Asbestos Mines, Ltd.	Thetford Mines	Nov. 20th, 1936	10,000
Bernard Cadillac Gold Mines, Ltd.	Montreal	Dec. 5th, 1936	3,000,000
Bourlamaque Gold Developments, Ltd.	Montreal	Jan. 20th, 1936	2,250
Bowes Gold Mines, Ltd.	Rouyn	April 1st, 1936	2,000,000
British Guiana Mining Corporation	Montreal	Feb. 4th, 1936	250,000
Brown Cadillac Gold Mines, Ltd.	Montreal	Nov. 7th, 1936	3,000,000
Burwell Gold Mines, Ltd.	Montreal	Aug. 18th, 1936	3,000,000
Cache Lake Chibougamau Mines, Ltd.	Montreal	Sept. 24th, 1936	3,500,000
Canadian American Development Company	Montreal	Sept. 30th, 1936	99,000
Carrière Gravel, Ltée (La)	Château-Richer	May 19th, 1936	200
Carrière St-Barthélemi, Ltée	Saint-Barthélemi	Feb. 22nd, 1936	200
Carrière St-Marc, Ltée	Saint-Marc-des-Carières	Oct. 15th, 1936	160
Cassels Chibougamau Mines, Ltd.	Montreal	Feb. 11th, 1936	3,000,000
Cavalier Cadillac Gold Mines, Ltd.	Montreal	Dec. 29th, 1936	3,000,000
Central Cadillac Gold Mines, Ltd.	Montreal	July 16th, 1936	3,000,000

MINING COMPANIES INCORPORATED IN THE PROVINCE OF QUEBEC
IN 1936.—Continued

NAME OF COMPANY	HEAD OFFICE	DATE OF INCORPORATION	NO. OF SHARES
Central Chibougamau Gold Mines, Ltd.	Montreal	Sept. 30th, 1936	3,000,000
Central Duvernay Gold Mines, Ltd.	Montreal	Nov. 23rd, 1936	4,000,000
Central Louvicourt Gold Mines, Ltd.	Montreal	Dec. 29th, 1936	3,000,000
Centremaque Gold Mines, Ltd.	Montreal	Dec. 5th, 1936	3,000,000
Century Mining Corporation, Ltd.	Montreal	June 20th, 1936	3,000,000
Chibmac Mines, Ltd.	Montreal	Mar. 20th, 1936	3,000,000
Chibougamau North Gold Mining Corp'n.	Quebec	Dec. 30th, 1936	3,000,000
Chibougamau Peninsula Mines Co., Ltd.	Montreal	May 23rd, 1936	3,000,000
Chibougamau Properties, Ltd.	Montreal	Mar. 11th, 1936	99,950
Chibougamau Ventures, Ltd.	Quebec	Oct. 12th, 1936	599,999
Christie Mining Syndicate, Inc.	Christie Twp.	May 1st, 1936	49,800
Colonial Gold Mines, Ltd.	Montreal	May 23rd, 1936	3,000,000
Compagnie d'Eau Minérale Paski (La)	Quebec	Nov. 24th, 1936	200
Cie Minière Mirador (La)	Montreal	Oct. 19th, 1936	3,000,000
Consolidated Mines & Finance, Ltd.	Montreal	Nov. 5th, 1936	199,900
Continental Exploration, Ltd.	Montreal	Dec. 31st, 1936	45,000
Coronation Gold Mines, Ltd.	Montreal	Dec. 23rd, 1936	20,000
Courvak Gold Mines, Ltd.	Montreal	July 10th, 1936	3,000,000
Cromir Exploration Company.	Montreal	July 30th, 1936	99,000
Crown Point Gold Mines Co., Ltd.	Montreal	Sept. 24th, 1936	3,000,000
Daubree Gold Mines, Ltd.	Montreal	Nov. 23rd, 1936	3,000,000
Dean-Cadillac Mining Corporation.	Montreal	Aug. 18th, 1936	3,000,000
Descar Corporation, Ltd.	Montreal	Mar. 28th, 1936	3,000,000
Drummond Quarry, Ltd.	Drummondville	July 28th, 1936	200
Dubuisson Goldfields, Ltd.	Montreal	Oct. 10th, 1936	3,000,000
Dumico Gold Corporation	Montreal	Mar. 7th, 1936	5,000,000
Duver Creek Gold Mines, Ltd.	Montreal	Sept. 8th, 1936	3,500,000
East Cadillac Syndicate, Ltd.	Montreal	Oct. 13th, 1936	4,000
Embergold Mines, Ltd.	Montreal	Aug. 14th, 1936	1,500,000
Flavrian Gold Mines, Ltd.	Noranda	Dec. 1st, 1936	3,500,000
Fontana Gold Mines, Ltd.	Montreal	Sept. 16th, 1936	3,000,000
Ford Cadillac Gold Mines, Ltd.	Montreal	Dec. 23rd, 1936	3,000,000
Freegold Mines, Ltd.	Montreal	Mar. 20th, 1936	3,000,000
Garipey Gold Mining, Co. Ltd.	Montreal	May 11th, 1936	20,000
Gold Mining Financial Corporation.	Quebec	Sept. 1st, 1936	5,000,000
Gold Valley Mines, Ltd.	Montreal	Feb. 26th, 1936	3,000,000
Grenfell Goldfields, Ltd.	Montreal	Sept. 4th, 1936	9,900
Inregold Prospectors, Ltd.	Rouyn	May 27th, 1936	20,000
Iroquois Gold Mining, Ltd.	Montreal	June 30th, 1936	2,000,000
Jacques-Cartier Mining Corporation	Montreal	April 14th, 1936	3,000,000
Jubilee Gold Exploration Syndicate.	Montreal	Jan. 29th, 1936	2,500
Lac Lemoine Mines, Inc.	Montreal	Feb. 14th, 1936	2,000
Lake Bousquet Gold Mines, Ltd.	Montreal	Dec. 24th, 1936	3,000,000
Lake Larone Gold Mines, Ltd.	Chicoutimi	June 9th, 1936	40,000
Lake Montigny Gold Mines, Ltd.	Montreal	July 13th, 1936	3,000,000
Lake Routhier Gold Mines, Ltd.	Montreal	May 23rd, 1936	3,500,000
Landry Mines, Ltée.	Mont-Joli	Nov. 4th, 1936	99,000
LaPause Gold Mining Corporation, Ltd.	Montreal	Dec. 23rd, 1936	4,000,000
La Salle Gold Mines, Ltd.	Montreal	Sept. 24th, 1936	3,000,000
Laval Bousquet Gold Mines, Ltd.	Montreal	Dec. 24th, 1936	3,000,000
Lessard Siscoe Gold Mines, Ltd.	Montreal	June 3rd, 1936	3,000,000
Louvest Gold Mines, Ltd.	Montreal	Sept. 3rd, 1936	3,000,000
Macdonald Mines, Ltd.	Montreal	Dec. 23rd, 1936	3,000,000
McRae Gold Mines, Ltd.	Montreal	Oct. 13th, 1936	5,000,000
Mainland Chibougamau Mines, Ltd.	Montreal	Nov. 28th, 1936	600,000
Malartic Lakeshore Mines, Ltd.	Montreal	Mar. 16th, 1936	2,000,000
Maleo Explorations, Ltd.	Montreal	Sept. 3rd, 1936	300
Maurice Exploration Co., Ltd.	Montreal	July 17th, 1936	1,990
Minéraux et Pétrole de Gaspé Compagnie, Ltée.	Saint-Joachim-de-Tourelle	Jan. 30th, 1936	1,000,000
Mineseeker Forgold, Ltd.	Rouyn	Feb. 26th, 1936	20,000
Montreal Terra Coita, Ltd.	Montreal	June 22nd, 1936	490
Numaque Mining Company.	Montreal	June 12th, 1936	3,000,000
Peninsula Mines, Ltd.	Montreal	Nov. 28th, 1936	30,000
Penn Cadillac Gold Mines, Ltd.	Montreal	Nov. 28th, 1936	3,000,000
Paindor Mines Company.	Montreal	April 4th, 1936	3,000,000
Power & Mines, Ltd.	Montreal	April 29th, 1936	303,353
Pre-Cambrian Explorers, Ltd.	Montreal	July 10th, 1936	199,000
Primont Exploration, Ltd.	Montreal	Nov. 9th, 1936	49,999
Quemaque Gold Mines, Ltd.	Quebec	Dec. 12th, 1936	3,000,000
Radio Prospectors, Ltd.	Bourmont	Oct. 3rd, 1936	20,000
Ramsey Gold Mines, Ltd.	Quebec	Sept. 11th, 1936	10,000
Richard Exploration Co., Ltd.	Montreal	Sept. 5th, 1936	200

MINING COMPANIES INCORPORATED IN THE PROVINCE OF QUEBEC
IN 1936.—Continued

NAME OF COMPANY	HEAD OFFICE	DATE OF INCORPORATION	NO. OF SHARES
Rochette Gold Mines, Ltd.	Taschereau	July 8th, 1936	3,000,000
Routhier Cadillac Gold Mines, Ltd.	Montreal	May 23rd, 1936	3,500,000
Rowan-Red Lake Gold Mines, Ltd.	Montreal	June 10th, 1936	3,000,000
Roy Chibougamau Mining Co., Ltd.	Quebec	April 22nd, 1926	229,000
Rush Lake Gold Mines, Ltd.	Montreal	Feb. 5th, 1936	49,900
Saint-Jude Gold Mines, Ltd.	Montreal	July 6th, 1936	3,000,000
Saint-Pierre Cadillac Gold Mines, Ltd.	Montreal	Aug. 21st, 1936	3,000,000
Sandlac Gold Mines, Ltd.	Montreal	July 17th, 1936	3,000,000
Scott Chibougamau Mines, Ltd.	Montreal	Oct. 5th, 1936	3,000,000
Senneterre Prospectors, Ltd.	Amos	May 13th, 1936	190,000
Shield Mining Co., Ltd.	Noranda	June 5th, 1936	20,000
Sim-Clere Gold Mines, Ltd.	Montreal	Aug. 10th, 1936	3,000,000
South Lamaque Gold Mines, Ltd.	Quebec	July 29th, 1936	3,000,000
South Malartic Gold Mines	Montreal	July 29th, 1936	3,000,000
Solidor Mines, Ltd.	Montreal	Aug. 29th, 1936	20,000
Stadore Gold Corporation.	Montreal	July 2nd, 1936	3,000,000
Syndicat des Mines d'Or Matchi-Manitou, Ltée.	Quebec	Sept. 10th, 1936	14,900
Thompson Bousquet Gold Mines, Ltd.	Montreal	Oct. 16th, 1936	3,000,000
True Fissure Mines, Ltd.	Montreal	May 12th, 1936	3,500,000
Trout Creek Gold Mines, Ltd.	Montreal	Sept. 8th, 1936	3,500,000
Twinlake Cadillac Gold Mines, Ltd.	Montreal	Nov. 4th, 1936	3,500,000
Twin Mac Gold Syndicate, Ltd.	Montreal	Dec. 15th, 1936	10,000
Valbec Exploration, Ltd.	Montreal	Aug. 22nd, 1936	800
Valco Cadillac Gold Mines, Ltd.	Quebec	Sept. 21st, 1936	3,000,000
Vega Gold Mines, Ltd.	Montreal	Sept. 11th, 1936	3,000,000
Vipond Cameron Mines, Ltd.	Montreal	Aug. 11th, 1936	3,000,000
Wahu Mines, Ltd.	Senneterre	June 26th, 1936	4,000,000
Wawbano Mines, Ltd.	Montreal	Jan. 22nd, 1936	3,000,000
Wellesborne Development, Ltd.	Montreal	July 16th, 1936	2,000
West Shore Malartic Gold Mines, Ltd.	Montreal	Jan. 13th, 1936	3,000,000
West Siscoe Gold Mines, Ltd.	Montreal	Oct. 22nd, 1936	3,000,000
Westwood Cadillac Mines, Ltd.	Montreal	Sept. 15th, 1936	3,500,000
Yates United Mines, Ltd.	Montreal	Dec. 1st, 1936	3,000,000
York Bousquet Gold Mines, Ltd.	Montreal	Dec. 21st, 1936	3,000,000

MINING COMPANIES, INCORPORATED IN 1936 IN THE PROVINCE OF ONTARIO, WHICH
HAVE ACQUIRED MINING RIGHTS IN THE PROVINCE OF QUEBEC

NAME OF COMPANY	HEAD OFFICE	DATE OF INCORPORATION	NO. OF SHARES
Admiral Cadillac Gold Mines, Ltd.	Toronto	Aug. 6th, 1936	3,000,000
Amm Gold Mines, Ltd.	Toronto	Aug. 7th, 1936	3,000,000
Amos-Cadillac Gold Mines, Ltd.	Toronto	Aug. 7th, 1936	3,000,000
Beauplace Mines, Ltd.	Toronto	Jan. 20th, 1936	100,000
Belleterre Mines, Ltd.	Toronto	May 19th, 1936	1,500,000
Berm Martyn Prospecting Co., Ltd.	New Liskeard	Feb. 6th, 1936	50,000
Bickleigh Mining Co. Ltd.	Toronto	July 20th, 1936	40,000
Bouscadillac Gold Mines, Ltd.	Toronto	July 2nd, 1936	3,000,000
Brownlee Mines (1936), Ltd.	Toronto	June 30th, 1936	3,000,000
Bruell Gold Mines (1936), Ltd.	Toronto	Oct. 8th, 1936	3,000,000
Candalaca Gold Mines, Ltd.	Toronto	July 28th, 1936	3,000,000
Ceres Explorations, Ltd.	Ottawa	Feb. 2nd, 1936	250,000
Commander Mines, Ltd.	Toronto	Nov. 30th, 1936	3,000,000
Coronation Cadillac Mines, Ltd.	Toronto	Nov. 27th, 1936	3,000,000
Dempey-Cadillac Gold Mines, Ltd.	Toronto	July 14th, 1936	3,000,000
Depada Gold Mines, Ltd.	Toronto	April 22nd, 1936	40,000
Donwell Gold, Ltd.	Toronto	June 26th, 1936	3,000,000
Doreva Gold Mines, Ltd.	Toronto	July 27th, 1936	3,000,000
Dubuque Mines, Ltd.	Timmins	April 2nd, 1936	40,000
Dubar Gold Mines, Ltd.	Edgewood, Rhode Island, U.S.A.	May 8th, 1936	2,000,000
Flobee Gold Mines, Ltd.	Toronto	Oct. 15th, 1936	3,000,000
Hayes Cadillac Mines, Ltd.	Toronto	July 23rd, 1936	3,000,000
Kewagama Gold Mines, Ltd.	Toronto	Oct. 7th, 1936	5,000,000
Kiask Falls Mining Co., Ltd.	Toronto	Aug. 5th, 1936	10,000
Kiena Gold Mines, Ltd.	Toronto	June 12th, 1936	3,000,000
Kirkfield Mines, Ltd.	Toronto	July 24th, 1936	3,000,000
Lake Dasserat Mines, Ltd.	Toronto	June 6th, 1936	100,000

MINING COMPANIES, INCORPORATED IN 1936 IN THE PROVINCE OF ONTARIO, WHICH
HAVE ACQUIRED MINING RIGHTS IN THE PROVINCE OF QUEBEC.—Continued

NAME OF COMPANY	HEAD OFFICE	DATE OF INCORPORATION	NO. OF SHARES
Lake Rose Mines, Ltd.	Toronto	Feb. 4th, 1936	3,000,000
Lakman Gold Mines, Ltd.	Toronto	May 1st, 1936	3,000,000
La Reine Gold Mines, Ltd.	Toronto	Sept. 15th, 1936	3,000,000
Macaboug Explorations, Ltd.	Toronto	Feb. 12th, 1936	500,000
Maritime Cadillac Gold Mines, Ltd.	Toronto	Oct. 14th, 1936	3,000,000
Marva Gold Mines, Ltd.	Toronto	Dec. 28th, 1936	3,000,000
Miska Mining Co., Ltd.	Toronto	April 2nd, 1936	20,000
Mooshla Gold Mines, Ltd.	Toronto	May 15th, 1936	3,000,000
Mud Lake Gold Mines, Ltd.	Toronto	Aug. 7th, 1936	3,000,000
Mylamaque Gold Mines, Ltd.	Toronto	July 31st, 1936	3,000,000
Olympic Cadillac Gold Mines, Ltd.	Toronto	Oct. 8th, 1936	3,000,000
Orcour Gold Mines, Ltd.	Toronto	Dec. 17th, 1936	10,000
Pandora Cadillac Gold Mines, Ltd.	New Liskeard	June 2nd, 1936	3,000,000
Partanen Malartic Gold Mines, Ltd.	Toronto	Nov. 28th, 1936	3,000,000
Pelletier Lake Gold Mines, Ltd.	Toronto	Sept. 22nd, 1936	3,000,000
Quebec Manitou Mines, Ltd.	Ottawa	Nov. 23rd, 1936	3,000,000
Quemartic Mines, Ltd.	Toronto	Dec. 18th, 1936	3,000,000
Que-On Mines, Ltd.	Toronto	June 12th, 1936	1,000,000
Senore Gold Mines, Ltd.	Toronto	June 30th, 1936	2,000,000
Siscoe Extension Gold, Ltd.	Toronto	Oct. 14th, 1936	3,000,000
Snowshoe Mines, Ltd.	Toronto	June 25th, 1936	3,000,000
Turno Cadillac Gold Mines, Ltd.	Toronto	Dec. 19th, 1936	3,000,000
Washington Gold Mines, Ltd.	Toronto	Dec. 21st, 1936	3,500,000
Wedding River Gold Mines, Ltd.	Toronto	Mar. 31st, 1936	3,000,000
West Flo Gold Mines, Ltd.	Toronto	Feb. 11th, 1936	50,000
Wisik Gold Mines, Ltd.	Toronto	June 17th, 1936	3,000,000
Ypres Cadillac Mines, Ltd.	Toronto	Oct. 1st, 1936	3,500,000

MINING COMPANIES, INCORPORATED IN 1936 BY LETTERS-PATENT OF THE FEDERAL
GOVERNMENT, WHICH HAVE ACQUIRED MINING RIGHTS IN THE
PROVINCE OF QUEBEC

NAME OF COMPANY	HEAD OFFICE	DATE OF INCORPORATION	NO. OF SHARES
Aldermac Copper Corporation, Ltd.	Montreal	Jan. 10th, 1936	5,000,000
Celta Development & Mining Co., Ltd.	Montreal	April 1st, 1936	3,000,000
Clerno Mines, Ltd.	Ottawa	June 30th, 1936	3,000,000
Norbeau Mines, Ltd.	Noranda	Jan. 8th, 1936	2,000,000
Orland Gold Mines, Ltd.	Ottawa	Oct. 16th, 1936	3,000,000

MINING OPERATIONS IN 1937

METALS

COPPER

Quebec's copper production in 1937 amounted to 94,653,135 pounds, valued at \$12,378,737. Both the quantity and value are well above the previous peaks, attained in 1930, of 80,310,363 pounds and \$10,425,891. Compared with 1936, the increase was approximately 43 per cent in quantity and 100 per cent in value.

The great increase in value was in part accounted for by the notable improvement in the price of copper on the London market, where most of the Quebec copper is sold, from an average of 9.477 cents per pound in 1936 to 13.078 cents in 1937. The price of the metal mounted steadily in the first three months of the year, following which there was a gradual decline which continued to the end of the year and into the early months of 1938.

As has been the case since 1928, the great bulk of the copper output came from Western Quebec, where four companies operating five mines reported production of copper in 1937. In addition, one copper mine in the Eastern Townships was active throughout the year.

QUEBEC PRODUCTION OF COPPER, 1925-1937

YEAR	QUANTITY (Pounds)	VALUE \$	YEAR	QUANTITY (Pounds)	VALUE \$
1925.....	2,628,417	\$ 277,083	1932.....	67,336,692	\$ 4,296,216
1926.....	2,674,058	368,886	1933.....	69,943,882	5,214,177
1927.....	3,119,848	407,146	1934.....	73,968,545	5,487,948
1928.....	33,697,949	4,909,792	1935.....	79,050,906	6,162,350
1929.....	55,337,169	10,109,901	1936.....	66,340,175	6,287,058
1930.....	80,310,363	10,425,891	1937.....	94,653,135	12,378,737
1931.....	68,376,985	5,723,154			

Producers in Western Quebec were: *Noranda Mines, Limited*, who operate the Horne mine and the Noranda smelter; the *Normetal Mining Corporation, Limited*, whose property, formerly the Abana, is in Desmeloizes township; the *Aldermac Copper Corporation, Limited*, in Beauchastel township, who produce from their ore a copper concentrate and a pyrite (sulphur ore) concentrate; and *Waite-Amulet Mines, Limited*, who operate two mines: the Amulet, in Dufresnoy township, with its complex zinc-copper-gold ore, and the Waite, in Duprat township, whose gold-copper ore is treated at the Noranda smelter. Operations at these and other Western Quebec mines are reviewed in the report of R. H. Taschereau, Inspector of Mines for the district (see page 51).

The other copper producer during 1937 was the *Consolidated Copper and Sulphur Company, Limited*, operating the Eustis mine, near Sherbrooke, in the Eastern Townships. This deposit was discovered in 1865 and it was first worked under the name Lower Canada mine, and later, Hartford mine. Production was intermittent from 1865 until 1879, but since the

latter year the mine has been in continuous operation and, to date, some 2,500,000 tons of ore have been raised. The mine is developed by two inclined shafts, one, at 41 degrees, extending from surface to the 6,350-ft. level, at which horizon No. 2 shaft, offset 50 feet from the other, continues at an average inclination of 45 degrees to the bottom of the mine, which, at the end of 1937, was at a depth of 7,196 feet. During the year, a fan was installed on the 7,060-ft. level, with the necessary gates to control the air current. The mill treated an average of 325 tons of ore per day. Improvements were made in the crushing and flotation systems.

During the year, *Quebec United Mines, Limited*, acquired the old Suffield property, comprising parts of lots 2, 3, and 4, range XI, of Ascot township. After being de-watered, the mine was examined and sampled by Herbert E. Corbett, consulting engineer for the Company.

GOLD AND SILVER

GOLD

The gold production of the Province of Quebec is steadily increasing; new peaks have been established in each of the past three years. The 1937 output reached 711,482 ounces, valued at \$24,894,755, exceeding the record of 1936 by 6½ per cent. The average price of gold for the year, in Canadian funds, was \$34.99 an ounce, four cents lower than in 1936. Gold contributed slightly more than 38 per cent of the total value of the mineral production for 1937, standing far in advance of any other item.

Reports of gold production were received from twenty-four mines, one in Portneuf county and all the remainder in the Rouyn-Harricana region of Western Quebec. In addition, a recovery of 10½ ounces of gold was reported from small-scale alluvial operations in the Beauce region.

In eighteen of the twenty-three Western Quebec mines which reported production of gold, the ores are of the gold-quartz type, from which only gold, and some silver, are recovered, by amalgamation and cyanidation. The remaining five mines operate on auriferous complex ores, which are smelted for recovery of base-metals as well as gold and silver. These latter mines are the *Horne*, *Aldermac*, *Normetal*, *Waite*, and *Amulet*. The Horne mine of Noranda Mines, Limited, is the largest individual contributor to the gold production of Quebec.

Details of gold mining operations and development work in Western Quebec in 1937 are given in the report of R. H. Taschereau, Inspector of Mines for that district (see page 51):

ALLUVIAL GOLD:

The small recovery of alluvial gold referred to above, amounting to about 10½ ounces, was from operations by individuals on the placer deposits of the Chaudière River basin, in Beauce county.

Landry Mines, Limited, of which Dr. L. P. Landry is president, did some exploration work on lot 879, range VI, of fief Cumberland of the Aubin de L'Isle Seigneurie, in Beauce county. Two short drifts were opened at the bottom of a shaft which had been sunk in 1936 to bedrock, at a depth of 80 feet. Washing of the sand from the drift showed the

presence of gold in small amount. Four to six men were working the greater part of the summer, but operations were discontinued early in September. The 'placer' is situated near the centre of lot 879, on the south side of Cumberland creek, which flows into the Famine river. On this lot there are traces of two old shafts, said to have been put down some 60 years ago.

Embergold Mines, Limited, continued exploration work on lot 14, range X, of Ditton township. This work consisted in drifting to the south and southeast of the main shaft. In the same township, on lot 43, range XI, Dr. Robert Harvie did some prospecting, mainly by trenching, on the Little Ditton river.

Fred Redfern, of Bishopton, did some work on lots 13 C and D, range V, of Dudswell township. Two shafts, 30 and 25 feet deep, respectively, and 400 feet apart, were put down close to the course of Osgoode brook. The first shaft struck a bed of sand carrying much pyrite, and the second was stopped in the heavy, grey clay.

SILVER

Production of silver in 1937 totalled 908,590 ounces, valued at \$407,784, as compared with 724,339 ounces valued at \$326,872 in 1936. The average price of the metal was 44.881 cents an ounce, slightly lower than in the previous year.

There are no silver mines, rightly speaking, known in the Province of Quebec. Our entire production of the metal is derived, as a by-product, from the treatment of ores that are mined primarily for metals other than silver. The copper-gold, zinc-gold, and gold-quartz ores of Western Quebec all contain some silver, as do the copper-sulphur ores of the Sherbrooke district and the zinc-lead ores of Portneuf county. It is from these sources that our production of silver is obtained.

LEAD

Returns of production, and shipments, of lead concentrate and ore were received from one producer, the *Tétreault Estate*, whose property is in Montauban township. The lead content of the shipments was 1,521,182 pounds, which, calculated on the average London market price of the metal, had a value of \$77,732. This lead ore and concentrate was shipped to European smelters for treatment, as there are no lead-smelting plants in eastern Canada.

Calumet Mines, Limited, Bryson, has taken over the properties of the Calumet Zinc & Lead Company, in range IV, Calumet island, Pontiac county. A contract was let by this operator to the Ontario Diamond Drilling Company for several thousand feet of diamond drilling. At the close of the year, 7,677 feet of core had been taken out.

SELENIUM

Selenium production in 1937 amounted to 208,531 pounds, valued at \$360,759, as against 168,417 pounds valued at \$298,098 in 1936. The

whole of this selenium is recovered as a by-product in the refining of copper produced from the copper-gold ore of the Horne mine, in Rouyn township. The raw (only partially refined) copper metal resulting from the Noranda smelter operations is cast into anodes, which are shipped to the plant of Canadian Copper Refiners, Limited, at Montreal East. The copper of the anodes is refined electrolytically, and the impurities, which include gold, silver, selenium, and tellurium, fall to the bottom of the electrolyte tanks with the slime. The slime is treated for the recovery of these four by-product metals, which also are refined at the Montreal East plant.

Selenium made its first appearance in our table of mineral production in 1933, in which year selenium, in the form of sludge, was shipped to the United States for further treatment. In the following year, the Montreal East plant commenced production of refined selenium and shipments have been maintained regularly since that time. Production from year to year is shown in the table on page 8.

The Province of Quebec is responsible for over 52 per cent of the Canadian production of selenium, the balance being contributed by three other provinces.

The average price of selenium on the London market in 1937 was \$1.73 per pound, as compared with \$1.77 in 1936. In New York, a nominal price of \$2.00 per pound for 99.5 per cent pure material prevailed throughout the year.

Consumption of selenium, for various uses, is increasing yearly. A large amount is absorbed in the glass industry, both as a colouring agent in the manufacture of ruby glass and as a decolorant to neutralize the effect of objectionable oxides. Other important uses are in the manufacture of stainless-steel alloys; in the making of photo-electric cells for the 'electric eye'; in the rubber industry, for vulcanizing and increasing resistance to abrasion; and in the manufacture of pigments and dyes. Further research is being carried out in all these applications with the object of finding new uses for selenium.

ZINC

The production of zinc in 1937 is estimated at 8,566,927 pounds, contained in shipments of zinc-ore concentrates made by two mines, the *Tétreault* in Portneuf county, and the *Amulet*, operated by Waite-Amulet Mines, Limited, in Western Quebec. The value, computed on the average London price of the metal during the year, was \$419,951. Corresponding figures for 1936 were 6,896,123 pounds valued at \$228,606. There was thus an increase of 24 per cent in quantity and 83 per cent in value. The price of spelter on the London market, converted into Canadian funds, improved from an average of 3.315 cents per pound in 1936 to 4.902 cents in 1937.

MISCELLANEOUS METALS

CHROMITE

The mining of chromite, the main ore of chromium, was quite an active industry between the years 1894 and 1908 in the Black Lake district, Mégantic county, but by 1910 and 1911 production had dwindled to a few

hundred tons and the mines closed down in 1912. With the demand for 'war minerals', chrome mining was resumed in 1915 and the production attained a peak in 1918, when 36,131 tons, valued at \$770,125, were shipped from the reopened mines.

For the past few years, small quantities of chromite have been recovered by the Asbestos Corporation at the Beaver mine, in Coleraine township, and shipped without concentration or other treatment. In 1937, the production was 210 tons, valued at \$3,286, against 545 tons valued \$8,508 in 1936.

TELLURIUM

Production of tellurium in 1937 amounted to 26,439 pounds, valued at \$45,739. This is an increase of 35½ per cent in quantity and of 32½ per cent in value over the 1936 production, which was 19,502 pounds valued at \$34,519.

The average London price of tellurium, converted into Canadian funds, was \$1.75 per pound. On the New York market, a nominal price of \$1.75 to \$2.00 per pound was quoted throughout the year.

The tellurium produced in the Province of Quebec is recovered as a by-product in the course of refining the copper anodes of the Noranda smelter.

TITANIFEROUS IRON ORE

The *Baie St-Paul Titanic Iron Ore*, of Baie Saint-Paul, mined and shipped 4,229 tons of titaniferous iron ore, valued at \$26,432. The shipments were made to Niagara Falls, N.Y.

NON-METALLICS *

ASBESTOS †

GENERAL REVIEW OF THE INDUSTRY

Sales of asbestos in 1937 were the highest in the history of the industry, with a total of 410,024 tons valued at \$14,505,541. Compared with the previous year, this is an increase of 36 per cent in quantity and 46 per cent in value. The average price of all grades of asbestos sold was \$35.38 per ton, as against \$33.05 per ton in 1936 (See Table 1)

Statistical data of the asbestos industry in Quebec for each of the years 1920-1937 are given in Table 2. It will be noted that the value of the 1937 shipments did not quite reach the record of \$14,749,048 attained in 1920, but in that year asbestos prices were abnormally high, being more than double the 1937 average.

The brisk demand for asbestos kept most of the mines working at capacity throughout the year. A total of 6,477,805 tons of rock was mined, 1,785,801 tons more than in 1936 and exceeding the record of 1929 by 268,835 tons (Table 2). Of the rock mined, 1,037,198 tons or 16 per cent was

(*) Unless otherwise stated, notes on Non-Metallics are by Paul E. Bourret, Inspector of Mines.

(†) By Lucien Lavigne, Assistant Inspector of Mines.

sent to the dumps as barren rock. The 5,440,607 tons treated in the mills yielded 402,477 tons of fibre of all grades. From this it may be calculated that the rock mined contained 124.26 pounds per ton of recoverable asbestos, or 6.21 per cent. At the prices prevailing during the year, the asbestos of all grades produced in the mills had a total value of \$13,882,097, or \$34.49 per ton, giving an average yield of \$2.14 per ton of rock mined.

TABLE 1
PRODUCTION OF ASBESTOS IN THE PROVINCE OF QUEBEC, 1936 AND 1937

GRADE	1936 SHIPMENTS AND SALES			1937 SHIPMENTS AND SALES		
	TONS (2,000 lb.)	VALUE		TONS (2,000 lb.)	VALUE	
		TOTAL	AVERAGE PER TON		TOTAL	AVERAGE PER TON
Crudes.....	3,440	\$ 790,971	\$ 229.93	3,845	\$ 947,667	\$ 246.47
Fibres.....	133,288	6,483,946	48.65	200,246	10,235,820	51.12
Shorts.....	164,559	2,683,266	16.30	205,933	3,322,054	16.13
TOTALS.....	301,287	\$9,958,183	33.05	410,024	\$14,505,541	35.38
Sand, gravel, and stone (waste rock only).....	3,103	2,356	0.76	3,980	3,301	0.83
TOTAL, asbestos and waste rock.	304,390	\$9,960,539		414,004	\$14,508,842	
Rock mined.....	4,692,004			6,477,805		
Rock milled.....	3,568,992			5,440,607		

TABLE 2
TABLE OF DATA OF THE QUEBEC ASBESTOS INDUSTRY
FOR THE YEARS 1920-1937

YEAR	FIBRE SHIPPED (Tons)	TOTAL VALUE	AVERAGE VALUE (Per ton)	FIBRE PRODUCED (Tons)	ASBESTOS CONTENT PER TON OF ROCK (Pounds)	AVERAGE VALUE OF CONTENT OF ROCK (Per ton)	ROCK MINED (Tons)
1920.....	179,891	\$14,749,048	\$ 81.89	170,500	109.10	\$ 4.53	3,123,370
1921.....	87,475	5,199,789	59.44	117,458	107.20	4.28	2,224,138
1922.....	160,339	6,053,068	37.75	149,195	102.00	1.70	2,920,280
1923.....	216,804	7,364,260	33.97	218,959	117.00	1.42	3,747,576
1924.....	208,762	6,561,659	31.37	205,764	124.00	1.83	3,324,727
1925.....	273,522	8,976,645	32.82	267,328	129.70	1.95	4,121,258
1926.....	279,389	10,095,487	36.13	301,044	134.30	2.35	4,483,361
1927.....	274,778	10,621,013	38.65	274,763	113.70	2.13	4,834,761
1928.....	271,637	11,181,143	41.16	266,227	103.20	2.17	5,141,263
1929.....	306,055	13,172,581	43.04	309,746	99.76	2.21	6,208,970
1930.....	242,113	8,390,164	34.65	244,114	99.61	1.90	4,901,206
1931.....	164,297	4,812,886	29.29	154,872	136.20	1.99	2,274,048
1932.....	122,977 (a)	3,039,721	24.72	119,968	129.38	1.60	1,145,340
1933.....	158,367 (b)	5,211,177	32.90	151,842	145.38	2.39	1,566,919
1934.....	155,980	4,936,326	31.65	173,604	149.60	2.45	2,320,750
1935.....	210,467	7,054,614	33.52	213,285	149.56	2.42	2,852,118
1936.....	301,287	9,958,183	33.05	311,205	132.65	2.11	4,692,004
1937.....	410,024	14,505,541	35.38	402,477	124.26	2.14	6,477,805

(a) Calculated on 1,854,434 tons, i.e., 1,145,340 tons of rock mined and 709,094 tons of tailing re-treated.

(b) Calculated on 2,088,849 tons, i.e., 1,566,919 tons of rock mined and 521,930 tons of tailing re-treated.

TABLE 3
ANNUAL SHIPMENTS OF ASBESTOS, 1933-1937*
(Tons of 2,000 lb.)

YEAR	CRUDES	FIBRE	SHORTS	TOTAL ASBESTOS SHIPPED	SAND, GRAVEL AND STONE (waste rock only)
1933.....	1,306	82,605	74,456	158,367	6,445
1934.....	1,663	77,465	76,852	155,980	4,672
1935.....	2,278	102,270	105,919	210,467	3,025
1936.....	3,440	133,288	164,559	301,287	3,103
1937.....	3,845	200,246	205,933	410,024	3,980

* For figures for 1879-1924, see report for the calendar year 1932.
For figures for 1925-1932, see report for the calendar year 1936.

Nominal prices quoted on the New York market during the year for various grades of asbestos were, per ton: crude No. 1, \$550 - \$660; crude No. 2, \$200 - \$225; spinning fibre, \$90 - \$170; shingle stock, \$15 - \$75; paper fibre, \$32.50 - \$42.50; waste, stucco or plaster, \$29; refuse or shorts, \$10 - \$23.

Table 4 gives details of the amount, value, and destination of asbestos exported from Canada in 1937.

TABLE 4
EXPORTS FROM CANADA OF MANUFACTURED ASBESTOS
DURING THE CALENDAR YEAR 1937
(From *Trade of Canada, Monthly Reports, 1937*, Dom. Bur. of Statistics)

IMPORTING COUNTRY	CRUDE & FIBRE		SHORT FIBRE, SHORTS & WASTE		TOTAL	
	TONS (2,000 lb.)	VALUE \$	TONS (2,000 lb.)	VALUE \$	TONS (2,000 lb.)	VALUE \$
United Kingdom.....	14,093	\$ 919,350	6,357	\$ 119,605	20,450	\$ 1,038,955
United States.....	98,196	5,347,488	176,708	2,913,183	274,904	8,260,671
Australia.....	3,042	150,919	15	345	3,057	151,264
Belgium.....	15,743	926,061	3,009	52,722	18,752	978,783
France.....	9,376	614,979	857	16,757	10,233	631,736
Germany.....	17,699	1,361,571	5,205	95,718	22,904	1,457,289
Italy.....	2,683	205,627			2,683	205,627
Japan.....	33,934	1,344,561	1,017	21,487	34,951	1,366,048
Netherlands.....	522	20,741	451	8,118	973	28,859
Newfoundland.....			2	75	2	75
Argentina.....			15	165	15	165
Portugal.....	59	4,113	22	600	81	4,713
Columbia.....			38	413	38	413
Sweden.....	768	46,547	247	2,747	1,015	49,294
Cuba.....			30	360	30	360
British India.....	90	4,500	120	1,500	210	6,000
Mexico.....			30	360	30	360
Norway.....			6	74	6	74
Brazil.....	8	1,600	25	280	33	1,880
Puerto Rico.....			30	330	30	330
Poland.....	238	21,795	346	7,618	584	29,413
Chile.....	60	3,000			60	3,000
TOTALS.....	196,511	\$ 10,972,852	194,530	\$ 3,242,457	391,041	\$ 14,215,309

Table 5 shows imports of unmanufactured asbestos into the United States for the year 1937, by classes and countries, together with compar-

ative totals for the year 1936. Total imports from Canada far exceed those from all other countries, but imports of 'crude' from the Union of South Africa were more than doubled in 1937 as compared with 1936, whereas those from Canada remained almost stationary. Table 6, comparing total consumption of asbestos in the United States with their imports from Canada, for the years 1933-1937, brings out the fact that Canada supplies more than 90 per cent of the asbestos requirements of the United States. The United Kingdom, however, imports considerably more asbestos from Africa than from Canada (Table 7).

TABLE 5

ASBESTOS (UNMANUFACTURED) IMPORTED FOR CONSUMPTION IN THE UNITED STATES
IN 1936 AND 1937, BY COUNTRIES AND CLASSES
(From *Minerals Yearbook, 1938, U.S. Bureau of Mines*)

EXPORTING COUNTRY	CRUDE (INCLUDING BLUE FIBRE)		MILL FIBRE		STUCCO AND REFUSE		TOTAL	
	TONS (2,000 lb.)	VALUE \$	TONS (2,000 lb.)	VALUE \$	TONS (2,000 lb.)	VALUE \$	TONS (2,000 lb.)	VALUE \$
Africa, British:								
Union of S. Af.	4,247	490,335			1	27	4,248	490,362
Other.	7,099	794,256					7,099	794,256
Canada.	2,620	556,034	95,788	4,775,513	177,062	2,984,299	276,010	8,315,846
Finland.					88	3,568	88	3,568
France.					122	1,735	122	1,735
Italy.	31	22,332			958	19,755	989	42,087
Malta, Gozo, Cyprus.					8,129	310,058	8,129	310,058
U. S. S. R.	39	8,464	7,978	363,804	2,196	85,392	10,213	457,660
United Kingdom.	290	54,636					290	54,636
Totals for 1937.	14,326	\$ 1,928,057	103,766	\$5,139,317	189,096	\$3,404,834	307,188	\$10,470,208
Totals for 1936.	7,912	\$1,157,551	79,663	\$3,790,055	156,027	\$2,577,331	243,602	\$ 7,524,937

TABLE 6

UNITED STATES TOTAL CONSUMPTION, AND IMPORTS FROM CANADA, OF ASBESTOS,
1933-1937
(From *Minerals Yearbook, 1938, U.S. Bureau of Mines*)

YEAR	ASBESTOS CONSUMPTION IN U.S.A.		CANADIAN ASBESTOS EXPORTS TO U.S.A.	
	TONS (2,000 lb.)	VALUE \$	TONS (2,000 lb.)	VALUE \$
1933.	119,542	\$ 3,542,483	112,915	\$ 3,192,599
1934.	120,334	3,377,994	113,060	3,026,563
1935.	166,585	5,125,413	154,236	4,486,112
1936.	243,602	7,524,937	226,078	6,390,764
1937.	307,188	10,470,208	276,010	8,315,846

Germany's imports of asbestos over a period of years are shown in Table 8. Of a total of 24,024 metric tons imported in 1937, 15,195 tons, or 63 per cent, was from Canada. This compares with 6,399 tons in 1936 and 5,684 tons in 1935. On the other hand, Russia, which supplied more than half Germany's asbestos requirements in 1935, sold none to that country in 1937. It is of interest to note that Germany's imports of asbestos

have about doubled since 1933 (see Tables 8 and 9). This would appear to indicate that attempts in that country to produce a synthetic substitute for asbestos have not met with success.

TABLE 7
UNMANUFACTURED ASBESTOS IMPORTED INTO THE UNITED KINGDOM,
1936 AND 1937
(From *Asbestos*, March, 1938)

EXPORTING COUNTRY	1936		1937	
	TONS (2,240 lb.)	VALUE £	TONS (2,240 lb.)	VALUE £
Africa:				
Rhodesia	16,679	£ 382,274	20,651	£ 479,663
Union of S. Africa	12,093	177,431	12,764	208,904
Portuguese East Af.	2	7		16
Kenya	2	60	1	30
Australia	147	2,885	78	3,525
Austria				2
Belgium	10	105		
British India	1	6		1
Canada	10,219	117,886	18,722	244,521
Cyprus, Malta & Gozo	1,605	18,687	857	8,925
Denmark	100	1,637	1	16
Finland	112	787	166	1,110
France	6	40		
Germany	16	1	1	49
Italy	4	477	92	4,589
Netherlands	29	1,026	428	19,299
New Zealand			10	28
Soviet Russia	1,854	29,995	1,804	29,917
Straits Settlements			4	118
Switzerland			1	58
United States of America	27	664	8	51
Venezuela	62	1,528		
TOTALS	42,956	£ 735,496	55,588	£ 999,822

TABLE 8
GERMAN IMPORTS OF ASBESTOS: TOTAL AMOUNT AND VALUE, 1932-1937
(From *Mineral Trade Notes*, April, 1938, U.S. Bureau of Mines)

YEAR	METRIC TONS	THOUSAND MARKS
1932	7,581	2,249
1933	12,613	3,651
1934	20,154	5,146
1935	21,885	5,535
1936	16,541	4,154
1937	24,024	6,220

It should be added that several years ago there was quite a flurry of excitement in German asbestos-trade circles regarding the reported success of Professor Scheumann in producing synthetic asbestos from German material susceptible of commercial development, and this reported achievement was hailed, especially in nationalistic circles, as marking a further scientific success in the country's struggle for economic independence by removing its dependence on foreign sources in still another important raw-material sphere. However, subsequent developments have shown that manufacture of synthetic asbestos remains a task still to be achieved (Consul Sydney B. Redecker, Frankfort-on-Main, Feb. 11th, 1938).

TABLE 8A
 GERMAN IMPORTS OF ASBESTOS, BY COUNTRY OF ORIGIN, 1935-1937
 (In metric tons)

COUNTRY OF ORIGIN	1935	1936	1937
Canada.....	5,684	6,399	15,195
Rhodesia.....	3,124	2,501	4,598
Union of South Africa.....		1,552	1,167
Soviet Russia.....	11,913	3,752	Nil
United States.....	380	327	440
All Others.....	784	2,010	2,624
TOTALS.....	21,885	16,541	24,024

TABLE 9
 IMPORTS OF UNMANUFACTURED ASBESTOS INTO PRINCIPAL COUNTRIES OF THE WORLD,
 1933-1936 (LESS RE-EXPORTS)
 (From *The Mineral Industry of the British Empire and Foreign Countries: Statistical Summary, Production, Imports, and Exports, 1934-36*)
 (Long tons)

IMPORTING COUNTRY	1933	1934	1935	1936
BRITISH EMPIRE:				
United Kingdom.....	24,365	26,546	31,681	42,044
British India.....	1	951	1,135	1,246
Australia.....	2,676	2,471	4,423	7,817
FOREIGN COUNTRIES:				
Austria.....	1,246	1,159	2,696	2,360
Belgium-Luxembourg, E.U.....	13,812	10,626	11,932	17,356
Bulgaria.....	4	3	6	4
Czechoslovakia.....	2,173	4,860	3,349	8,948
Denmark.....	707	1,023	2,084	2,368
Estonia.....	31	23	33	63
Finland (including mica).....	67	84	214	143
France.....	14,127	10,059	11,936	15,100
Germany.....	12,414	19,836	21,540	16,280
Greece.....	54	75	89	70
Hungary.....	769	617	886	(a)
Italy.....	3,607	8,288	5,054	4,483
Latvia.....	46	22	87	371
Lithuania.....	80	20	21	44
Netherlands.....	548	283	420	593
Norway.....	958	745	840	1,509
Poland.....	541	797	869	1,108
Portugal.....	126	340	563	486
Roumania.....	100	120	95	(a)
Spain.....	5,964	4,628	4,957	(a)
Sweden.....	1,044	1,676	3,530	2,665
Switzerland (including mica).....	824	771	1,034	1,020
U.S.S.R. (Russia).....	27	93	4	1
Yugoslavia.....	339	866	1,585	386
Algeria.....	40	36	44	48
Egypt.....	88	95	145	108
Mexico.....	349	(a)	265	541
United States.....	106,733	107,441	148,739	217,502
Brazil.....	37	37	31	37
Chile.....	47	27	1	11
Colombia.....	28	37	39	64
Venezuela.....	22	37	2	(a)
Japan (total imports).....	13,546	20,191	21,287	25,761
Korea.....	(a)	89	179	451
Manchoukuo.....	582	1,271	1,691	1,221
Netherlands East Indies.....	12	14	51	60

(a) Information not available.

Table 9, imports of unmanufactured asbestos into the principal countries of the world for the years 1933-1936, and Table 10, showing the world production of asbestos for the years 1934-1936, afford, indirectly, a measure of the rate at which consumption of asbestos is increasing throughout the world. In round figures, production increased from 302,000 tons in 1934 to 500,000 tons in 1936. It will be noted that, in the latter year, the United States imported 217,502 tons, or 43.5 per cent of the world's output of asbestos. Second and third as importing countries came the United Kingdom and Japan, with 42,044 tons and 25,761 tons, respectively.

Of the world production in 1936, 353,000 tons, or 70.6 per cent, came from deposits within the British Empire, with Canada contributing some 272,000 tons, Southern Rhodesia 50,000 tons, and the Union of South Africa 22,000 tons. Russia's production in 1936 amounted to about 123,000 tons, or somewhat less than 25 per cent of the world total.

TABLE 10

WORLD PRODUCTION OF ASBESTOS, 1934-36

(From *The Mineral Industry of the British Empire and Foreign Countries: Statistical Summary, Production, Imports, and Exports, 1934-36*)

(Long tons)

PRODUCING COUNTRY AND DESCRIPTION	1934	1935	1936
BRITISH EMPIRE:			
Southern Rhodesia.....	28,762	38,034	50,309
Union of South Africa:			
Amosite.....	2,552	4,031	5,323
Blue.....	2,413	2,097	2,955
Chrysotile.....	11,186	12,105	13,469
Anthophyllite.....			65
CANADA:			
Chrysotile (b).....	143,439	190,618	271,777
Crude.....	1,485	2,034	3,071
Fibre.....	69,165	91,313	119,007
Shorts.....	68,618	84,670	146,923
Sand and Gravel (waste rock only).....	4,171	2,701	2,771
Actinolite.....	27		
Cyprus.....	7,081	7,493	9,202
India.....	25	63	57
Australia.....	170	143	239
Total, British Empire.....	196,000	255,000	353,000
FOREIGN COUNTRIES:			
Bulgaria.....	3	3	
Czechoslovakia.....	2,100	2,600	2,700
Finland.....	3,629	3,400	7,000
France.....	400	450	(a)
Greece.....	30	2	(a)
Italy.....	2,216	(a)	(a)
U.S.S.R. (Russia).....	90,740	93,975	123,141
United States (sales):			
Chrysotile.....			9,322
Amphibole.....	5,843	8,406	361
Argentina.....			13
China.....	285	(a)	(a)
French Indo-China.....			5
Japan (estimated).....	1,000	1,000	1,000
Korea.....			6
Turkey.....	4	102	117
Total, Foreign Countries.....	106,000	113,000	147,000
WORLD'S TOTAL.....	302,000	368,000	500,000

(a) Information not available.

(b) Sales and shipments.

From Table 11, exports of unmanufactured asbestos from various countries, 1933-1936, it will be noted that, of the world's principal producers of asbestos, Canada, Southern Rhodesia, and the Union of South Africa export the great bulk of their output in the raw state, whereas Russia's exports of unmanufactured asbestos are only 20 per cent or so of her total production.

TABLE 11

EXPORTS OF UNMANUFACTURED ASBESTOS FROM VARIOUS COUNTRIES, 1933-1936
(Domestic Produce)
(From *The Mineral Industry of the British Empire and Foreign Countries: Statistical Summary, Production, Imports, and Exports*)
(Long tons)

EXPORTING COUNTRY	1933	1934	1935	1936
BRITISH EMPIRE:				
United Kingdom.....	498	418	205	436
Southern Rhodesia.....	26,887	28,626	40,435	45,738
Union of South Africa.....	14,307	15,565	21,173	22,061
Canada.....	133,033	141,290	178,760	262,701
Cyprus.....	4,567	7,590	7,513	9,506
FOREIGN COUNTRIES:				
Austria.....	162	85	106	57
Belgium-Luxembourg, E.U.....	2,745	803	202	575
Czechoslovakia.....	507	545	358	501
Finland.....	(a)	(a)	1,246	2,142
Germany.....	234	187	217	170
Italy.....	1,209	497	809	1,858
Netherlands.....	4	5	50	110
Poland.....	43	35	32	24
Sweden.....	26	5	30	39
Switzerland (in. luding mica).....	5	20	11	13
U.S.S.R. (Russia).....	21,119	33,183	21,713	25,734
United States.....	1,230	1,490	759	3,343
Japan.....	(a)	(a)	418	177
Manchoukuo.....	70	94	146	77

(a) Information not available.

OPERATIONS AT QUEBEC MINES IN 1937

Returns of sales and shipments of asbestos were received from the following companies:

Asbestos Corporation, Limited, Thetford Mines
 Bell Asbestos Mines, Limited, Thetford Mines
 Canadian Johns-Manville Company, Limited, Asbestos
 Johnson's Company, Thetford Mines
 Quebec Asbestos Corporation, Limited, East Broughton
 Nicolet Asbestos Mines, Limited, Norbestos

Asbestos Corporation, Limited

King Mine:

An extensive programme of underground development was carried out at the King mine, where the block-caving system of mining is employed. Mining of blocks 502, 503, 504, 505, and 515 continued during the year, and blocks 506, 507, 508, and 510 were developed in preparation for mining. At the close of the year, block 508 was ready for production.

Development work included 11,000 feet of horizontal work in drifts, cross-cuts, and manways, and 4,227 feet of raises and chutes from the 500-ft. level to the grizzlies. On the 500-ft. level, a drift was cut from the old workings to the new shaft, greatly improving ventilation in the mine. A certain amount of development work was done on the 700-ft level, including the drilling of a number of exploratory holes. The latter work was carried out by the Sudbury Diamond Drilling Company.

Early in the year, a contract was let to Messrs. Harrison and Beck for the sinking of a new shaft, No. 3, and by the end of December it had reached a depth of 857½ feet from the collar. Its dimensions, outside the frame, are 18 ft. by 13 ft., and it has five compartments: two skipways, each 5 ft. 9 in. by 5 ft. 6 in.; cageway, 7 ft. by 12ft.; service compartment; and a compartment for pipe-lines and counter-balance. The work of sinking through the overburden to bedrock, at 72 feet, was carried out by the Asbestos Corporation, and to this depth the shaft is lined with concrete. As sinking proceeded, it was found necessary to pour concrete at several horizons, because of structural weakness of the rock. Water in considerable volume was encountered, in places as much as 20 cubic feet per minute, and this necessitated almost continuous pumping. Six-inch *H*-beams, lined with wood planks, were used for the sets.

Beaver Mine:

The Beaver mine operated continuously throughout the year. In the course of the year, 1,052 feet of development work was completed on the 300-ft. level. This included 163½ feet of main haulage, 12 ft. by 9 ft.; 810½ feet of lateral drifts from the Beaver workings toward and under the adjacent Bennett-Martin mine; and 78 feet of manways.

Bennett-Martin Mine:

This mine was operated under contract by Angelo Testaguzza, who had a crew of 15 to 28 men working on the property from January until December 7th. The rock mined was hauled by truck to the King mill. A certain amount of 'crude' was recovered in the course of these operations.

British Canadian Mine:

A crew of 250 men, in two 8-hour shifts, was working throughout the year at this Black Lake property of the Asbestos Corporation. The glory-hole system of mining was abandoned. In its place, a horizontal retreating method of quarrying has been adopted, in which 40-foot holes and lifters are drilled from the edge of the pit. The rock is loaded in cars by an electrically operated shovel, and hauled to the mill by an electric motor. On surface, a large area was stripped of overburden in preparation for quarry extensions. Mill operation was improved by installation of a Symons cone crusher.

Maple Leaf Mine:

Throughout the summer, a crew of men, with teams, were occupied in stripping overburden from the surface adjacent to the pit. Repairs to the mill, which had been inactive since 1932, were carried out early in May. All operations were suspended on December 20th.

Vimy Ridge Mine:

Stripping of overburden at this property was carried on by S. M. Telfer, of Montreal, working under contract. A width of about 75 feet was cleared, mainly on the north and northeast sides of the pit. A gasoline-operated shovel was used in this work.

A new Thew Lorrain 75D shovel, operated by a 100 h.p. Diesel engine, was placed in service. This has eliminated the necessity for use of hoisting boxes and for manual handling of rock. A much improved system of lighting for the pit was installed, the projectors formerly used being replaced by large bulbs which are suspended from wires strung across the workings.

Canadian Johns-Manville Company, Limited

During 1937, the open pit was worked both horizontally and vertically. An electrically-driven shovel, with capacity of eight cubic yards, was installed. This has had the effect of speeding-up tramming operations very considerably. In the mill, a series of dust-elimination tests were made, using a Cottrell machine.

During the year, the Company, jointly with the Canadian National Railways, built a new shunting yard. This work entailed a filling of 300,000 cubic yards and the re-laying of two miles of track.

Construction was started of a trestle which will carry a series of belts for conveying the mill tailing to a side track and thence to the dump. Other construction included a fence and a 'punching' office at the entrance to the mill, which no one may now enter without special permission; and the building of a number of houses for employees.

Bell Asbestos Mines, Limited

The Bell mine operated throughout the year, with some 250 men on the payroll, working both day and night shifts. The development programme was exceptionally heavy. A vertical shaft was sunk 400 feet from the bottom of the pit, this work being carried out by Messrs. Harrison and Beck on a contract basis. The outside dimensions of the shaft are 13 ft. 4 in. by 5 ft. 6 in., and it has three compartments: two skipways, each 4 ft. 6 in. by 4 ft. 6 in., and a service manway, 3 ft. 4 in. by 4 ft. 6 in. The sets are constructed of 6-in. hemlock, suspended by four hangers and spaced 6 feet apart. Stations were cut at two levels.

North of the new shaft, a concrete sump, 25 feet deep, was sunk; and a tunnel, about 50 feet long, was driven under the incline in the pit.

During the year, the Asbestos Corporation drove 1,562½ feet of tunnels under the Bell property, from their 500-ft. level.

Johnson's Company

The open-pit on the Johnson's Thetford Mines property operated throughout the year.

On October 19th, work was commenced on removal of overburden in preparation for the sinking of a shaft. Using sheet-piling, an excavation 25 ft. 9 in. in diameter and 98 feet deep was made to bedrock, and in this

was placed a circular concrete collar, with walls two feet thick, resting on a base 13 feet thick. This work was carried out by the Foundation Company of Canada, Limited. Sinking of the shaft will be undertaken by Messrs. Harrison and Beck. It will have outside dimensions 17 ft. 9 in. by 12 ft.

New construction on the property included erection of a 'safety-first' building and a new machine shop; also, a dining room for employees was provided.

Exploration was continued on the Company's property on lot 26, range X, Ireland township, and a number of holes were put down, using a Calyx drill.

The mine at Black Lake operated throughout the year. During the summer months, some stripping was done on the property, and also some drilling, with a Calyx machine.

Quebec Asbestos Corporation, Limited

After being inactive during the winter months, this mine was reopened late in April and remained in operation for the remainder of the year. An extensive stripping programme was carried out.

Nicolet Asbestos Mines, Limited

The Nicolet mine, at Norbestos, was inactive during the year, but some 8,000 feet of diamond drilling was carried out on the property. This work is reported to have given encouraging results.

Granville Prospect

Under the supervision of Gordon Granville, of Montreal, some development work was carried out during the year on lots 19 to 25, range C, Cole-raine township. Fifty-three prospect pits, averaging six feet deep, were opened in the solid rock at various points on the property, and a sample of the rock, amounting to some 800 to 900 pounds, was sent to the laboratory of the Asbestos Corporation for testing purposes. Mr. Granville is planning to do some diamond drilling on the property in 1938.

THE ASBESTOS INDUSTRY IN OTHER COUNTRIES

United States

According to the U.S. Bureau of Mines *Minerals Yearbook*, domestic production of asbestos in the United States of America during 1937 amounted to 13,896 short tons, as compared with 10,924 short tons in 1936.

The asbestos sold or used by domestic producers amounted to 12,079 short tons, valued at \$344,644 in 1937, in comparison with 11,064 short tons valued at \$314,161 in 1936. Of the quantity sold or used in 1937 by domestic producers, 11,547 short tons consisted of chrysotile, valued at \$322,747, whereas the balance, 532 short tons, valued at \$11,897, was amphibole.

The domestic production comes mainly from the States of Arizona and Vermont, with minor amounts from Montana, Maryland, and North Carolina. It furnished less than 4 per cent of the asbestos consumed in the United States during 1937.

Union of South Africa

Table 12, reproduced from the annual report of the Department of Mines, Union of South Africa, for 1937, shows sales in 1936 and 1937 of the several varieties of asbestos produced in that country.

TABLE 12
ASBESTOS SALES, UNION OF SOUTH AFRICA, 1936 AND 1937

PROVINCE	AMOSITE		CHRYBOTILE		BLUE		TOTAL	
	TONS	VALUE	TONS	VALUE	TONS	VALUE	TONS	VALUE
1937								
Transvaal.....	7,488.0	£ 133,401	15,141.6	£ 162,044	653.6	£ 14,026	23,283.2	£ 309,471
Cape.....					4,786.1	121,290	4,786.1	121,290
Total, 1937.....	7,488.0	£ 133,401	15,141.6	£ 162,044	5,439.7	£ 135,316	28,069.3	£ 430,761
Total, 1936.....	4,823.3	£ 80,701	16,149.2	£ 159,156	4,264.1	£ 97,372	25,236.6	£ 327,229

CLASSIFICATION OF CHRYBOTILE ASBESTOS SOLD IN 1937

Crude, run-of-mine.....	40,400 short tons
Spinning fibre.....	1,405,000 " "
Shingle fibre.....	9,019,125 " "
Paper stock.....	3,724,650 " "
Millboard stock.....	952,400 " "
Total.....	15,141,575 short tons

Southern Rhodesia

Table 12A shows the amount and value of asbestos produced in Southern Rhodesia for the years 1932 to 1937. As an interesting parallel, it may be pointed out that in Southern Rhodesia, as in the Province of Quebec, production of asbestos in 1932 was the lowest of the past fifteen years, and that in both countries the 1937 production established an all-time record. Moreover, the percentage increase from 1932 to 1937 was almost identical, being 256 per cent for Southern Rhodesia and 233 per cent for Quebec.

TABLE 12A
ASBESTOS PRODUCTION IN SOUTHERN RHODESIA, 1932-1937
(From Annual Report, Southern Rhodesia Chamber of Mines, 1937)

YEAR	TONS	VALUE
1932.....	15,766	£ 197,092
1933.....	30,182	505,993
1934.....	32,214	402,745
1935.....	42,598	646,658
1936.....	56,346	836,469
1937.....	57,014	840,026

FELDSPAR

In 1937, fifty-eight per cent of the total Canadian output of feldspar was produced in the Province of Quebec. Shipments from Quebec mines totalled 12,285 tons valued at \$105,612, against 8,115 tons valued at \$75,703 in 1936.

Sales of feldspar were reported from twelve properties. Eleven of these are located within a radius of twenty miles of Buckingham, in Papi-neau county; the other is in Aberford township, on the north shore of the Ottawa river, thirty-five miles east of Mattawa, Ontario. Production in excess of a thousand tons was reported by only three operators, the Canadian Flint and Spar Company, W. E. Evans, and the Perkins Mining Company.

The *Canadian Flint and Spar Company* operates the Derry mine on lot 8, range I, Derry township, and the Wallingford mine on lot 15, range II, Derry township. The Derry mine is the largest feldspar operation in Quebec and since 1921 has produced approximately 100,000 tons of high-potash feldspar. In 1937, a feldspar washing and sorting plant was built at the mine. The Wallingford deposit consists of a pegmatite dyke of considerable size worked by underground methods, from which both feldspar and quartz are extracted. In addition to these properties, the Canadian Flint and Spar Company operates a feldspar and quartz grinding plant at Buckingham. This mill is equipped to turn out all sizes of product from stucco material to the finest ground feldspar for ceramic purposes.

The *Perkins Mining Company* works by open-pit methods a large pink-feldspar mine on lot 1, range III, Derry township. The material is hand-cobbed and shipped without further treatment.

W. E. Evans operated formerly two mines, the Evans mine near Poltmore, in Portland West township, and the Cameron mine, in Buckingham township. Both of these operations were abandoned in 1936. Mr. Evans has now re-opened the New York feldspar mine, on lots 27 and 28, range IX, Buckingham township. Between 1926 and 1929, about 17,000 tons of feldspar were shipped from this property, but operations had to be discontinued through lack of adequate haulage facilities.

In 1937, the Quebec Bureau of Mines rebuilt the roads leading to the New York and Wallingford mines. This improvement permitted the re-opening of both properties, thereby making available to the ceramic industry important supplies of raw material.

Feldspar deposits of good quality are known to occur in the Province in other parts of the Laurentian plateau, but, owing to the low value of the crude material, it has not been found profitable to work them. The average price of crude feldspar delivered at Buckingham was \$5.79 per ton in 1937, as compared with \$5.60 in 1936.

Practically all of the output of feldspar was shipped to the grinding plants of the Canadian Flint and Spar Company at Buckingham and of Bon Ami, Limited, at Montreal East, and to grinding mills at Rochester, New York.

Quebec feldspar is used mostly in the manufacture of tableware, electric porcelain, floor tile, enamels, and scouring soaps. It also enters in the manufacture of bottle glass, supplying the necessary alumina in a form easily assimilated by the molten batch. A small tonnage of hand-picked, high-grade spar is used in the manufacture of artificial teeth.

GARNET

Occurrences of garnet, or highly garnetiferous rocks, are numerous in the Province of Quebec and some of them may be found to be of workable size and grade. A considerable amount of development work was done in the past on three of these deposits, two of which are near Labelle, in Joly township, Labelle county, and the third near Langlade, in Abitibi county.

In 1937, *La Belle Mining, Incorporated* did a small amount of surface development work and also laid the foundations for a concentrator which is to be completed in the near future. On November 30th, the properties and assets of this operator were sold to the *Canada Garnet Company, Limited*. The other operators were inactive during the year.

KAOLIN (CHINA-CLAY)

A deposit of kaolinized quartzite of considerable volume and containing a high percentage of kaolin extends across several lots in range VI South, Amherst township. The deposit was worked intermittently from 1916 to 1927 and during this period several shipments of kaolin were made.

In 1937, the property was acquired by the *Canada China Clay Company, Limited*. A new three-compartment shaft was completed to a depth of 267 feet and the construction of a 200-ton mill is under way. It is expected that production will start in the fall of 1938.

No sales of kaolin from Quebec mines were recorded in 1937.

LIME, LIMESTONE, AND MARL (INDUSTRIAL)

The tonnage of industrial lime and limestone used or sold by Quebec producers in 1937 was the highest ever recorded. Industrial limestone used as such or in the form of quicklime or hydrated lime totalled 414,792 tons, against 339,742 tons in 1936. Of this total, 176,488 tons, valued at \$210,828, was used as crude limestone, and the balance in the production of 106,353 tons of quicklime valued at \$684,486 and 35,323 tons of hydrated lime valued at \$112,484. Data relating to building lime and limestone are given on page 48, in the section dealing with Building Materials.

High-calcium limestone constitutes the bulk of the production. This stone is quarried on a large scale in the Eastern Townships, at Bedford and Limeridge; in the Saint-Lawrence and Ottawa valleys, in the vicinity of the cities of Hull, Montreal, and Joliette, and at Saint-Marc-des-Carrières; in Gaspé peninsula, at Nouvelle; and in the Lake Saint-Jean district, at Mistassini. Dolomitic limestone and dolomite are produced at L'Annonciation, in Labelle county, and at Portage-du-Fort, in Pontiac county. No important new quarries were opened during 1937.

The great bulk of the lime and limestone output is used in pulp and paper mills and in chemical industries, such as carbide manufacture. In the table which follows, showing the distribution of the production of industrial lime, that used in carbide plants, in coke manufacture, in oil refineries, and in mills using cyanide for the extraction of gold from its ores, is included under the item 'carbide and other chemical products'.

Approximately 32,927 tons of marl, valued at \$13,171, were produced in 1937, against 27,186 tons, valued at \$10,874, in 1936. The entire output was from deposits in the counties of Bonaventure, Gaspé, and Matapédia and was used as a soil corrective.

QUANTITY AND VALUE OF INDUSTRIAL LIMESTONE PRODUCTS SOLD IN 1936 AND 1937

CLASSIFICATION	1937		1936	
	QUANTITY (Tons)	VALUE \$	QUANTITY (Tons)	VALUE \$
Flux.....	6,830	9,522	2,541	3,680
Pulp and paper mills.....	111,977	110,088	92,137	83,123
Agricultural limestone.....	43,697	67,466	34,987	51,061
Other industrial uses.....	13,984 (1)	23,752 (1)	5,889 (2)	12,045 (2)
TOTAL.....	176,488	\$210,828	135,554	\$149,909

(1) Sugar refineries, whiting, glass factories, poultry grit, unspecified.

(2) Glass factories, poultry grit and unspecified.

DISTRIBUTION OF THE PRODUCTION OF INDUSTRIAL LIME IN 1936 AND 1937
(In tons)

CLASSIFICATION	1937		1936	
	QUICK- LIME	HYDRATED LIME	QUICK- LIME	HYDRATED LIME
Carbide and other chemical products...	44,921	1,773	33,408	4,307
Sugar refineries.....	49	107	50	396
Tanneries.....	265	450	691	319
Pulp and paper mills.....	59,218	26,295	54,243	22,125
Agricultural uses.....	3	652	3	808
Foundries.....	1,897	6,040	1,878	3,426
TOTAL.....	106,353	35,323	90,273	31,381

MAGNESITIC-DOLOMITE

Magnesitic-dolomite marketed or used in the crude, calcined, or dead-burned state in 1937 was valued at \$677,207, against \$768,742 in 1936. As for many years, *Canadian Refractories, Limited*, at Kilmar, in Grenville township, and the *International Magnesite Company*, in Harrington township, were the only producers.

At the beginning of the year, a three-compartment shaft was sunk to a depth of 420 feet at the Kilmar mine, and stations were cut and workings driven at the 110-, 250-, and 400-foot levels. Stopes opened on the three levels supplied approximately 40,000 tons of ore during the year. Open-cast mining was abandoned at this mine in 1936.

Canadian Refractories market a great variety of refractory products in the semi-finished or finished state. During 1937, several new products were developed, in whose manufacture the magnesitic-dolomite employed has a higher lime content than the raw material which had been used heretofore. Products of this Company are shipped to many parts of the world, including Australia, South Africa, and Tasmania.

The International Magnesite Company carried on its regular mining operations by open-pit methods. The products marketed by this operator are crude magnesitic-dolomite and calcined materials.

MICA

Owing to improvement in the demand for mica, the production increased from 544,214 pounds valued at \$63,123 in 1936 to 1,092,105 pounds valued at \$124,594 in 1937. The value of the 1937 output is the highest recorded since 1926. In consequence of the better demand and a slight increase in prices, several mines which had remained idle for some years past were re-opened. Twenty-nine mines, twenty-three of which are in the Hull district, were in operation in 1937 against eighteen mines—fifteen in the Hull district—in 1936.

With the exception of a few hundred pounds of muscovite from the property of *Eugène Simard*, in Bergeronnes township, the entire output consisted of mica of the phlogopite variety. The *Blackburn*, *Rainville*, and *Wallingsford* mines, in Templeton township, and the *Cascades*, *Horse-shoe*, and *Varasour* mines, in Hull township, were the main producers. Small-scale operations were conducted by several other operators in the Gatineau River district. Shipments of mica were also reported from the *Laurel* mine, in Wentworth township, and *Bazinet's* mine, in Joliette township.

Operations were resumed at the *Richard* mine, at Petit Pré in Montmorency county, by the *Saint-Laurence Mica Company*. It is reported that over sixty tons of mine-run mica were taken out of this mine in 1937, but no shipments were made.

Exploration work and mining operations were conducted on a number of small phlogopite deposits on the *Valenti* property, in Viel township, approximately thirteen miles northeast of L'Ascension, in Labelle county. An average of seventeen men worked on this property for a period of seven months in 1937.

Exploration work on a modest scale was done at the *Pied-des-Monts* muscovite mine, in Lacoste township, and at a few prospects in Bergeronnes township.

Shipments of mica in 1937 and 1936 were as shown in the accompanying table.

SHIPMENTS OF MICA, 1936 AND 1937

DESCRIPTION	1937	1936
Splittings	72,500 lb.	24,100 lb.
Trimmed and rough-cobbed mica	332,746 "	109,902 "
Ground, run-of-mine, and scrap mica	686,859 "	410,212 "
TOTAL	1,092,105 lb.	544,214 lb.

Dealers' quotations, furnished by the Federal Department of Mines and Resources, were as follows at the close of the year:

	PER POUND
KNIFE-TRIMMED SHEET:	
1 by 3 inches.....	\$0.50
2 by 3 ".....	0.75
2 by 4 ".....	1.00
3 by 5 ".....	1.75
4 by 6 ".....	2.25
5 by 8 ".....	3.00
SPLITTINGS:	
1 by 1 inch.....	\$0.45
1 by 2 ".....	0.50
GROUND MICA:	PER TON (in ton lots, <i>f.o.b.</i> Ottawa)
20-mesh.....	\$25.00
60-mesh.....	30.00
120-mesh.....	45.00

OCHRES AND IRON OXIDES

The production of crude ochres and calcined iron oxides was 5,698 tons valued at \$77,883, against 5,458 tons valued at \$65,630 in 1936. The increase is attributable to a large demand for the calcined products.

Air-dried ochreous iron oxides, used mainly for the purification of coal gas, were shipped mainly from three deposits, one at Pointe du Lac, in Saint-Maurice county, and the others at Almaville and Saint-Adelphe, in Champlain county. The average price of crude iron oxides in 1937 was \$3.20 per ton, *f.o.b.* mine. The iron oxides marketed as mineral pigments came from deposits near Champlain and Red Mill, in Champlain county, and were calcined in the plant of the *Sherwin-Williams Company of Canada, Limited*, at Red Mill.

In 1937, *Iron Oxide Products, Limited*, constructed a calcining and levigating mill near their iron oxide deposits at Lacoste, in Marchand township. This plant will go into production in the spring of 1938.

OIL AND GAS

Two test-holes were drilled during the year for oil and gas exploration purposes. One of these, known as the Mallet Test-Hole No. 1, is on lot 513, parish of Sainte-Thérèse, Mille-Isles seigniory. It was diamond-drilled to a depth of 3,035 feet. Gas seepages were encountered at several horizons between depths of 474 feet and 1,644 feet, but no oil was found. The operator was *Vicomte Roger de Roumefort*, of Montreal. Following is the log of the test-hole, as condensed from the report of the Water and Borings Section, Geological Survey, Ottawa:

LOG OF MALLET TEST-HOLE No. 1

FOOTAGE		FORMATION
0-	180.....	Chazy formation, limestone and shale
180-	250.....	Chazy formation, dark grey shale
250-	290.....	Chazy formation, light grey sandstone
290-	320.....	Beekmantown formation, dolomitic limestone
320-	930.....	Beekmantown formation, dolomite and shale
	930.....	Intrusive igneous rock
930-	1,050.....	Beekmantown formation, dolomite
1,050-	1,300.....	Beekmantown formation, dolomite and sandstone
	1,300.....	Dark green igneous rock
1,300-	1,360.....	Beekmantown formation, dolomite and sandstone
1,360-	1,730.....	Potsdam sandstone
	1,730.....	Dark green igneous rock
1,730-	3,035.....	Potsdam sandstone

The other test-hole is on lot 51, range I, Baie de Gaspé Nord township, and was drilled by Dubé & Frères for the *Minéraux et Pétrole de Gaspé Compagnie, Limitée*. It was put down by means of an eight-inch well-drill to a depth of 240 feet, and the rock encountered throughout was sandstone. Neither gas nor oil was found.

PEAT *

The production of peat was 578 tons valued at \$17,121, as compared with 295 tons valued at \$7,106 in 1936.

Three bogs were operated for the production of peat moss. They are at Isle Verte, Rivière Ouelle, and Waterville. Isle Verte supplied the bulk of the output. The fabricating plant here manufactures a product which is marketed under the trade-name *Spagmos*, for use as insulation material, packing, litter, and fertilizer filler. Packing moss, in the form of loose material, is made at the Waterville plant. Litter or humus is produced at Rivière Ouelle. There was no production of peat fuel from any of these bogs.

The output of peat moss from Quebec bogs is not sufficient to meet the domestic demand. It may be noted, also, that a report prepared by R. G. C. Smith, Assistant Trade Commissioner, and published in *Commercial Intelligence Journal*, January 22nd, 1938, indicates that there would be a market in the United States for litter peat from bogs in Eastern Canada located conveniently to highways or railways.

PHOSPHATE

Shipments of apatite, or phosphate rock, amounted to 100 tons, valued at \$900. This small output was derived entirely from the Blackburn mica mine, in Templeton township, where the apatite is recovered as a by-product. The apatite mines in the townships of Buckingham and Portland were idle throughout the year.

QUARTZ AND INDUSTRIAL SAND

Production of silica and industrial sand in 1937 totalled 127,535 tons, valued at \$448,327. This establishes a new record, exceeding the previous peak, attained in 1936, by 61 per cent in quantity and 40 per cent in value.

(*) By Henri Girard, Inspector of Mines.

The bulk of the output is derived from quartz-kaolin deposits at Saint-Rémi, in Papineau county, and from sandstone deposits at Saint-Canut in Deux-Montagnes county, at East Templeton in Papineau county, and at Melocheville in Beauharnois county. The silica sand produced from the materials enters mainly as an ingredient in the manufacture of glass and carborundum, but other products are sand-blasting material and other abrasives, fillers, silica for use in the ceramic industry, smelter flux, and moulding sand. A large tonnage of sandstone quarried at Melocheville was used for the production of ferro-silicon in the plant of the *Saint-Lawrence Alloys Company, Limited*, at Beauharnois.

In the Buckingham district, quartz was produced by several operators, who obtain the mineral, and also feldspar, from pegmatite dykes. The quartz was shipped to the plant of the *Electric Reduction Company*, at Buckingham, for use as flux in the manufacture of phosphorus, and to the grinding unit of the *Canadian Flint and Spar Company*, also at Buckingham.

The *Canada China Clay Company, Limited*, is at present erecting a mill at Saint-Remi, in Amherst township, for the production of washed kaolin. It is expected that the washed silica that will be obtained as a by-product will also be marketed.

SOAPSTONE *

Returns of sales of soapstone were received from four operators, as follows:

Broughton Soapstone & Quarry Company, Limited, Broughton Station.

L. R. Cyr, Lemesurier, Mégantic County.

Charles Fortin, Robertsonville, Mégantic County.

L. C. Pharo, 187 Coleraine Avenue, Thetford Mines.

Sales or shipments of soapstone, as sawn blocks, crayons and in the pulverized state, were valued at \$40,513, as compared with \$32,769 in 1936. On a percentage basis, this shows an increase of nearly 24 per cent.

The quarry of the *Broughton Soapstone & Quarry Company* on lot 12, range XI, Broughton township, was in operation steadily throughout the year. The construction of a small pulverizing mill, for the production of ground soapstone, was completed during this period. The mill, which has a daily capacity of 4 tons, was operated from August 10th to the end of the year. The Company also did some prospecting work on lot 8A, range X, Broughton township.

L. R. Cyr did some exploration on lot 15, range XV, Leeds township. The results of the work having been satisfactory, quarrying operations were commenced in the fall.

From October 15th to the end of the year, *Charles Fortin* produced sawn blocks from his quarry situated on the east half of lot 2, range V, Thetford township.

L. C. Pharo operated a soapstone quarry on lot 11 E, range III, Thetford township, from January 1st until November 1st. Later he carried out some exploration work on lots 12 A and 13 B of the same range.

(*) By Lucien Lavigne, Assistant Inspector of Mines.

BUILDING MATERIALS*

Building and engineering contracts let in the Province of Quebec in 1937 totalled \$69,122,900, as compared with \$45,749,500 in 1936. The greater activity in the building trade was accompanied by an increase in sales of mineral building materials, which were estimated at \$9,355,941, against \$6,724,020 in the preceding year. As compared with 1936, the gains in value were as follows: cement, 20 per cent; crushed stone, 40 per cent; stone for building purposes and for monuments, 23 per cent; clay products, 52 per cent; sand and gravel, 86 per cent.

Seventy-seven quarries produced crushed stone, against sixty-six in 1936. Their combined output was 1,495,748 tons, as compared with 1,133,998 tons reported in 1936.

CEMENT

The entire output of cement in 1937 was produced in two plants operated by the *Canada Cement Company*, one located at Montreal East and the other at Wrightville, near the city of Hull. The Montreal East plant of the National Cement Company remained idle throughout the year. Sales of cement amounted to 2,578,623 barrels, valued at \$3,537,798, as compared with 2,093,130 barrels valued at \$2,945,074 in 1936. The average market price, f.o.b. plant, was \$1.372 per barrel, against \$1.407 in 1936.

The raw materials which enter in the manufacture of cement are, at the Montreal East plant, limestone, dyke rock, gypsum, and sand; and at the Wrightville plant, limestone, clay, gypsum, and sandstone. It is reported that 679,509 tons of limestone, 16,982 tons of clay, and 1,540 tons of sand and crushed sandstone — all from deposits within the Province — were used in the Quebec mills of the Canada Cement Company during 1937.

CLAY AND SHALE PRODUCTS

Domestic clay and shale products, consisting of common and face brick, structural and drain tile, and sewer pipe, were valued at \$1,052,592, against \$691,765 in 1936. Gains were recorded in the sales of all products with the exception of common brick made by the soft mud process and of dry-pressed face brick.

Of the sixteen operators who reported sales of brick, four used ground shale as raw material; all the others used superficial clay. Eighty per cent of the total output of brick was made with ground shale, which is approximately the same as for the preceding year.

The average price of face brick made by the soft mud process declined slightly, but the average selling prices of all the other clay and shale products were higher than in 1936.

GRANITE

Owing mainly to larger shipments of material for use as building stone and as crushed stone, the production of granite increased from 137,910 tons valued at \$429,281 in 1936 to 218,742 tons valued at \$611,023 in 1937.

(*) By Paul-L. Bourret, Inspector of Mines.

CLAY PRODUCTS IN 1936 AND 1937

CLASSIFICATION	1937		1936	
	QUANTITY	VALUE	QUANTITY	VALUE
BRICK:				
Face brick, soft mud process. M	600	\$ 7,527	215	\$ 2,364
Common brick, soft mud process. . . M	1,510	14,259	2,482	22,056
Face brick, stiff mud process. . . . M	12,643	250,737	9,803	191,085
Common brick, stiff mud process. . . M	33,749	461,765	18,921	248,647
Face brick, dry press. M	1,659	40,283	2,161	52,096
Common brick, dry press. M	3,292	51,025		
SUB-TOTAL.	53,453	\$325,596	33,582	\$516,248
OTHER CLAY PRODUCTS:				
Structural tile. Tons	19,590	\$165,381	16,867	\$135,145
Drain tile. No.	464,367	13,950	437,985	13,713
Sewer pipe.		47,665		26,659
SUB-TOTAL.		\$226,996		\$175,517
TOTAL.		\$1,052,592		\$691,765

Building and monument granite was extracted for the most part from quarries in the Little Mount Megantic and Stanstead areas; the remainder came largely from Mount Johnson, in Iberville county; from Guenette, in Labelle county; and from the Lake Saint-Jean district. Two outstanding buildings were faced with Quebec granite in 1937, the Saint-Joseph Oratory, Montreal, and the Bank of Canada building, Ottawa. Stone extracted from the quarry of the *Silver Granite Company*, at Saint-Samuel, was used in both cases. Anorthosite, known also as black granite, quarried by *National Granite Limited*, at Saint-Gédéon, Lake Saint-Jean county, was used to face the base of the store of Dupuis Frères, Limitée, Montreal.

An unusually large tonnage of crushed granite was produced in 1937. It came mainly from Comeau Bay, on the north shore of the lower Saint-Lawrence, and from the Lake Saint-Jean district. Much of the output was used in public works, and also in the development of a townsite at Comeau Bay. Of the 139,146 tons produced, 61,100 tons valued at \$79,037 was from commercial quarries, and 78,046 tons valued at \$117,940 from municipal and government owned quarries and from quarries operated by contractors who, themselves, use the whole of their output.

QUANTITY AND VALUE OF GRANITE SOLD IN 1936 AND 1937

CLASSIFICATION	1937		1936	
	QUANTITY (Tons)	VALUE	QUANTITY (Tons)	VALUE
Building stone, rough.	1,973	\$ 12,166	2,187	\$ 9,461
Building stone, dressed.	6,257	252,346	5,599	171,778
Monument stone, rough.	3,779	27,446	3,483	25,610
Monument stone, dressed.	1,223	79,377	2,267	97,210
Curbstone.	785	2,808	3,333	21,657
Paving blocks.	536	4,652	85	754
Rubble and rip-rap.	65,043	35,251	66,091	38,077
Crushed stone.	139,146	196,977	54,865	64,734
TOTAL.	218,742	\$611,023	137,910	\$429,281

LIME AND LIMESTONE (BUILDING)

The total quantity of limestone quarried in Quebec in 1937 is estimated at 2,574,486 tons, as compared with 2,063,964 tons in 1936. The production was used as follows: 703,918 tons in the manufacture of cement and building lime; 1,455,776 tons in the building trade, as dimension stone, crushed stone, and rubble; and 414,792 tons for industrial purposes. Industrial lime and limestone, now classed with the 'non-metallics', are dealt with on page 40.

QUANTITY AND VALUE OF BUILDING LIMESTONE PRODUCTS
SOLD IN 1936 AND 1937

CLASSIFICATION	1937		1936	
	QUANTITY (Tons)	VALUE	QUANTITY (Tons)	VALUE
Building stone, rough.....	7,539	\$ 31,755	12,606	\$ 22,689
Building stone, dressed.....	8,769	176,547	6,977	123,149
Monument stone, rough.....	.....	.....	71	1,407
Monument stone, dressed.....	65	2,335	27	830
Flagstone.....	62	85	299	1,399
Curbstone.....	50	500	.....	.....
Asphalt filler.....	5,492	15,007	2,153	5,699
Rubble and rip-rap.....	97,058	60,455	101,665	64,932
Crushed stone.....	1,336,741	985,883	990,477	695,370
TOTAL.....	1,455,776	\$1,272,567	1,114,275	\$915,475

BUILDING LIME:

The 11,406 tons of quicklime and 2,951 tons of hydrated lime reported as having been used in construction work included 7,145 tons of quicklime and 2,503 tons of hydrated lime sold to dealers and retailers. As the latter dispose of their lime products mainly to the construction trade, their total sales are classed, for statistical purposes, as building lime.

DIMENSION STONE:

Twelve operators quarried 16,373 tons of building and monument limestone valued at \$210,637, a decrease of 17 per cent in quantity but an increase of 42 per cent in value as compared with 1936. This output was derived entirely from quarries at Saint-Marc-des-Carières, in Portneuf county, and in the vicinity of the cities of Montreal and Hull.

CRUSHED STONE:

The total output of crushed limestone, from 52 producers, was 1,336,741 tons valued at \$985,883, against 990,477 tons valued at \$695,370 in 1936. Approximately 97 per cent of the production came from operators who marketed their products. No new development of consequence has taken place in the crushed-limestone industry during the year.

The average price of crushed limestone for the whole of the Province of Quebec was \$0.738 per ton, against \$0.702 in 1936. Commercial quarries on the Island of Montreal and on Isle Jésus reported sales of 960,314 tons at an average price, f.o.b. quarry, of \$0.689 per ton, against 630,266 tons at \$0.623 in 1936. In the City of Quebec district, sales of 124,904 tons

of crushed limestone were recorded, and the average price was \$0.940; this compares with 68,796 tons at \$0.829 in 1936. Sales of crushed limestone by commercial quarries in other parts of the Province totalled 204,751 tons at an average price of \$0.782 per ton. The balance, 46,772 tons, was not marketed but used in construction works undertaken by quarry operators.

DISTRIBUTION OF THE PRODUCTION OF BUILDING LIME IN 1936 AND 1937

CLASSIFICATION	1937		1936	
	QUICK-LIME	HYDRATED LIME	QUICK-LIME	HYDRATED LIME
Building trade.....	4,261	448	3,770	398
Dealers.....	5,090	1,342	2,454	1,233
Unclassified.....	2,055	1,161	2,618	931
TOTAL.....	11,406	2,951	8,842	2,562

MARBLE

The production of marble for use in the building trade amounted to 3,322 tons valued at \$39,423, as compared with 6,091 tons valued at \$120,582 in 1936. This output consisted of polished slabs of marble quarried and dressed by the *Wallace Sandstone Quarries, Limited*, at Philipsburg, in Missisquoi county, and of granulated and pulverized marble produced by this operator and also by the *Canada Marble and Lime Company*, at L'Annonciation, in Labelle county, and the *White Grit Company*, at Portage-du-Fort, in Pontiac county. The crushed material has numerous uses, as in the manufacture of artificial stone, for terrazo flooring, and for stucco work.

Statistics pertaining to marble and dolomite used for industrial purposes are included in this report with 'industrial' minerals (page 40).

MARBLE PRODUCTS SOLD IN 1936 AND 1937

CLASSIFICATION	1937	1936
Building and ornamental stone, rough.....	129 tons	29 tons
Building and ornamental stone, dressed.....	275 "	937 "
Crushed marble.....	2,918 "	3,353 "
Rubble and rip-rap.....		1,772 "
TOTAL.....	3,322 tons	6,091 tons

SAND AND GRAVEL

Sand and gravel produced during 1937 is estimated at 9,476,000 tons, as compared with 5,490,280 tons in 1936. The output constitutes a record.

Of the total, returns indicate that a little over one million tons was used as ballast and for the construction of buildings, and the remainder in road construction and maintenance. The notable increase in the production of crushed gravel is attributable to the fact that this material is at present used in preference to crushed stone in road work, as it can be produced on a large scale at low cost.

The average price of washed and screened sand and gravel was \$0.416 per ton in 1937, against \$0.474 per ton in 1936. Corresponding figures for crushed gravel were \$0.386 and \$0.496.

QUANTITY OF SAND AND GRAVEL SOLD IN 1936 AND 1937

CLASSIFICATION	1937	1936
Washed and screened sand and gravel.....	436,385 tons	319,898 tons
Ballast.....	667,138 "	1,075,711 "
Sand and gravel for building, concrete, road construction and maintenance.....	6,606,287 "	3,790,413 "
Crushed gravel.....	1,723,865 "	292,362 "
Other sands.....	42,325 "	11,896 "
TOTAL.....	9,476,000 tons	5,490,280 tons

SANDSTONE AND SHALE

The production of sandstone in 1937 amounted to 70,726 tons valued at \$65,424, against 92,094 tons valued at \$102,056 in 1936.

As is usual, the output consisted almost entirely of crushed stone and rubble used in public works. The material was obtained from quarries situated in the vicinity of the cities of Sherbrooke and Quebec, and along the lower Saint-Lawrence river and the baie des Chaleurs. The large tonnage of sandstone rubble recorded in the Table which follows was used for the most part in the construction of a wharf at Rimouski and was extracted from a quarry located nearby. Of the total output of crushed sandstone, 12,494 tons, sold at an average price of \$1.29 per ton, was produced by commercial quarries, and 7,367 tons, valued at \$1.29 per ton, by operators who produced crushed stone for their own use.

The production of red and grey slate and shale amounted to 693 tons valued at \$1,031. This output was derived from waste dumps lying in the vicinity of abandoned slate quarries in the Eastern Townships, and from red shale quarries at Lauzon in Lévis county and at Sainte-Hénédiine in Dorchester county. The total production was shipped as crude material to pulverizing mills.

QUANTITY AND VALUE OF SANDSTONE SOLD IN 1936 AND 1937

CLASSIFICATION	1937		1936	
	QUANTITY (Tons)	VALUE	QUANTITY (Tons)	VALUE
Building stone, rough.....	487	\$ 1,436	102	\$ 192
Rubble and rip-rap.....	50,378	38,420	3,336	2,588
Crushed stone.....	19,861	25,568	88,656	99,276
TOTAL.....	70,726	\$65,424	92,094	\$102,056

MINING OPERATIONS AND DEVELOPMENT IN WESTERN QUEBEC IN 1937

By R.-H. Taschereau, Inspector of Mines

DASSERAT TOWNSHIP

ARNCOEUR GOLD MINES, LIMITED

During 1937, this Company performed a large amount of work to explore a group of sixty-nine claims situated on the east boundary of Dasserat township. The work comprised stripping, trenching, and 17,077 linear feet of diamond drilling. Operations were suspended early in 1938.

MONARCH MINES, LIMITED

During the first few months of 1937, underground work was continued. This work failed to indicate the presence of a commercial ore deposit, and it was suspended. Diamond drilling was then resumed, and by the end of May, 1937, 4,346 feet of drilling had been completed.

Some bulk samples of the vein material were shipped to the Temiskaming Testing Laboratories, at Cobalt, Ont., for treatment, and a small quantity of gold was recovered. The property was idle during the remainder of the year.

BEAUCHASTEL TOWNSHIP

ALDERMAC COPPER CORPORATION, LIMITED

In January, 1937, production was resumed at the Aldermac mine on a basis of 250 tons of ore per day. With the installation of additional milling equipment, the capacity of the concentrator was later increased to 1,000 tons per day, and by the end of the year it was operating at close to its rated capacity. In 1937, the total tonnage treated amounted to 157,880 tons. The grade of the ore averaged 1.973 per cent copper, and 0.11 ounces gold and 0.435 ounces silver per ton.

Copper concentrates were shipped to a customs smelter, outside the Province. Some shipments of pyrite concentrates were made to outside points and the remainder was stock-piled, pending the erection of a plant to produce elemental sulphur at the property.

ARNTFIELD GOLD MINES, LIMITED

During 1937, the mill operated at an average of 180 tons per day. Late in the year, milling capacity was increased to 250 tons per day. In the twelve-month period ending December 31st, 1937, 65,691.7 tons of ore were milled, and 6,802 ounces of gold produced. The grade of the ore was too low to permit an operating profit, but indications point to more successful results in 1938.

The ore reserves at December 31st were estimated at 138,700 tons averaging 0.143 ounces gold per ton. A large part of the ore mined during

the year was drawn from the No. 3 shaft workings. Stopping was continued above the 675- and 825-foot levels, and lateral work was carried out on the 975-foot level. Mining operations at No. 2 shaft were largely confined to the 625-foot level, and to diamond drilling. The ore hoisted at the No. 2 shaft is hauled by motor truck to the mill.

FRANCOEUR GOLD MINES, LIMITED

During 1937, development of the No. 2 ore-zone was continued by diamond drilling and underground work. A three-compartment shaft, inclined at 45 degrees to the horizontal, was completed to a depth of 330 feet, and levels were established at depths of 190 and 315 feet. Approximately 3,000 feet of lateral work was completed on both levels. To the northeast of the shaft, a raise was driven from the 1st level to the surface. Three raises were driven from the 2nd to the 1st level, and it is reported that these showed the ore to be continuous between levels, and equal in grade to that encountered in lateral work.

The annual report of the Company for 1937 contains the following supplementary statement, dated April 8th, 1938:

"Since the end of the year, ore reserves have been increased by 12,400 tons, and now stand at 151,400 tons, averaging \$9.08 per ton. On the recommendation of your mine manager, the Directors have authorized the erection at your property of a 150-ton concentrator. Equipment orders have been placed and construction will commence as soon as possible. It is planned to have your property in production before July, 1938. Concentrates will be shipped to Noranda for treatment.

"During the construction, the mine will be prepared for production. No. 2 shaft is being sunk an additional 250 feet to a depth of 565 feet and two levels prepared for development".

HALLIWELL GOLD MINES, LIMITED

Operations were carried on continuously throughout 1937. A two-compartment vertical shaft was completed to a depth of 496 feet, and stations were cut at the 150-, 300-, and 450-foot levels. Lateral work was, for the most part, confined to the bottom level, and this totalled 1,465 feet. Diamond drilling was carried out during the year to a total of 13,561 feet.

The underground work and diamond drilling resulted in the development of a small tabular deposit, estimated to contain about 2,000 tons of ore, averaging approximately 0.7 ounces gold per ton. It was planned to extract this ore and ship it to a copper smelter, but the presence of bismuth in the ore made it unacceptable to the smelter. Arrangements were then made with Arntfield Gold Mines, Limited to treat the ore, for recovery of its gold content, in the Arntfield mill, and shipments were commenced early in 1938.

LA MINE D'OR CHAMPLAIN, LIMITÉE

In the fall of 1936, a promising discovery was made on a group of claims situated to the southeast of the Aldermac mine, in ranges V and VI of

Beauchastel township. Trenching and stripping exposed a mineralized zone containing promising gold values. A diamond-drilling programme, totalling over 10,000 feet, was then carried out.

This drilling was rewarded with encouraging results.

In the spring of 1937, a small mining plant was installed on lot 30, range VI, and the sinking of a two-compartment shaft was commenced. This shaft was carried to a depth of 213.5 feet, and cross-cuts were driven to north and south on the 200-foot level, for distances of 220 and 140 feet, respectively. From the end of the south cross-cut, a drift was opened to the southwest on the strike of several promising diamond-drill intersections. Some slashing, raising, and sub-levelling were also carried out.

The lateral work on the 200-foot level failed to develop material of ore grade. At the end of the year, exploratory work was continuing.

NEW RIBAGO MINES, LIMITED

This Company was incorporated in 1937, with a capitalization of 4,000,000 shares of \$1.00 par value stock, to acquire the assets of Ribago Copper Corporation. These assets included a block of claims in Beauchastel township and extending into the adjacent township of Rouyn.

In the spring of 1937, after a lapse of nine years, work was resumed on this property and a new discovery was made in a section hitherto unexplored. It consists of several lenses of quartz, in places heavily mineralized with pyrite and chalcopyrite, and with promising gold values. The property was optioned to Noranda Mines, Limited, who carried out a diamond-drilling programme. Later, the option was relinquished.

NIAGARA GOLD MINES, LIMITED

This Company was incorporated in 1937, with a capitalization of 99,000 shares of \$1.00 par value stock. It is a subsidiary of Adeline Lake Gold Mines, Limited.

During the year under review, a large amount of stripping and trenching was carried out, and a diamond-drilling programme totalling 9,566 feet was completed.

O'LEARY-MALARTIC MINES, LIMITED

In 1937, this Company continued to explore its group of claims situated astride the Beauchastel-Duprat boundary. Diamond drilling totalling 3,800 feet was carried out and is reported to have indicated irregular gold values. The Company also performed work on groups of claims in Rouyn and Bousquet townships.

ORLAND GOLD MINES (QUEBEC), LIMITED

This Company was incorporated in 1937 with a capitalization of 4,000 shares of no-par-value stock. The property comprises a large group of claims in the south-central part of Beauchastel township.

In 1937, in addition to a large amount of stripping and trenching, a diamond-drilling programme totalling 5,047 feet was completed.

ROUYN TOWNSHIP

ABBEVILLE GOLD MINES, LIMITED

This Company was incorporated in 1937 with a capitalization of 4,000,000 shares of \$1.00 par value stock. The property consists of a group of claims situated astride the Rouyn-Beauchastel boundary.

In early 1937, some diamond drilling was completed on the Beauchastel claims. It is reported that this work did not yield encouraging results.

Operations have been largely confined to the Rouyn group, where approximately 17,000 feet of diamond drilling was completed in addition to stripping, trenching, and the sinking of several test-pits. This work indicated the presence of silicified zones containing fine pyritic mineralization. The pyrite is auriferous, and an underground exploration programme was undertaken to determine the importance of the deposits.

Substantial camps were built, and a mining plant was installed. The plant includes a 450 cu. ft. steam-driven compressor, an 8 in. by 12 in. steam hoist, and an 80 h.p. locomotive-type boiler. The sinking of a vertical two-compartment shaft was commenced in early 1938. This shaft is located on claim R.18971.

ASTORIA ROUYN MINES, LIMITED

Operations were continued on this property during the first ten months of 1937. A light mining plant, consisting of a 6-in. by 8-in. steam hoist, a 310 cu. ft. gasoline compressor, and a 24 h.p. steam boiler, was installed. A two-compartment shaft was sunk to a depth of 269 feet, and stations were cut at the 125- and 250-foot levels.

Approximately 3,000 feet of lateral work was completed on the two horizons. It is reported that quartz veins encountered in this work were difficult to follow as a result of faulting and folding, and that, while some short sections of ore grade were exposed, the results, as a whole, were disappointing. Operations were suspended in October, 1937.

BAGAMAC MINES, LIMITED

In 1937, this Company performed about 3,000 feet of diamond drilling on their Rouyn Township claims. It is reported that low copper and gold values were encountered in this work.

BROWNLEE MINES (1936), LIMITED

During 1937, approximately 2,671 feet of diamond drilling were completed on the Brownlee property. The results of this drilling are not known.

CLERNO MINES, LIMITED

The underground work commenced in 1936 on claim R.11609 was discontinued, and operations were transferred to claim R.11479. On this latter claim, a sheared zone containing numerous quartz stringers was discovered. The quartz and nearby wall-rock are well mineralized with

coarse pyrite, and free gold has been observed. A 44-degree inclined shaft was sunk on the outcrop to a depth of 169 feet, and some lateral work was carried out on the 80- and 160-foot levels. This work failed to prove the existence of ore in mineable quantity, and operations were suspended.

GRANADA GOLD MINES, LIMITED

Early in 1937, an electric plant was installed at the No. 3 shaft, and deepening of the shaft from 350 feet to about 450 feet was carried out. Approximately 800 feet of drifting was completed on the 425-foot level. Operations have been suspended.

KEYROC (QUEBEC) GOLD MINING COMPANY, LIMITED

This Company was incorporated in 1937 with a capitalization of 149,000 shares of \$1.00 par value stock. It is a subsidiary of Keyroc Gold Mining Company, Limited.

Diamond drilling was continued during the early part of 1937. This drilling totalled 1,019 feet. Operations were then suspended.

MCWATTERS GOLD MINES, LIMITED

During 1937, 33,636 tons of ore and 765 tons of impounded tailings were milled, from which 12,074 ounces of gold were recovered. At December 31st, 1937, ore reserves were estimated at 34,624 tons averaging 0.4 ounces gold per ton. Promising developments occurred as a result of systematic exploration work. The annual report of the Company for 1937 contains the following information:

"The ground along the South contact, between the shaft and the east boundary of the property, has been explored by diamond drilling from the surface. These holes were spaced 300 feet apart and, where values were encountered, closer drilling was done. Though values were exposed in some of the holes, no important results were obtained.

"Drilling from the 460-foot level to depth exposed values at the 712-foot horizon in three holes spaced about 40 feet apart. A number of other intersections showed interesting values in the area. It was decided to carry the winze down to the 900-foot level, and sinking started on November 12th.

"The winze has been completed at this writing and the zone exposed in the drilling opened up for over 100 feet east and west on the 6th sub-level, or 712-foot horizon. The exposed width will average better than 15 feet. The grade is estimated at \$10.00. The possibilities of the shear extending east and west are good, and this work is under way. Other drill intersections 60 and 120 feet below the 6th sub-level indicate that the shear extends downward".

NORANDA MINES, LIMITED

The annual report of the Company for 1937 contains the following information concerning developments at the Horne mine:

"The new No. 5 shaft was completed to a depth of 4,094 feet and since October a portion of the ore has been hoisted in it.

"A total of 6,883 feet of drifting, 512 feet of raising in rock, 38,161 feet of exploratory diamond-drilling was done and 228,000 cubic feet of rock was excavated in cutting stations and ore-pockets.

"After the completion of No. 5 shaft, cross-cutting and drifting were started on the 3,475-foot, the 3,725-foot, and the 3,975-foot levels. At the end of the year, these exploratory drifts had just been gotten well under way, the maximum advance from the shaft being 322 feet on the 3,475-foot level. So far, all three of these drifts have been mostly in alternate bands of heavily mineralized rhyolite-breccia and massive pyrite, carrying low values in copper and gold, mostly below commercial grade. Information previously obtained from a few scouting diamond-drill holes put down from the 2,975-foot level indicated that this favourable zone of heavily mineralized rhyolite-breccia is quite extensive, and as the vertical extent of the block of ground presently prepared for exploration is 1,000 feet, it will require several years to thoroughly explore it by drifting and diamond drilling on a number of levels.

"ORE RESERVES:

"From information obtained in diamond drilling and other openings in the various ore-bodies there is now indicated above the 2,975-foot level, as of January 1, 1938, the following tonnage of ore:

	AMOUNT (tons)	COPPER (per cent)	GOLD (oz./ton)
Sulphide ore over 4% copper.....	7,693,000	7.36	0.165
Sulphide ore under 4% copper.....	19,699,000	0.95	0.187
Siliceous fluxing ore.....	3,509,000	0.83	0.123

"ORE SHIPMENTS:

"The tonnage and grade of ore delivered from the Horne mine to the smelter and concentrator in 1937 were as follows:

	AMOUNT (tons)	COPPER (per cent)	GOLD (oz./ton)	SILVER (oz./ton)
Direct smelting sulphide ore.....	496,142	4.00	0.229	0.57
Concentrating sulphide ore.....	1,106,644	2.02	0.131	0.35
Siliceous fluxing ore.....	421,682	0.50	0.102	0.13
TOTAL.....	2,024,468			

"SMELTER:

"During 1937, the smelter treated 1,155,755 tons of ore, concentrate, and refinery slag and produced 89,915,813 pounds of anodes. After deducting the copper, gold, and silver which was recovered from the refinery slag, the estimated production of new copper, gold, and silver was 87,060,237 pounds of fine copper, 280,806 ounces of gold, and 705,494 ounces of silver.

"Included in the above figures is the production from 51,338 tons of customs ore and concentrate. If the estimated production from this customs

ore and concentrate is deducted, the estimated recovery from the Horne mine is 80,172,108 pounds of fine copper, 274,162 ounces of gold, and 599,911 ounces of silver.

"The concentrator milled 1,106,609 tons of ore from the Horne mine, the average analysis of which was 2.02 per cent copper, 0.131 oz. gold per ton, and 0.35 oz. silver per ton, from which 182,837 tons of copper-gold concentrate were produced and sent to the smelter. The tailing from the copper-gold flotation circuit was re-treated by flotation and a gold-bearing pyrite concentrate produced; 150,933 tons of this pyrite were treated in the cyanide plant and 9,856 ounces of gold were recovered from it.

"STATISTICS:

"The following table shows the amount of ore hoisted, the tonnage treated in the smelter and concentrator, and the production each year since the commencement of operations:

YEAR	ORE HOISTED (tons)	ORE, CONCENTRATE, AND REFINERY SLAG SMELTED (tons)	ORE TREATED IN CONCENTRATOR (tons)	FINE COPPER PRODUCED (pounds)	GOLD PRODUCED (ounces)	SILVER PRODUCED (ounces)
1927.....	10,740	10,740	.....	552,345	767	2,644
1928.....	265,970	271,926	4,468	33,065,261	52,949	186,277
1929.....	323,316	428,221	51,689	51,223,115	68,732	334,279
1930.....	849,303	734,072	191,856	75,509,373	117,393	691,920
1931.....	1,012,005	765,544	317,792	62,859,355	253,363	558,801
1932.....	1,218,295	918,567	379,637	63,013,485	341,350	619,597
1933.....	1,541,524	1,010,629	676,168	65,008,731	284,675	510,739
1934.....	1,777,021	1,050,684	920,363	70,175,512	248,615	552,809
1935.....	1,906,661	1,076,232	1,048,806	74,478,436	268,333	544,559
1936.....	2,011,730	1,120,455	1,070,597	62,750,342	342,495	543,250
1937.....	2,024,468	1,155,755	1,106,609	87,060,237	280,806	705,494

"NEW CONSTRUCTION:

"At the mine, a 2,200 h.p. skip hoist was installed and placed in operation at the new No. 5 shaft. Conveyor belts, loading pockets, storage bins, and other equipment required for transferring ore from underground crushers to No. 5 shaft, and conveying it from the shaft to the secondary crushing plant on surface, were also installed. A new timber-framing and carpenter shop was constructed.

"A new Roots blower was installed in the concentrator to ensure uninterrupted supply of low-pressure air to the flotation cells, and a storage room was provided for the chemical reagents used in the concentrator.

"An additional roasting furnace was installed in the smelter, and the second reverberatory smelting furnace was lengthened nine feet. Alterations were made in the charge bins above the reverberatory furnaces in preparation for changes in the method of transferring the hot roasted ore from the nine roasting furnaces to the two reverberatory smelting furnaces. These changes are being made principally to improve working conditions in the smelter, but it is expected that some decrease in dust loss will also be effected.

"An additional 2,000 kv.a. transformer was purchased to take care of increased power demand, and a 28-inch-diameter wood-stave pipe-line,

11,150 feet long, was constructed from the power house to Dufault Lake to ensure an adequate supply of water for the plant and the towns of Noranda and Rouyn.

"The smelter change-house was enlarged, and two detached houses, eight duplex houses, and two four-family apartment houses, were constructed for rental to employees".

PELLETIER LAKE GOLD MINES, LIMITED

This Company, a subsidiary of Ventures, Limited, holds the mining rights to a group of claims situated to the west of the Stadacona-Rouyn mine.

In 1937, an extensive diamond-drilling campaign was inaugurated to explore the ground on the strike of the Stadacona-Rouyn ore-zones. In this programme, 15,482 linear feet of drilling were completed.

The annual report of Ventures, Limited, for the year 1937 states that a number of lenses of gold ore were intersected in the drilling, and that the results warrant further work at some future time.

PONTIAC ROUYN MINES, LIMITED

In 1937, operations on this property were confined to the shipment of 470 tons of ore from the dump to the Noranda smelter. It is reported that this shipment contained 32 ounces of gold and 35 ounces of silver.

POWELL ROUYN GOLD MINES, LIMITED

During the first six months of 1937, lateral work was continued on the 200- and 500-foot levels, from the No. 1 inclined shaft. This work was rewarded with very encouraging results. The sinking of a three-compartment vertical shaft was then commenced to the northeast of the collar of No. 1 shaft, and this was completed to a depth of 766 feet at the end of the year. Drifting, during the year, totalled approximately 4,000 feet.

Levels were established in the new shaft at the 200-, 350-, 500-, and 650-foot horizons. The Company reports that the development work has indicated over one million tons of developed and partially developed ore averaging 0.183 ounces gold per ton.

Toward the end of the year, stoping was commenced. Shipments of ore were made to the Noranda smelter at a rate of 250 to 300 tons per day. Since that time, production has been increased to 500 tons of ore per day. The ore has a high silica content, and this makes it valuable as a fluxing medium in the smelting of copper ores.

Production for the year amounted to 29,565 tons, from which 4,345 ounces of gold were recovered.

The property is completely electrified. The mining equipment includes two 1,000 h.p. compressors and a 125 h.p. double-drum hoist.

QUESTOR GOLD MINES, LIMITED

This Company was incorporated in 1937 with a capitalization of 3,000,000 shares of \$1.00 par value stock. It holds the mining rights to properties in the townships of Rouyn and Joannès.

In Rouyn township, operations were confined to two properties situated to the southwest of Noranda. Stripping and trenching were carried out on a mineralized zone carrying gold values, and a diamond drilling programme totalling 6,168 linear feet was completed.

RED GOLD MINING COMPANY, LIMITED

Surface stripping, trenching, and diamond drilling were continued on this property in the year under review. The drilling totalled 16,761 feet.

ROUYN REWARD GOLD MINES, LIMITED

In 1937, surface stripping and trenching were carried out on the property, and a diamond-drilling programme totalling 3,750 linear feet was completed.

SEGUIN ROUYN GOLD MINES, LIMITED

Operations on this property in 1937 were confined to the drilling of a number of diamond-drill holes totalling 3,791 feet.

SENATOR ROUYN MINES, LIMITED

In 1937, stripping and trenching on this property exposed a mineralized zone carrying promising gold values. Camps were erected and an extensive diamond-drilling campaign was undertaken. By the end of the year, forty-six drill holes, totalling 14,000 feet, had been completed. It is reported that sections of high-grade gold ore were encountered in the drilling, and it is planned to carry out an underground exploration programme at an early date.

STADACONA ROUYN MINES, LIMITED

In the year ending December 31st, 1937, 101,786 tons of ore were milled for a recovery of approximately \$4.85 (0.14 oz.) gold per ton. The capacity of the mill has been increased, and early in 1938 the mine output was increased to 400 tons of ore per day. The shaft was deepened to 900 feet, and two new levels were established at the 725- and 850-foot horizons.

JOANNÈS TOWNSHIP**ARROWHEAD GOLD MINES, LIMITED**

This Company continued underground exploration work throughout most of 1937. The three-compartment shaft, begun in the previous year, was deepened to 520 feet, and lateral work was carried out on the 200- and 500-foot levels. This drifting and cross-cutting totalled 2,600 feet. A station was cut at the 350-foot horizon, but no lateral work was undertaken at this level. Also, 2,702 feet of diamond drilling were completed.

The work proved the presence of narrow veins of quartz, carrying encouraging gold values, and it is reported that about 6,000 tons of ore averaging 0.57 ounces gold per ton is indicated. Operations were suspended toward the end of the year.

JOANNÈS DAVIDSON MINES, LIMITED

During the first six months of 1937, this Company carried out an extensive exploration campaign. This included a large amount of stripping and 2,864 feet of diamond drilling in eleven holes. It is reported that this work indicated the presence of gold-bearing veins, but, as a whole, the gold content was low.

DUPRAT-DUFRESNOY TOWNSHIPS

WAITE-AMULET MINES, LIMITED

Early in 1937, operations were resumed on the Waite and Amulet properties. The annual report of the Company for the year 1937 contains the following information:

Amulet Section

“RESUMPTION OF PRODUCTION:

“Preparations were begun in early April for the resumption of production of copper-zinc milling ore from the Amulet *F* ore-body.

“Milling commenced on July 3rd. As the *F* shaft aerial tramway was not in operation until August 10th, mill feed until that date was drawn largely from the *C* shaft ore-dump, the remainder being trucked from *F* shaft. Subsequently, all mill feed was drawn from *F* shaft. A milling rate of about 10,000 tons monthly was attained by the middle of September.

“CONSTRUCTION:

“An aerating classifier was installed in the mill in place of the existing classifiers, this change being indicated for the future treatment of the Waite zinc-free ores. A dryer for copper concentrate was installed to eliminate the difficulty of handling badly frozen concentrates in the winter months. Several other minor changes and additions were made in the mill flow-sheet.

“A complete surface plant, comprising headframe, ore bins and tramway loading terminal, hoist house, blacksmith shop, change house, and sub-station, was erected at *F* shaft to replace the plant previously destroyed by fire. Fire damage to the shaft collar and the aerial tramway was repaired. An additional dormitory was built at the Amulet.

“The mill heating plant was completely re-built, an additional boiler being installed for the copper concentrate dryer. A small heating plant was built at *F* shaft.

“A new motor road from the Macamic highway to the Amulet office was built by the Quebec Department of Mines, in conjunction with the Dominion Government and this Company. Extensive repairs were necessary to buildings and equipment throughout the plant.

“MINING:

“Production of milling ore from *F* shaft was 44,699 tons. Development work, other than stope preparation, is summarized as follows:

Drifting and cross-cutting.....	357 feet
Raising.....	488 feet
Diamond drilling.....	7,010 feet

“Development and exploration was limited owing to the necessity of preparing stopes for mining. The diamond drilling, amounting to 7,010 feet, was in the *A* and *F* ore-body areas.

“ORE RESERVES:

“The ore reserves estimate, as of December 31st, 1937, based on previous records and estimates and modified by any new information gained during the year, is as follows:

	COPPER %	ZINC %	SILVER (oz./ton)	GOLD (oz./ton)
Copper-sine ore..... 453,849 tons:	2.64	10.74	2.5	0.039

“MILLING:

“The tonnage of ore treated in the mill was 47,285 tons, of which 2,641 tons were reclaimed from the *C* shaft ore-dump and 44,644 tons were drawn from *F* ore-body. The average ore assay was:

Copper.....	4.23	per cent
Zinc.....	11.84	“
Silver.....	1.72	ounces per ton
Gold.....	0.019	“

“The production of copper concentrates from this ore amounted to 7,385 tons, of the following average assay:

Copper.....	24.39	per cent
Silver.....	7.87	ounces per ton
Gold.....	0.078	“

“Zinc concentrate production was 7,773 tons, averaging 52.99 per cent zinc. As a satisfactory grade of concentrate could not be made from the oxidized dump-ore, the zinc circuit was not operated regularly until August 3rd and the production was made from 42,239 tons of ore milled subsequent to that date.

“SHIPMENTS:

“Copper concentrate shipments to the Noranda smelter amounted to 7,245.0 tons.

“Zinc concentrate shipments to Europe amounted to 6,155.5 short tons of concentrate from the stock-pile left from the previous mill operation. Four thousand and one tons of concentrate produced after the close of the 1937 shipping season were placed in the stock-pile for shipment in 1938.

Waite Section

“RESUMPTION OF OPERATIONS:

“Preparations were started in late April for re-opening of the Waite mine. Production of high grade smelting ore commenced early in August.

“CONSTRUCTION:

“A dormitory, mess-house, and office and warehouse, were built to replace the buildings destroyed by fire. A small heating plant was provided for the Waite dormitory and mess-house.

“A head-frame and hoist-house were erected for the new Waite No. 2 shaft. The aerial tramway extension from *F* shaft to No. 2 shaft, a distance of 8,300 feet, was completed except for the installation of cables and small equipment, and the Waite loading terminal and ore bins were 75% completed. All tramway equipment was on hand.

“MINING:

“Production of smelting ore was 12,814 tons. Development work, other than stoep preparation, is summarized as follows:

Shaft sinking.....	551 feet
Drifting.....	22 feet
Raising.....	65 feet

“Very little work was required to get the mine into production. The major item of development was the sinking of the Waite No. 2 shaft to a depth of 551 feet.

“ORE RESERVES:

“The ore reserves estimate, as of December 31st, 1937, based on previous records and estimates, is as follows:

	COPPER %	ZINC %	SILVER (oz./ton)	GOLD (oz./ton)
Copper ore..... 454,536 tons:	5.88	.....	0.5	0.049
Zinc ore..... 300,000 tons:	.....	11.52	.....	.....

“SHIPMENTS:

“Smelting-ore shipments were 12,665.3 tons. The average smelting-ore assay was 13.18 per cent copper, and 0.093 ounces of gold and 0.46 ounces of silver per ton”.

CLÉRICY TOWNSHIP

LEROY GOLD MINES, LIMITED

In 1937, this Company erected new camps on the Caputo group, situated on the south boundary of Cléricy township. A light mining plant was installed, and a three-compartment shaft was sunk to a depth of 265 feet. Levels were established at the 125- and 250-foot horizons. The shaft is in the southeast corner of claim R.25993.

In previous years, a large amount of trenching, stripping, and diamond drilling was carried out on the Caputo property, to explore a gold-bearing lens of quartz. In the shaft, this lens was encountered at a depth of 147 feet, and it dipped out of the shaft at 170 feet. Some very promising assays were returned from sampling the vein in the shaft, but it is reported that lateral work on both levels failed to indicate a continuous ore deposit. All operations have been suspended.

DUPARQUET TOWNSHIP

BEATTIE GOLD MINES, LIMITED

The Company's annual report contains a complete description of operations and developments during the year under review. In the twelve-month period, 580,520 tons of ore were milled, for an average recovery of 0.1138 ounces of gold per ton.

"EXPLORATION:

"There was no exploration work done on surface this year.

"During the year, underground exploration work in the North ore-zone consisted of advancing 23 drift 660 feet east on the 2nd level. Diamond drilling has shown 350 feet of 0.12 oz. ore over 8-foot widths and 300 feet of 0.11 oz. ore over widths of 21 feet. This drift is in the vicinity of drilling done from surface by the Consolidated Mining and Smelting Company several years ago, in which some ore was disclosed.

"The 33 drift on the 3rd level, which was driven to the east boundary of the property in 1936, was this year diamond-drilled with horizontal holes at fifty-foot intervals. The ore shown by this drilling can be combined into three blocks; a length of 750 feet, 18 feet wide, assaying 0.10 oz., is directly under the ore shown in 23 drift, and indicates 140,000 tons of 0.11 oz. ore between the two levels; the next block to the east, 500 feet in length, 27 feet wide, assaying 0.08 oz.; and the remaining block, 600 feet in length, 24 feet wide, assayed from 0.06 to 0.10 oz. The 43 drift of the 4th level was advanced 435 feet to the east and subsequent cross-drilling showed 0.13 oz. ore, 12 feet wide, for the drift length. The 53 drift was advanced 511 feet to the east in erratic values, and indications are that ore shown in 43 drift plunges to the east, in which case the 53 drift should be advanced further. The 67 drift on the 6th level was driven parallel to 63 drift for a distance of 660 feet to connect with 653 cross-cut for mining purposes and for exploring the North contact of the ore-zone with the greenstone, and also for future diamond drilling. The drift was in breccia carrying values most of the distance.

"Diamond drilling in the North ore-zone for exploration purposes below the 6th level consisted of six holes spaced along a length of 1,000 feet in 63 drift; each of these holes showed some mineralization though only one, on the 8,000-ft. section, east, showed commercial ore which averaged 0.12 oz. over 80 feet horizontal width, approximately 300 feet below the level. Two diamond-drill holes were driven through the south porphyry contact, one on the 8,100-ft. section from 33 drift, 3rd level, which cut 300 feet of bleached greenstone containing several small stringers of ore;

and one hole from 63 drift at 8,500-ft. section which passed through 270 feet of bleached greenstone along the contact. This greenstone contained four bands of breccia ore, the best one being $8\frac{1}{2}$ feet wide and assaying 0.15 oz. gold.

"In the A ore zone, 44 drift on the 4th level was driven to the west about 240 feet, and subsequent horizontal diamond-drilling disclosed 180 feet of 0.13 oz. ore over 23 feet average width and also a block 50 feet in length assaying 0.20 oz. ore 20 feet wide. This latter block is cut off on the west by a fault and is being further explored. There was also some drifting done in 45, 54, and 55 drifts disclosing narrow bands of ore.

"The 64 drift on the 6th level was advanced 460 feet to explore the west end of the porphyry. There were several bands of breccia ore in the drift, the best one being 200 feet in length and assaying 0.16 oz. gold over an average width of nine feet.

"The A ore-body was also picked up by drilling east of the shaft and west of the main fault, showing an average grade of 0.16 oz. 20 feet wide.

"DEVELOPMENT:

"Preparations for mining the ore east of the main fault in the North ore-body were continued during the early part of the year. The No. 3 crusher installation of the 6th level was also finished. The remaining development work in this section consisted of drifting and raising in preparation for mining the block of ore immediately west of this ore-body.

"In the A ore-zone, development work consisted of drifting on the 4th level, and driving mining raises and manways on the 4th, 5th, and 6th levels in preparation for mining.

"Stripping overburden from the surface of the North ore-zone was continued during the early part of the year. In June, a section of the North wall at the east end of the glory-hole failed, allowing several thousand yards of clay to slide into the glory-hole, some of which ran down the ore-passes to the 6th level crusher-station. Production during June was curtailed while this material was being removed from the mine; the portion still remaining in the glory-hole will be removed in 1938. To prevent further sloughing, a large section of the overburden, alongside the rim of the glory-hole, has been removed, and also a ditch has been dug to try to drain some of the water which is held in the nearby swamp.

"ORE RESERVES:

"This year, 580,520 tons of ore at an average grade of 0.1434 oz. gold were milled. This tonnage practically all came from the North ore-zone, although a portion came from east of the main fault, which is a section of the ore-body prepared last year for mining.

"Exploration and development work done in preparation for mining this block of ore east of the fault and the A ore-zone have provided data for re-estimation of ore reserves. This makes it possible to add 600,000 tons of ore to the reserves this year.

	AMOUNT (tons)	GOLD (oz. per ton)
NORTH ZONE:		
Reserve, January 1st, 1937.....	4,227,840	0.142
Partially developed east of Main fault, 1937.....	550,000	0.138
TOTAL	4,777,840	0.141
Milled, 1937.....	577,200	0.143
RESERVE	4,200,440	0.141
A ZONE:		
Reserve, January 1st, 1937.....	300,000	0.152
Developed, 1937.....	50,000	0.152
TOTAL	350,000	0.152
Milled, 1937.....	3,320	0.126
RESERVE	346,680	0.152
TOTAL RESERVE, January, 1938	4,547,120	0.142

"MILLING:

"There were 580,520 tons of ore assaying 0.1434 oz. gold milled during 1937. This is an increase of 29,488 tons over the tonnage milled in 1936. The average daily tonnage rate of ore milled was 1,590 tons, which is lower than the actual daily rate, due to a reduction of 16,000 tons in June, caused by the plant being partially down while removing overburden that had caved into the east section of the mine glory-hole.

"Milling operations were upset to some extent this year as changes in the flow-sheet were made to fit in with the new treatment of roasting primary flotation concentrate before cyanidation. This change in milling practice was started in November, after the erection of the roasting plant was completed. Switching the plant over to the new metallurgical practice to some extent affected this year's production, which was lower due to increase in process inventories, and the costs were higher as the plant was on a lower tonnage basis. Previous to November, the concentrates resulting from the re-flotation of the cyanide residues were shipped to the American Smelting & Refining Company's smelter at Tacoma, Washington.

"The December operations have shown considerable improvement; and indications are that results from roasting the flotation concentrate before cyanidation will be better than was expected, both as to recoveries and costs.

"TRANSPORTATION:

"There were approximately 36,000 tons hauled this year over the railway, consisting of outgoing concentrates, incoming supplies, and materials for erecting the new roaster plant. Several sections of the road-bed were ballasted, and, due to washouts caused by floods, several concrete culverts were installed and a new bridge was built over the Bassignac river at Davangus.

"CONSTRUCTION AND PLANT IMPROVEMENT:

"The installation of the No. 3 crusher on the 6th level, to facilitate mining from the east section of the North ore-zone, was completed in February. This crusher is located so as to take all ore from the east end of the ore-body, and the crushed product is transported 700 feet to the

shaft loading-pocket by a belt conveyor. Another similar crushing arrangement is located on the 6th level to treat ore from the west end of the ore-body.

"An additional pump was installed on the 3rd level this year as a standby for the unit in operation and also to be used while extensive repairs are being made to the existing unit.

"A Dominion dragline shovel was purchased in July to replace the Marion steam-shovel which was destroyed when the rim of the east section of the glory-hole caved-in, in June.

"The installation of the roasting plant, located above the present mill-site, necessitated changes and additions in railway track arrangements, waggon roads, air, water and power lines.

"Excavation work was commenced the latter part of April. Steel erection was started in June and was completed in October. The plant consists of a conveying system from the existing concentrate drying plant to three bins of 750 tons capacity, located over three 14-hearth Wedge-type roasters. Facilities for receiving hot calcines, quenching with water, and pumping to the cyanide plant are located beneath the roasters. Gases and dust resulting from the roasting process are transported through a brick-lined system of flues to a waste-heat boiler and thence to the hot Cottrell section, where the dust is recovered. The gases then pass through the cold Cottrell section to recover arsenic, and then into a 7 by 400 ft. reinforced concrete brick-lined chimney.

"Equipment to return the recovered dust to the roasters is located beneath the Cottrell sections, and there is similar equipment to pump the recovered arsenic to the 100 ft. by 30 ft. deep storage tank.

"Pulverized coal is used for supplying heat to the process, and the equipment for same consists of facilities for dumping railroad cars, elevator, storage bins, air-swept mills for pulverizing, and a combustion flue connected through risers to eight hearths on each roaster. A 150 h.p. Keeler boiler is included in the roaster-plant building to replace the old wood-burning boilers. This boiler, along with the waste-heat boiler, takes care of plant requirements.

"Adjustments and additions in both the flotation and cyanide plants to fit in with the proposed change in practice consisted of a new thickener and an addition to the cyanide plant building, additional clarification and precipitation equipment, rearrangement and installation of classifiers, tanks, launders, pumps, and pipe-lines. In the flotation section, a new 6 by 16 ft. ball-mill was installed to replace the worn-out 4 by 20 ft. ball-mill; also, a bowl classifier was taken from the cyanide plant and re-located in this section. Other additions consisted of pumps, pipe-lines, launders, and rearrangement of existing equipment.

"Early in the year, four new Oliver filters were purchased, three of which replaced the old worn-out Portland-type filters and one for filtering the additional tonnage of concentrate now being roasted. Also, changes and additions were required in the drying plant to handle the extra tonnage of concentrate".

DUMICO GOLD CORPORATION, LIMITED

The mining rights formerly held by the Duparquet Mining Company, Limited, are now held by this Company. The property is situated to the east of, and adjoining, that of Beattie Gold Mines, Limited.

In 1937, a mining plant was installed close to the west boundary of the property, and the sinking of a new three-compartment shaft was completed to a depth of 329 feet. Approximately 11,000 feet of diamond drilling was also carried out. Plans were made for an extensive underground exploration campaign in the coming year.

KANBEC GOLD MINES, LIMITED

This Company is a subsidiary of Kanasuta Gold Mines, Limited. It holds the mining rights to a group of claims situated to the west of the Beattie mine.

In 1937, surface work and diamond drilling were carried out to explore a mineralized zone exposed on the western part of the claims. It is reported that there is a wide body of quartz porphyry in this locality, and that gold values were found in association with the intrusive. In addition to a large amount of stripping and trenching, nearly 10,000 feet of diamond drilling was completed by the end of the year.

DESTOR TOWNSHIP

DESCAR CORPORATION, LIMITED

In 1937, exploration work was continued on this property, and 8,499 feet of diamond drilling was completed. It is reported that encouraging gold assays were returned from several holes, but that no commercial ore-bodies were definitely established.

DUQUESNE MINES, LIMITED

This Company is a consolidation of several organizations, which include the Del Rio Mining Company, Limited, and Galatea Gold Mines, Limited. The property is situated astride the Duparquet-Destor boundary.

In 1937, diamond drilling totalling 21,703 feet was carried out. It is reported that promising results were obtained in this work, and the presence of several gold-bearing zones indicated.

MARY JANE COPPER-GOLD MINES, LIMITED

In 1937, a diamond-drilling programme was resumed on this property, and 2,444 feet of drilling was completed at the end of the year.

BOUSQUET TOWNSHIP

BOUSCADILLAC GOLD MINES, LIMITED

Early in 1937, underground exploration work was suspended, and a diamond-drilling programme was commenced. In this programme, 5,063 feet of drilling was completed.

It is reported that the drilling indicated the presence of two gold-bearing lenses, at distances of 900 feet and 1,300 feet, respectively, from the shaft. On completion of this work, all operations were suspended.

BROWN BOUSQUET MINES, LIMITED

In 1937, trenching and stripping were carried out on this property, and a number of diamond-drill holes, totalling 6,412 feet, were put down.

BROWN CADILLAC GOLD MINES, LIMITED

Promising results were obtained in surface work on this property, and a diamond-drilling programme, totalling 2,575 feet, was completed. It is reported that the drilling failed to confirm the continuation of the surface showings to depth, and operations were suspended.

CASSELS DUVAL MINES, LIMITED

This Company was incorporated in 1937 with a capitalization of 3,500,000 shares of \$1.00 par value stock. The property is close to the north boundary of Bousquet township.

In the fall of 1936, a promising gold discovery was made. Stripping and trenching indicated a mineralized schisted zone containing gold values. A diamond-drilling programme was commenced, and at the end of December, 1937, over 6,000 feet of drilling had been completed. This drilling was attended with very encouraging results, and has indicated the presence of a continuous ore-shoot. During the summer, direction of operations was transferred to the United States Smelting and Refining Company.

It is reported that underground work may be commenced on this property in 1938.

DOREVA (QUEBEC), LIMITED

This Company was incorporated in 1937 with a capitalization of 99,000 shares of \$1.00 par value stock. It is a subsidiary of Doreva Gold Mines, Limited.

In 1937, following the completion of a considerable amount of surface work and diamond drilling, a two-compartment shaft was sunk to a depth of 210 feet. Over 300 feet of drifting and cross-cutting was carried out on the 150-foot level before operations were suspended.

MOOSHLA GOLD MINES, LIMITED

Underground work was continued during the first part of the year under review. Later, a diamond-drilling programme was commenced and 5,586 linear feet were completed. At the end of October, all operations were suspended.

NORGOLD MINES, LIMITED

Surface work was resumed in the summer of 1937 on the three groups of claims held by this Company. Also, diamond drilling totalling 3,500 feet was carried out.

THOMPSON BOUSQUET GOLD MINES, LIMITED

During the summer of 1937, stripping and trenching were continued, and 3,147 feet of diamond drilling was completed.

WESTWOOD CADILLAC MINES, LIMITED

Diamond drilling on this property, in holes aggregating about 8,000 feet, is reported to have been attended with encouraging results. Plans were made for an underground exploration campaign, and a mining plant was installed. The sinking of a shaft was under way at the end of the year.

CADILLAC TOWNSHIP

AMM GOLD MINES (QUEBEC), LIMITED

This subsidiary of Amm Gold Mines, Limited, was incorporated in 1937 with a capitalization of 40,000 shares of \$1.00 par value stock.

The surface work carried out during the previous year indicated the presence of three sheared zones, containing quartz lenses up to two feet in width, and accompanied by banded quartz stringers. Sulphide mineralization consists of pyrite and arsenopyrite. Fine free gold is also present.

During 1937, substantial camps were erected, and, following the installation of a mining plant and completion of an electric transmission line, a three-compartment shaft was sunk to a depth of 285 feet and levels established at the 135- and 260-foot horizons. This shaft is on claim T.584.

Drifting was under way on both levels at the end of the year. Some difficulty was experienced in sampling the veins, and a 5-ton test-mill was installed as a bulk sampling medium. Diamond drilling carried out during the year totalled 7,222 feet.

CANDALACA (QUEBEC) GOLD MINES, LIMITED

Diamond drilling in holes aggregating 6,425 feet was carried out on the Candalaca group of claims, situated to the north of, and adjoining, the O'Brien Gold Mines property. Operations were suspended in July, 1937.

CENTRAL CADILLAC GOLD MINES, LIMITED

Underground work and diamond drilling were continued, with, it is reported, encouraging results. Several gold-bearing veins were exposed in drifting on the 100- and 200-foot levels. This lateral work totalled over 6,000 feet.

HAYES CADILLAC MINES, LIMITED

Surface work was carried out on the Cadillac Township group held by this Company and a diamond-drilling programme was completed in holes totalling 4,078 feet. Operations were suspended late in the year.

KEWAGAMA GOLD MINES, LIMITED

In 1937, the shaft was deepened to 524 feet, and lateral work was commenced on the 375- and 500-foot levels. The results are reported as

encouraging. The old section of the shaft, between the surface and the 125-foot level, is of two-compartment size; below that, it has three compartments.

Diamond drilling totalling 3,766 feet was also carried out. This work indicated the presence of gold-bearing veins on the east part of the property.

LAPA CADILLAC GOLD MINES, LIMITED

The shaft was continued to a depth of 588 feet, and three levels were developed at the 165-, 290-, and 540-foot horizons. Nearly 4,000 feet of drifting and cross-cutting was carried out by the end of the year. In addition, a total of 19,981 feet of diamond drilling was completed.

The underground work confirmed the presence of several mineralized zones containing gold in economic quantity, and plans were made for the erection of a 250-ton mill. This mill was under construction in the spring of 1938.

O'BRIEN GOLD MINES, LIMITED

On completion of the Main shaft to 1,540 feet, lateral work was commenced on the four new levels, *viz.*, the tenth, eleventh, twelfth, and thirteenth. The results of this work are described in the following extracts from the annual report of the Company for the year ended September 30th, 1937:

"Tenth Level (1,138-ft.).—This drift was advanced 386.5 feet west of the shaft; no advance was made to the east. The vein between 66 feet west and 301 feet west was typical of that in the high-grade shoot developed on the upper levels. A stope length of 265 feet is indicated, with ore grading 1.333 oz. per ton (\$46.65 with gold at \$35.00 per oz.) over a stoping width of 3.3 feet.

"Eleventh Level (1,264-ft.).—Drifting on this level was advanced 478.5 feet west and 410.5 feet east of the shaft. On the west, two separate shoots are indicated, one 210 feet long (between 62 ft. and 272 ft. west) grading 0.340 oz. per ton (\$11.90 with gold at \$35.00 per oz.) and the other 78 feet long (between 348 ft. and 426 ft. west) grading 0.280 oz. per ton (\$9.80 with gold at \$35.00 per oz.). On the east side, there appears to be one ore-shoot of from 50 to 70 feet in length extending to below the twelfth level, but insufficient work has yet been done on this ore on the east side from below the eighth level to reliably determine the grade and tonnage.

"Twelfth Level (1,389-ft.).—Drifting on this level was advanced to 525.5 feet west and 430 feet east of the shaft. As on the eleventh, two shoots are indicated to the west, 155 feet long (between 136 and 291 feet west) grading 0.280 oz. per ton (\$9.80 with gold at \$35.00), and 138 feet long (between 331 and 469 feet west) grading 0.250 oz. per ton (\$8.75 with gold at \$35.00).

"Thirteenth Level (1,514-ft.).—Drifting on this level was advanced 528 feet west and 310.5 feet east of the shaft. This work has shown the vein to continue over this length west of the shaft, where greater width and more persistency has been found than on any other level, although as yet no really high-grade ore has been found in it. Two shoots are indicated,

from drifting only, with lengths of about 100 feet each (between 162 and 262 feet east and between 315 and 415 feet west) and grading 0.200 oz. per ton (\$7.00 with gold at \$35.00 per oz.).

"In general, the geological picture on the four new levels (10th, 11th, 12th, and 13th) shows little change from that in the upper section of the mine. The andesite porphyry, within which the high-grade section of No. 4 vein was disclosed, continues downward essentially the same in size and in relation to the neighbouring rocks; being a sill-like body, and traceable on surface for at least two miles, it is likely to continue in its favourable relationship to a considerable depth.

"Certain zones of alteration with gold-bearing quartz and arsenopyrite, paralleling the No. 1 and No. 4 veins, have received attention, with the result that a broader and more favourable conception of the vein and fracture system is being attained with depth. In general, the structural and alteration aspects of these zones, as of the No. 4 vein itself, tend to be strongest on the bottom (13th) level".

In the early spring months, the sinking of a new shaft, No. 3, was commenced near the west boundary of the property, on block 15, 1,800 feet west of the Main shaft. It is a vertical, three-compartment shaft. On completion to a depth of 607 feet, levels were established at the 208-, 333-, 458-, and 583-foot horizons. A supplementary report of the general manager, dated December 24th, 1937, contains the following additional information relative to developments:

"*Main Shaft (No. 2), No. 1 Vein.*—Having completed the sinking of the Main (No. 2) shaft to 1,540 feet, and the work of opening up the levels (10th, 11th, 12th, and 13th) being well advanced to the west on No. 4 vein, the development of No. 1 vein has been resumed throughout the mine, where it can now be readily and cheaply reached from No. 4 vein workings. In No. 1 vein east of the shaft, recent work has disclosed a considerable tonnage of medium grade (\$10.00) ore from the third level up, with probabilities of a much larger tonnage below: similarly, at 1,000 feet west of the Main (No. 2) shaft, an ore-shoot is being developed between the third and fifth levels and its downward extension being sought on the thirteenth level.

"*No. 4 Vein.*—East of the Main (No. 2) shaft, the large block of ground below the ninth level is being developed; this work has disclosed commercial ore both in the greenstones and porphyry along the contact zone of the north porphyry body; parallel fracturing with wider mineralized zones (of commercial value) is being disclosed and it is probable that stoping widths in this area will be considerably greater than the average stope width of No. 4 vein.

"*New Shaft (No. 3).*—Since the close of the year, cross-cutting has been advanced north on all four levels to beyond the north porphyry body (a distance of approximately 125 feet per level). The porphyry lies about 65 feet north of the shaft on each level and has an average width of 50 feet.

"Cross-cutting results were as follows:

"*First Level (208-ft.).*—Visible gold was encountered in a quartz vein, A, within the porphyry near the southern margin; a mineralized zone, B, 9 feet wide, midway in the porphyry, gave low values; coarse gold was en-

countered in a silicified contact zone, *C*, between the porphyry and grey-wacke to the north.

*“Second Level (333-ft.).—*A narrow quartz vein, possibly *A*, two to four inches wide, assaying 0.48 oz. (\$16.80) was cut near the southern edge of the porphyry, and a poorly mineralized contact zone, *C*, was cut at the north edge.

*“Third Level (458-ft.).—*A few feet north of the shaft, a strong quartz vein, one foot in width, with low values, was cut in the conglomerate; this vein may be important if diamond-drill intersections to the west are substantiated; the vein, where it appears on the first, second, and fourth levels, is narrow.

“A vein was cut in the porphyry near the southern edge, one foot wide, with low values; zones B and C do not appear in the cross-cut on this level.

*“Fourth Level (583-ft.).—*Vein *A* on the south porphyry contact is poor where cut on this level; coarse gold was encountered in vein *D* midway in the porphyry on the west wall and roof. Drifting results were as follows:

“On the first level, at 87 feet west of the north cross-cut, high-grade was encountered in C vein for a length of 15 feet, with no showings in the next face. Drifting has begun on the second and third levels to come under the C vein high-grade on the first level. On the fourth level, drifting east on vein D disclosed a strong vein with car samples about \$5.00. Drifting west has not begun.

“Diamond drilling through heavy overburden on adjoining properties to the east has indicated the presence of commercial ore associated with bands of iron formation (magnetite); these bands traverse the locality in an east-west direction, conforming in general to the regional strike of the enclosing rock formations. On the O'Brien Gold Mines property, these bands have been outlined and delimited under heavy overburden by a detailed magnetometer survey, indicating them to be continuous for 3,000 feet in length and characterized by drag-folding on a large scale. This represents an important structural feature, lying approximately 550 feet north of the main Cadillac 'break', which warrants investigation in due course”.

During the year (October 4th, 1936, to October 2nd, 1937), 37,364 tons of ore and 1,051 tons of stock-piled concentrates were treated, for a recovery of 36,877 ounces of gold. The capacity of the plant was doubled, and, at the end of the year, production was being maintained on a basis of 170 tons of ore per day.

PANDORA CADILLAC GOLD MINES, LIMITED

In early 1937, lateral work was continued in the No. 2 shaft workings. Diamond drilling on the west part of the property was successful in indicating a new ore-zone, and plans were made to sink a new shaft in this area. A power line was erected, and a complete electric mining-plant installed. The sinking of the new shaft was commenced in the fall, and at the end of the year a depth of 377 feet had been reached.

During 1937, the diamond drilling carried out on this property totalled over 13,000 feet. New construction included a substantial office, a bunkhouse, and a cookery.

PAN CANADIAN GOLD MINES, LIMITED

Throughout most of the year under review, the direction of operations on the Pan Canadian property was in the hands of the Mines Operating Corporation. Later, control was transferred to T. H. Higginson (in trust).

The gold-quartz vein, found in the summer of 1936, was further explored by diamond drilling in ten holes totalling 3,880 feet. A transmission line was then erected from the Northern Quebec Power Company's sub-station, and a complete electrical-driven mining plant installed. A three-compartment vertical shaft was sunk to a depth of 300 feet, and 900 feet of lateral work had been completed on the 150- and 275-foot levels at the end of the year.

On the surface, the vein was traced over a length of 105 feet, and was found to have an average width of eighteen inches, and a gold content averaging 1.03 ounces per ton. Underground work indicated that the gold is unevenly distributed in the vein, but results were deemed encouraging enough to warrant the erection of a 50-ton mill. Some experimental work was carried out involving a new process, but this has been discarded and a standard flow-sheet is now employed.

ST. PIERRE CADILLAC GOLD MINES, LIMITED

In the summer of 1937, an extensive programme of surface work and diamond drilling was carried out on this property. The drilling totalled approximately 4,000 feet.

THOMPSON CADILLAC MINING CORPORATION, LIMITED

Thompson Cadillac produced 1,730.35 ounces of gold in 1937, from 38,081 tons of ore treated. Production of flotation concentrates amounted to over 1,200 tons.

In the fall of the year, milling capacity was increased to 200 tons per day by the installation of six new flotation cells and a new classifier. The mine is now operating on this basis.

A report by the manager, dated Nov. 10th, 1937, covers operations since production was resumed in June, 1936, and contains the following reference to mine development:

"The total lateral development underground up to October 31st amounts to 12,955.1 feet, of which 6,498.2 feet has been done since June 1st, 1936. The work during this period consisted of 4,732.4 feet of drifting, 1,311.4 feet of cross-cutting, and 454.4 feet of raising.

"Results from this development have enabled us to open up some interesting ore sections on all four levels. At the present time we have a total stoping length of 839.0 feet on the 150-foot level, 576.0 feet on the 300-foot level, and 123.8 feet on the 600-foot level opened up, with an additional 500 feet waiting for our stoping needs.

"In August, a surface diamond-drilling programme was undertaken and nine holes were drilled for a total length of 2,000 feet. This drilling of the western section of our property was over a length of 1,000 feet. Typical Cadillac conditions were found, with exceptionally consistent results. In hole No. 4, a section 4.7 feet wide averaged 0.30 oz. per ton, in hole No. 5 six feet averaged 0.10 oz., in hole No. 7, 3.8 feet assayed 0.24 oz. and 9.0 feet assayed 0.26 oz. Hole No. 8 returned values of 0.38 oz. over 3.7 feet, and No. 9, 0.24 oz. over 8.0 feet and 0.19 oz. over 2.4 feet.

"*Mining.*—Eleven stopes have supplied mill-feed during the period under review, and, coupled with development ore sent to the mill, have enabled us to build up a broken-ore reserve of 30,410 tons".

VALCO CADILLAC MINES, LIMITED

Operations of this Company were, for the most part, confined to diamond drilling, a total of 5,523 feet being completed during the year. It is reported that two mineralized zones, carrying low gold values, were encountered in this work.

WOOD CADILLAC MINES, LIMITED

Early in 1937, following the completion of an extensive diamond-drilling campaign in which encouraging results were obtained, plans were made to proceed with underground development. Substantial camp and mine buildings were erected, a complete electric mining-plant was installed, and a power line was constructed from the Cadillac sub-station of the Northern Quebec Power Company. The sinking of a three-compartment vertical shaft was completed to a depth of 522 feet, and levels were established at the 250- and 500-foot horizons. Lateral work was confined to the 250-foot level, where a cross-cut was driven to the south for a distance of about 320 feet, and approximately 360 feet of east-west drifting was carried out on two gold-bearing vein-systems. In addition to the underground work, 11,682 feet of diamond drilling was completed during the year.

In early 1938, Company officials reported that the underground work had indicated several shoots of gold ore.

YPRES CADILLAC MINES, LIMITED

During the summer of 1937, 2,500 feet of diamond drilling was completed on the Cadillac property of this Company. Results were not encouraging enough to warrant further work.

MALARTIC TOWNSHIP

ASCOT HOLDINGS, LIMITED

This Company is a subsidiary of Ascot Gold Mines, Limited. It holds the mining rights to lots 55 and 56, range II, Malartic township.

In 1937, exploratory work was carried out, including a considerable amount of stripping and trenching and the completion of 1,012 feet of diamond drilling.

BAYSIDE MALARTIC MINES, LIMITED

This Company holds the mining rights to claims A.50117, 50118, and 56959 to 56962, in Malartic township, in addition to a group in Launay. Operations in 1937 were, for the most part, confined to a 4,000-foot diamond-drilling programme on the Malartic property.

CELTA QUEBEC EXPLORATION, LIMITED

This Company is a subsidiary of the Celta Development and Mining Company, Limited. In 1937, a diamond-drilling programme totalling 4,240 feet was completed.

CUMMINGS-TRUDEL HOLDINGS, LIMITED

This Company holds the mining rights to lots 61, 62, 63, and 64, range III, Malartic township. In 1937, 6,441 feet of diamond drilling was carried out in an effort to locate the possible westward continuation of the Siscoe K zone. The Company also did some work on their Barraute Township claims.

DEANE-CADILLAC MINING CORPORATION

Diamond drilling was continued on this property and to April totalled 3,991 feet. Operations were suspended later in the year.

DEMPSEY CADILLAC GOLD MINES, LIMITED

In 1937, the shaft was continued to a depth of 255 feet and lateral work was carried out on the 125- and 250-foot levels. This work was discontinued in June, as results failed to indicate the presence of ore in commercial quantity. Diamond drilling during the year totalled 9,068 feet.

PARTANEN MALARTIC GOLD MINE, LIMITED

In addition to extensive surface stripping and trenching, a diamond-drilling programme totalling 13,206 feet was carried out on this property.

FOURNIÈRE TOWNSHIP**CANADIAN MALARTIC GOLD MINES, LIMITED**

The fifth annual report of the Company contains the following reference to developments during the year ended December 31st, 1937:

"On February 1st, the new unit was placed in operation, bringing the daily tonnage treated up to an average of 654.1 tons for the remainder of the year.

"PRODUCTION:

"Details of production are shown in the accompanying statement of operations.

SUMMARY OF MILLING OPERATIONS:

Dry ore milled, tons.	232,326.0
Running time, per cent.	96.5
Average per day, tons.	636.5
Fine gold produced, oz.	29,794.326
Fine silver produced, oz.	14,177.860
Average grade ore milled, gold, oz.	0.1451
Average grade tailings, gold, oz.	0.0168
Recovery gold, per cent.	88.4

SUMMARY OF MINING OPERATIONS:

Diamond drilling, surface, lineal feet.	11,457.0
Diamond drilling, mine, lineal feet.	6,375.8
Drifting and cross-cutting, lineal feet.	4,917.3
Raising, lineal feet.	1,039.7
No. 2 sump, cubic feet.	24,996.0
Slashing, cubic feet.	1,968.0
No. 2 loading pocket, cubic feet.	32,059.0
Ore broken (stopping), tons.	214,552.0
Ore broken (development), tons.	15,583.0

"DEVELOPMENT:

"The South ore-zone was further developed above the 2nd level for sub-level stoping, west to its economic limit and east to within 100 feet of its expected limit.

"The North ore-zone east of No. 1 shaft was developed for stoping over a length of 300 feet between the 5th and 3rd levels, and stoping on this section began in August. The ore is drawn through an ore-pass to No. 2 ore-pocket below the 6th level. This ore-pocket was enlarged to a capacity of 2,500 tons.

"The North ore-zone west of No. 1 shaft was also developed above the 2nd level. Stoping has started in this section, the ore being drawn through ore-passes to the No. 1 ore-pocket.

"The workings were extended to the east on the 3rd (375-ft.), 4th (500-ft.), 5th (625-ft.) levels. The 3rd level advanced to 1,460 feet east of No. 1 shaft. From 783 feet to 1,270 feet it followed an ore-shoot 487 feet long, 10.7 feet wide, and averaging 0.146 ounces. Five drill holes indicate that this ore-body breaks up into irregular shoots against the south flank of a syenite porphyry mass at 60 feet to 100 feet below the level. Conditions at greater depth are unknown. It has not been explored above the level.

"The 4th level has advanced in average-grade ore to a point 498 feet east of the shaft.

"The 5th level was advanced to 830 feet east of the shaft. It is located with reference to transportation of ore from the ore-bodies above the level and is not in ore.

"A sump having a capacity of 100,000 gallons was completed on the 6th level.

"DIAMOND DRILLING:

"In May, surface diamond-drilling was resumed. Holes *S-56* to *S-73* were drilled, aggregating 11,457 feet. A 400-foot gap between holes *S-36* and *S-47* was closed by drilling holes *S-59*, *S-60*, *S-62*, and *S-63* at 50° dips north to cut the zone at a depth of 340 feet. Hole *S-60* cut sections at

189.0 feet to 225.0 feet, averaging 0.162 oz., and at 275.0 feet to 329.0 feet averaging 0.128 oz. Hole *S-63* cut one section at 415.0 feet to 469.5 feet averaging 0.173 oz. Holes *S-59* and *S-62*, drilled 100 feet on either side of hole *S-60*, found only mineralized sections below pay-grade. A condition of recurring lenses is indicated which will be developed by underground work now in progress.

"Five holes located from 1,456 feet to 2,865 feet east of No. 1 shaft were drilled at 70° dips north to test conditions at the 700-foot horizon. Hole *S-56* cut sections in the porphyry contact zone of 14.0 feet at 0.173 ounces and 5 feet at 0.53 ounces. Holes *S-58*, *S-61*, *S-65* and *S-70* all cut the porphyry at depths of 700 to 750 feet, indicating the contact to be dipping southerly at angles up to 45 degrees. Except for a few low-grade intersections in the sediments, no ore was found. Hole *S-57*, drilled 550 feet farther south, reached a vertical depth of 1,200 feet without encountering either significant values or the porphyry contact. These holes are too widely spaced to permit definite conclusions as to ore occurrence.

"Three holes drilled easterly on the strike of the south zone indicate some further low-grade extension of the South ore-body.

"Underground holes *U-119* to *U-196* were drilled, aggregating 6,375.8 feet. These holes were drilled mainly to determine ore dimensions and positions. At No. 1 shaft on the 6th (750-ft.) level, the porphyry was proved to have a north-south width of 880 feet, with the south end still in porphyry.

"ORE STRUCTURE:

"The above work has amplified our understanding of the general structural situation, as stated in previous reports. The mine workings are located near the junction of a northwesterly striking zone of mineralization, with a longer zone of mineralization striking easterly. The first zone has a known length of 600 feet and the second zone of 3,250 feet to the east boundary.

"Both zones are associated with porphyry intrusions, which broaden with depth into a common mass under the ore-bodies near the shafts. East of this section, the depth of the sediments increases gradually to at least 1,200 feet near the east boundary.

"The sedimentary ore-bodies, as far as known, do not continue beyond the contact phase of the porphyry but may duplicate themselves with depth in zones upward from the contact or follow it down the dip.

"The South ore-bodies persist down to the 400-foot horizon, below which a non-payable grade is indicated, except at the north end, where the ore merges into the North zone. Easterly from this point, the North-zone ore is developed for 550 feet and other ore-bodies are indicated, mainly by drilling, over a further length of 2,250 feet to the east boundary.

"In the developed section, the North ore-body persists down to the 600-foot horizon, where it dips flatly south above the contact. Some further persistence of low-grade ore is indicated by drilling.

"West of the shaft section, the sediments appear to persist to below the 6th level and this area is now being drilled.

"Veining in the porphyry mass is indicated in several places, and one (vein 601) has been stoped to a height of 50 feet with satisfactory results. These veins are so far of limited tonnage but of better grade than the replacement ore-bodies of the sediments.

"The ore-bodies are all associated with the porphyry, and systematic development as planned in the vicinity of the contact has a good chance of extending the ore-shoots indicated by drilling and of discovering others.

'ORE RESERVES:

"Ore reserves are somewhat lower in both tonnage and grade as compared with the estimates of the previous year. The lower grade is mainly due to the inclusion of marginal-ore blocks on the ends of the South ore-body. No addition has been allowed for ore indicated in drifting or diamond drilling to the east, as information is too limited to permit estimates. Ore reserves as of December 31st are as follows":

	AMOUNT (tons)	AVERAGE GRADE (per ton)	VALUE (gold at \$35.00)
Assured ore reserves.....	398,000	0.173 oz.	\$6.05
Indicated ore.....	486,000	0.141 oz.	4.93
TOTAL.....	884,000	0.155 oz.	\$5.43

EAST MALARTIC MINES, LIMITED

Early in 1937, underground work was suspended in the No. 1 shaft area. Meanwhile, drifting in the No. 2 shaft workings, and diamond drilling on other parts of the property, were continued. The drilling totalled 11,576 feet. Drilling near the west boundary indicated a substantial new ore-shoot, and operations have since been confined to the development of this, No. 3, zone. By the end of the year, a four-compartment shaft, with an objective of 825 feet, had been sunk to a depth of 505 feet, and drifting was under way on the 150-foot level.

The work to date has indicated that the No. 3 ore-zone extends eastward from the west boundary of the property for a distance of 1,750 feet. It strikes N.74°W. and dips at 80 degrees to the south. From the shaft to the west boundary, a distance of 900 feet, the ore-zone averages 40 feet in width, and it is estimated that the average gold content is about 0.2 ounces per ton. The easterly section has an average width of 23.5 feet and is possibly somewhat lower in grade.

Present plans call for the erection of a 750-ton cyanide mill and the mining of the west section of the zone by block-caving methods.

MALARTIC GOLDFIELDS, LIMITED

Following the promising results obtained on nearby properties, an extensive diamond-drilling programme was commenced by Malartic Goldfields in 1937. This drilling totalled 25,229 feet.

It is reported that the drilling indicated a mineralized zone with a length of 1,100 feet, and a number of the holes returned very promising gold values.

MALARTIC LAKESHORE MINES, LIMITED

In 1937, this Company carried out surface trenching and stripping on lots 19, 20, and 21, ranges VI and VII. A programme of 3,500 feet of diamond drilling was also completed.

NATIONAL MALARTIC MINING COMPANY, LIMITED

It is reported that diamond drilling totalling 3,294 feet was carried out on this property during 1937.

RAND MALARTIC MINES, LIMITED

This Company was incorporated in 1937 with a capitalization of 3,000,000 shares of \$1.00 par value stock. The property, formerly known as the Sladen-Malartic East group, consists of twelve claims situated to the east of East Malartic Mines, Limited.

Surface work carried out in previous years, and a limited amount of diamond drilling, had indicated the presence of a gold-bearing zone. In June, 1937, diamond drilling was resumed by the new Company, and at the end of the year the total footage completed amounted 4,800 feet. The results obtained in this work were encouraging, and an underground exploration programme will be undertaken in 1938.

SLADEN MALARTIC MINES, LIMITED

The annual report of the Company for the year 1937 contains the following review of operations:

"MINING AND DEVELOPMENT:

"The first part of the year was largely devoted to opening up the west ore-body on the two new levels at 350 and 500 feet. At the same time, the contact zone was further explored by drifting east from the shaft on both these levels. Important new ore was opened up east of the shaft on both levels. Following authorization to erect a 250-ton mill, underground work was concentrated on preparing the West ore-body for mining. A block of ore in the West ore-body, from fifty feet above the second level to the surface pillar, and containing more than two years' supply for the mill, was developed for sub-level stoping. This block was divided into two stopes. In the lower stope, between the second and first levels, the broken ore is drawn through grizzlies and loaded into cars from chutes. In the upper stope, the broken ore is run from the stope above directly to the floor of the first level haulage drift and loaded from there into cars by means of a mechanical mucking machine. The ore is hoisted to the surface in cars which are dumped by means of air-operated tipples. These arrangements are proving very satisfactory and good mining costs are assured.

"SUMMARY OF DEVELOPMENT WORK:

Drifts and cross-cuts.....	5,727.7 feet
Raises.....	1,538.8 "
Sumps.....	5,342.0 cu. ft.
Slashing.....	944.0 cu. yd.
Box-holes.....	201.1 feet
Diamond drilling, underground.....	9,600.0 "
Diamond drilling, surface.....	6,423.0 "

"DIAMOND DRILLING:

"An underground drill was purchased and has been kept in continuous operation since April; 9,600 feet of holes were drilled and used largely in delineating the West ore-body and proving it between levels. From the drifts along the contact east of the shaft, holes were drilled at fifty-foot intervals to the north and south to explore the contact zone.

"Drilling below the 500-foot level indicated that the intermediate East ore-body is strengthening downward, and a large tonnage is indicated. Intersections indicate that the ore continues down to at least the 950-foot horizon.

"6,423 feet of drilling was done from the surface at the east boundary and along the continuation of the ore-zone. Excellent intersections were obtained for 550 feet west from the boundary with the East Malartic.

"SURFACE PLANT:

"The increased scale of operations necessitated extensions to the surface plant and housing facilities for employees.

"An air compressor of 1,000 cubic feet per minute capacity was purchased, a third 333 kv.a. transformer installed, and a 550 volt switch-house built. A second steel sharpener and miscellaneous machine-shop equipment were also purchased.

"A 75,000 gallon wood-stave water tank was set up on a 45-foot tower to furnish water for the plant and the mill. The water can be pumped into the tank at will either from the mine or from the pumping installation on surface.

"MILL:

"Excavation for the mill foundations was begun on August 18th. The plant was completed and the ball-mill put into operation on January 24th, 1938. The performance of the mill has been highly satisfactory and it is already exceeding its rated capacity, with tonnage continuing to go up.

"The ore is easy to treat and it would seem that no metallurgical difficulties are likely to develop. Currently, tailings are averaging thirty cents per ton on a grind of 74.4 per cent minus-200-mesh. It is interesting to note that silver is being recovered approximately in the ratio of three ounces of silver to one ounce of gold, and it will contribute an important income.

"MISCELLANEOUS:

"There are several showings on the property at widely separated points which are worthy of development. Unfortunately, swamp and the scarcity of outcrop greatly restrict surface work. A short distance south of the mill, small irregular quartz lenses in sheared greywacke have returned high assays from grab samples, and some free gold has been seen. On the north group of the claims, coarse gold occurs in narrow quartz veins along the fringes of a granite porphyry stock. On the west group, low values are obtained over considerable widths in silicified porphyry. Also worthy of attention is the south contact of the greenstone belt, which passes through the property for a length of more than a mile. Diamond drilling will have to be employed to explore these areas.

"The Rouyn-Senneterre highway crosses the property one thousand feet north of the shaft, and the Canadian National Railways branch line, now under construction, is located 1,800 feet farther north. The highway has been completed and it is expected that the railroad will be in operation as far as Malartic this summer".

SOUTH MALARTIC GOLD MINES, LIMITED

In 1936 and 1937, this Company carried out an extensive programme of surface stripping and trenching, and diamond drilling totalling 2,065 feet was completed.

VARSAN TOWNSHIP

DORVAL SISCOE MINES, LIMITED

The shaft was completed to a depth of 343 feet, and approximately 2,000 feet of lateral work was carried out on the 300-foot level. Diamond drilling during the year totalled 10,653 feet.

This work has been undertaken in order to develop the probable extension of the Siscoe K zone into the property.

MCRÆE GOLD MINES, LIMITED

Work on this property during 1937 included a considerable amount of stripping and trenching, and 5,000 feet of diamond drilling.

SENNEVAR MINES, LIMITED

This Company holds the mining rights to twenty-three claims in Senneville and Varsan townships. During the period under review, a diamond-drilling programme was carried out, in holes aggregating 8,667 feet.

SISCOE EXTENSION GOLD, LIMITED

The shaft was deepened to 750 feet and lateral work was commenced on the 725-foot level. Some promising gold-bearing veins were encountered in drifting to the east of the shaft. Diamond drilling was carried on almost continuously, and amounted to 10,500 feet.

WEST SISCOE GOLD MINES, LIMITED

The property of this Company is almost wholly covered by the waters of Montigny lake. In 1937, a total of 12,797 feet of diamond drilling was completed. Plans were made to extend a drift on the 450-foot level of the Siscoe mine to the property.

DUBUISSON TOWNSHIP

GALE GOLD MINES, LIMITED

Early in 1937, this property was electrified, and a new 1,030 cu. ft. compressor was installed. Underground operations were confined to drifting to east and west on the 250-foot level and to diamond drilling from these workings. The results obtained in this work were not encouraging. Free gold

was encountered in several places, in narrow quartz lenses, but no deposits of economic importance have been indicated.

Operations were suspended, and a few months later the Company went into bankruptcy. The property was purchased from the trustees by the Provincial Government to be used as a Mine School in training apprentices for the mining profession. The property was reopened as a Mine School early in 1938.

HARRICANAW AMALGAMATED GOLD MINES, LIMITED

The diamond-drilling programme, commenced in 1936, was completed early in 1937. Preparations were then made to carry out underground exploration. An electric power line was constructed and a mining plant installed, following which a three-compartment vertical shaft was sunk to a depth of 320 feet, with levels at 100, 200, and 300 feet. Over 600 feet of lateral work had been completed at the end of the year. The work has disclosed the presence of quartz-gold lenses lying along the margin of a diorite-porphry dyke.

JACOLA MINES, LIMITED

This Company was incorporated in 1937 with a capitalization of 3,500,000 shares of \$1.00 par value stock, to acquire the assets of Greene Stabell Mines, Limited, and Stabell Lake Gold Mines, Limited.

The annual report of the Company for the year ended December 31st, 1937, contains the following:

"The mill, which in the latter few months had been run chiefly for sampling purposes, was closed on March 15th, 1937, and the shaft-sinking from the 500-foot level to the 1,000-foot level started. Surface diamond-drilling at the two extremities of the property also got under way at this time. A motor-driven centrifugal pumping unit was installed on the 500-foot level, to look after water made on the new levels being established below.

"SHAFT SINKING:

"Shaft-sinking started on March 17th and ended July 4th, 1937, a period of 109 days. During this time, the shaft was sunk to twenty-two and a half feet below the 1,000 foot-level, and four stations at the 625-, 750-, 875-, and 1,000-foot levels were cut.

"DIAMOND-DRILLING:

"Surface diamond-drilling was done by contract. Three steep holes were drilled to depths of approximately 1,600 feet each, sectioning the favourable zone at the western extremity of the property. One of these holes, *J-1*, cut important values at vertical depths ranging from 1,000 feet to 1,090 feet.

"At the eastern end of the property, much difficulty was experienced in getting through the deep overburden. However, two vertical holes approximately 1,300 feet deep were drilled, one in the granodiorite north of the contact and one in the greenstone just south of the contact.

"An interesting section, over 25 feet wide, around 1,000-foot depth in the latter hole, characterized by quartz veins and vein matter, gave disap-

pointing assays. There remains about 4,000 feet along the contact east of the shaft unexplored.

"A number of short, lateral drill-holes totalling 3,200 feet were drilled on contact of the 1,000-foot level before the year-end, chiefly to locate the contact and thus guide our main drive headings to east and west of shaft.

"LATERAL DEVELOPMENT:

"Drifting and cross-cutting was still confined to the 1,000-foot level at the end of the year. The east heading had been carried 916 feet and the west heading 981, while the cross-cut from the shaft (including slashing) amounted to 234 feet. A total of 2,131 feet of lateral work on this level.

"RESULTS OF EXPLORATION:

"A high-grade vein of the zinc-chalcopyrite type of mineralization encountered on the upper levels was struck in the cross-cut from the shaft on the 1,000-foot level on August 22nd, 1937. This vein has narrow widths, varying in the main from 4 in. to 12 in. (but in places much wider) but is consistently high-grade and has relatively great persistence in length. For instance, as was the case on the upper levels, it was common to get grab samples from this vein running three to five ounces (one ran to ten ounces) with no free gold visible.

"This vein was traced in the East drift over a length of 380 feet, and, averaging all values over the best 240 feet of length, gave \$10.53 over 20½ inches. The southerly dip of the vein — the same as that on the upper levels — indicates that it is a parallel one. If further ore is found, this vein might be mined.

"At a point 130 feet west of the cross-cut, in following a south-dipping shear, considerable fine-grained free gold was suddenly encountered in a strong-looking, north-dipping quartz vein. Except where free gold was present at this point, assays were not high, the values apparently being dissipated in the barren shear".

KIENA GOLD MINES, LIMITED

During the first half of 1937, underground exploration work and diamond drilling were continued. Work completed in the six-month period included 1,770 feet of drifting and cross-cutting and 6,483 feet of diamond drilling. In July, all operations were suspended.

ROCDOR MINES, LIMITED

The operations of this Company were, for the most part, confined to a 3,000-foot diamond-drilling campaign. Several promising gold-quartz intersections were encountered.

SHAWKEY GOLD MINING COMPANY, LIMITED

During 1937, the shaft was enlarged to three compartments and was deepened from 600 feet to 725 feet. A station was cut at the 700-foot level,

and lateral work was commenced at this horizon. Stoping was in progress above the 225-, 325-, 450-, and 575-foot levels at the end of the year.

Diamond drilling was carried on throughout the year, both from the surface and from the underground workings. The total footage was 17,722 feet.

Milling capacity was increased to 175 tons per day. During the twelve-month period, 55,602 tons of ore were treated and 10,364 ounces of gold recovered. While sinking and enlargement of the shaft was in progress, a part of the mill-feed was obtained from the surface dump.

SHAWMAQUE GOLD MINES, LIMITED

In 1937, a large amount of stripping and trenching was carried out on this property, and several test-pits were sunk to shallow depths. Also 2,118 feet of diamond drilling was completed.

SISCOE GOLD MINES, LIMITED

The annual report of the Company for the year ended December 31st, 1937, contains the following:

"PRODUCTION:

"\$2,633,660.54 was recovered from the milling of 200,502 tons of ore. Average mill-heads were \$13.55 of which \$0.412 was lost in mill tailings for a final recovery of 96.96 per cent. The following comparative table tells the story over the years since milling started in 1929:

YEAR	MILL PRODUCTION	TONS MILLED	AVERAGE MILL HEADS	AVERAGE MILL TAILS	COST PER TON MILLED	PER CENT RECOVERY
*1929....	\$307,403.75	29,836	\$10.53	\$0.232	\$7.62	98.7
*1930....	367,266.20	33,744	11.11	0.230	7.23	97.7
*1931....	742,811.76	55,675	13.63	0.285	6.63	97.91
*1932....	1,006,113.30	63,998	15.94	0.219	6.117	98.63
*1933....	1,132,904.19	96,348	12.10	0.345	5.346	97.14
1934....	2,116,603.49	124,151	17.60	0.551	4.949	96.86
1935....	2,274,582.58	149,070	15.81	0.556	5.014	96.48
1936....	2,428,470.17	181,177	13.81	0.401	4.782	97.09
1937....	2,633,660.54	200,502	13.55	0.412	4.755	96.96

* Values based on gold at \$20.67 per ounce.

"NEW ORE:

"24,059.0 linear feet — nearly five miles — of exploration and development work was done. This was divided as follows: stations, 39.6 ft.; cross-cuts, 4,144.7 ft.; drifts, 16,054.9 ft.; raises, 3,819.8 ft. Of the total, 9,028.6 ft. was development in ore; this was 37.5 per cent of the total. In addition, 77,879.0 ft. of diamond drilling was done; 32,882.0 ft. of this was from the surface, and 44,997.0 ft. from underground workings. The programme of exploration and development consisted of:

- "(1) Driving from the main shaft to the east, parallel to the K zone, and the exploration from it of the K zone and the Main ore-zone on the four new bottom levels.

- “(2) Exploration and development of important extensions to the Siscoe vein on various levels.
- “(3) Further development of the *F* vein above the 4th level.
- “(4) The finding and opening up of a number of spurs from the Main vein, most of them of a horsetail nature.
- “(5) Exploring and developing a number of siliceous granodiorite sulphide bodies, the most important of which was that encountered to the north of the shaft on the 1st level.
- “(6) The further exploration of the Stee vein on the 3rd and 4th levels.
- “(7) Driving from the Stee vein on the 3rd level out into West Siscoe territory for the exploration of various diamond-drill intersections located there.
- “(8) Completing the ore-pass system from the 1,850- to the 975-ft. level.

“This campaign of exploration and development added 275,123 tons of new ore to our estimate of ore reserve. At the end of the year, this was calculated at 526,448 tons having an average value of \$11.32 per ton. These figures compare with 451,827 tons having an estimated grade of \$13.28 per ton at the end of 1936. This is accounted for by the fact that, throughout the mine, considerable tonnages of lower grade ore were developed which can be milled at a profit. Of these reserves, 99,906 tons were in the form of broken-ore in stopes.

“MILLING OPERATIONS:

“There were no changes or additions to the mill which affected the flow-sheet during the year. We did, however, instal a complete small pilot-mill having a capacity up to 8 tons per day. This is being used as a sampling mill and to conduct mill runs on certain ores from the mine that may call for modified methods of treatment. The average tonnage treated daily increased from 494.7 in 1936 to 549.3 in 1937. As pointed out last year, the cyanide process, the final one in our flow-sheet, continued to increase its percentage of recovery”.

	PERCENTAGE			
	1937	1936	1935	1934
Recovery by cyanide.....	23.523	21.263	11.17	4.83
Recovery by amalgamation.....	73.466	75.829	85.32	92.03
Tailing losses.....	96.989 3.011	97.092 2.908	96.49 3.51	96.86 3.14
	100.000	100.000	100.00	100.00

SULLIVAN CONSOLIDATED GOLD MINES, LIMITED

The annual report of the Company for the year of 1937 contains the following summary of operations:

“DIAMOND DRILLING:

“All diamond drilling was carried out by your Company, using its own drills. Underground, a total of 33,302 feet of drilling was performed in 150 holes, of which five were holes previously drilled but deepened during the year. On the surface, a total of 6,894 feet of drilling was done in thirteen holes. The aggregate footage was 40,196 in 163 holes, as compared with 18,061 feet in 80 holes drilled during the previous year.

“DEVELOPMENT:

“During the year, development work totalled 15,139 feet, as compared to 13,692.5 feet during 1936. This development work is subdivided as follows:

Drifting, including sub-levelling.....	8,322.5 feet
Slashing equivalent to drifting.....	879.0 “
Cross-cutting.....	3,587.0 “
Slashing equivalent to cross-cutting.....	69.5 “
Raising.....	1,963.5 “
Shaft-sinking and winzing.....	216.0 “
Station-cutting equivalent to shaft-sinking.....	101.5 “
TOTAL.....	15,139.0 feet

“Owing to the multiplicity of ore occurrences, it is impossible to give a complete list of all ore-lengths opened up by development during the year. However, your attention is directed to a description of the major ore-intersections. On the first level, the 145 South drift exposed a combined length of 257 feet of quartz which at points showed appreciable amounts of visible gold. The first 145 feet averaged \$23.80 across 3.0 feet. In the next forty feet, this occurrence expanded into a series of quartz stringers in chlorite schist which extended to 26 feet of width and averaged \$25.55 by car sample. This wide zone was subsequently explored upward by a raise which yielded \$18.20, with the full width not exposed. The remaining 72 feet in the drift assayed \$12.95 across 5.6 feet.

“On the second level, the 2,011 cross-cut penetrated a tensional zone which subsequent slashing proved to extend for slightly over 100 feet of length, with the southeasterly portion showing a width of thirty feet. This yielded \$13.12 by car sampling.

“Between the second and third levels, the 383 sub-level exposed a length of 106 feet which averaged \$12.95 across 3.3 feet. A raise from this averaged \$15.84 for a length of 62 feet, with the full width not exposed.

“Between the fourth and fifth levels, the 541 sub-level exposed quartz averaging \$11.00 over 5 feet for a length of 180 feet.

“On the fifth level, the 5,031 drift exposed two lenses of quartz having a combined length of 130 feet averaging \$15.40 by car sampling.

“Toward the close of the year, it was decided to sink No. 1 shaft to a depth of 1,050 feet. This has been enlarged to three compartments below the third level and will permit of exploration and development on five new levels during the ensuing year.

"MINING:

"A total of 55,019 tons of ore were delivered to the mill-bins. Of this total, 33,658 tons came from stopes and 21,361 tons were taken from development. The distribution of this tonnage by levels was as follows:

	LEVEL				
	1ST	2ND	3RD	4TH	5TH
Stopes.....	954	2,893	27,631	1,250	930
Development.....	3,263	7,142	3,723	2,840	4,393

"As shown by this distribution, most of the stoped ore came from the third level. The 381-382 ore-shoot provided the bulk of this third-level tonnage. This ore-shoot illustrates the difficulty of describing ore intersections on each level. While the ore-shoot only yielded a length of 150 feet on the 2nd level and less than 60 feet on the 3rd level, yet, occurring between these levels and raking downward at a flat angle, it proved to be over 600 feet long on its major axis and about 100 feet in depth on its minor axis. It has yielded 30,000 tons of ore of good grade.

"It can be stated that there is a reserve of ore sufficient to last a two-year period at current production. The grade of this reserve will average approximately 0.379 ounces, or \$13.25 at present price of gold. In addition to this, there had been partially developed between 25,000 and 30,000 tons of rock that will average about \$5.00 in grade.

"MILLING:

"A summarized account of the milling operations and results is shown in the following table":

Ore milled.....	55,072 tons
Gold produced.....	21,751.438 ounces
Silver produced.....	6,255.38 ounces
Value of bullion produced.....	\$763,661.49
Average tons milled per day.....	151.7 tons
Per cent possible running time.....	97.9%
Recovery by amalgamation, per cent.....	30.1%
Recovery by cyanidation, per cent.....	66.8%
Overall recovery, per cent.....	96.9%
Cyanide consumed per ton of ore.....	0.50 lb.
Lime consumed per ton of ore.....	1.18 "
Zinc-dust consumed per ton of ore.....	0.015 "
Lead acetate consumed per ton of ore.....	0.002 "
Grinding rods consumed per ton of ore.....	0.80 "
Grinding balls consumed per ton of ore.....	1.07 "

WISIK GOLD MINES, LIMITED

Early in 1937, underground operations were suspended, and a programme of exploration involving a total of 6,943 feet of diamond drilling was carried out. On completion of this work, all operations were suspended.

BOURLAMAQUE TOWNSHIP

BIDQUEBEC GOLD MINES, LIMITED

This Company is a subsidiary of Bidlamaque Gold Mines, Limited. It was incorporated in 1937 with a capitalization of 145,000 shares of \$1.00 par value stock.

The option taken on the property in the previous year by the Mining Corporation of Canada was relinquished, and exploratory work was continued by the new Company. At the end of the year, 8,431 feet of diamond drilling had been completed.

BLOUIN LAKE GOLD MINES, LIMITED

Operations on the fifteen claims of this Company were largely confined to diamond drilling, which totalled 12,444 feet.

CACHE D'OR GOLD MINES (QUEBEC), LIMITED

This property adjoins the Payore mine on the west. It has an area of about 430 acres, and is, for the most part, covered by a heavy mantle of drift. In the spring of 1937, 5,026 feet of diamond drilling was completed in sixteen holes, and it is reported that some promising intersections of gold-quartz ore were obtained. Later in the year, a drift on the 250-foot level of the Payore mine was extended into the Cache D'Or ground for a distance of sixty feet.

LAMAQUE MINING COMPANY, LIMITED

The following summary of operations is included in the Company's Annual Report for the year 1937:

"During this period, 230,465 tons of ore were treated. The recovery of bullion was the equivalent of 82,472.93 troy ounces of gold, which realized \$2,892,239.14; after the addition of \$840.00, interest earned on investments, the gross revenue was \$2,893,169.14, or \$12.55 per ton of ore milled. The mill recovery was 98.3 per cent of the gold content of the tonnage treated.

"Including the sum of \$200,508.60 charged for depreciation on buildings and fixed plant, \$83,356.17 for interest on bonds, and \$115,232.50 write-off for preliminary development costs at 50 cents per ton, the total operating cost was \$2,046,828.44, or \$8.88 per ton. After making a provision of \$137,277.96 for taxes, the net profit was \$709,062.74.

"Ore produced from development amounted to 64,248 tons.

"Diamond drill exploration amounted to:

Surface.....	0.0 feet
Underground.....	34,466.8 "
TOTAL.....	34,466.8 feet

"The sinking of No. 7 shaft (commenced in 1936, with an ultimate objective of 3,600 feet in depth) was completed to the present objective of 2,000 feet and placed in service in October, 1937. Preparatory work was

then started for the sinking of an interior incline shaft, to develop the ground from the 1,200-ft. to the 2,400-ft. levels at vertical intervals of 100 feet. This shaft will be connected to No. 7 shaft by main haulage ways at 600-ft. vertical intervals.

"Since no new levels were opened up during the year, the amount of ore exposed by drifting was less than that of the previous year. However, additional ore was developed on all of the old levels, and the tonnage of 'positive ore' developed exceeded that of the previous year by 59,494 tons.

"The technical estimate of 'positive ore' reserves at January 1st, 1938, was as follows:

	AMOUNT (tons)	PENNYWEIGHTS PER TON	TOTAL GOLD IN PENNYWEIGHTS
Broken ore.....	122,380	5.78	707,715
Blocked ore.....	536,170	6.75	3,618,959
TOTALS AND AVERAGE.....	658,550	6.57	4,326,674

"The construction of a second mill-unit, to double the mill capacity, was commenced in April and practically completed by the end of October. The new unit was put into operation November 1st. The scheduled daily tonnage (for the entire mill) was milled throughout November, and in December the daily average was 1,040 tons. Milling and metallurgical results have been fully up to those obtained in the first unit".

LAVALIE MINES (QUEBEC), LIMITED

During 1937, the Company performed a considerable amount of surface work on its holdings in Bourlamaque township, and a 3,000-foot diamond-drilling programme was completed.

MANITOU MINES (QUEBEC), LIMITED

This Company is a subsidiary of Quebec Manitou Mines, Limited. In 1937, following the completion of an extensive diamond-drilling programme in which twenty-three holes were drilled for a total of 10,814 feet, underground exploration was commenced.

An electric power line was built to the property, and a complete electric mining-plant was installed, which included a 1,080 cu. ft. compressor and a 75 h.p. double-drum hoist. The sinking of a three-compartment vertical shaft was commenced, and in January, 1938, a depth of 372 feet had been reached, with levels established at the 210- and 360-foot levels.

The diamond drilling carried out on this property has indicated the presence of lenses of gold-sphalerite ores over a length of 200 feet, and up to 20 feet in width. The ore-zone lies about 200 feet to the north of the new shaft.

NUMAQUE MINING COMPANY, LIMITED

The diamond-drilling campaign, commenced in the previous year, was continued in 1937. In all, sixty-three holes, aggregating 23,362 feet, were put down. Following completion of this programme and examination of

the cores, an additional deep (1,250-foot) hole was drilled. The work did not give conclusive results, and operations were suspended.

PAYORE HOLDINGS, LIMITED

This subsidiary of Payore Gold Mines, Limited, was incorporated in June, 1937.

During the year under review, trenching, diamond drilling, and underground work were carried out. A shaft was sunk to a depth of 385 feet, and approximately 5,000 feet of lateral work was completed on the 125-, 250-, and 375-foot levels.

The underground work proved the presence of quartz veins containing encouraging gold values. In early 1938, plans were made to proceed with the erection of a 50-ton milling unit. An electric power line was built to the property, and a complete electric mining-plant was installed.

SIGMA MINES, LIMITED

The annual report of the Company for the year 1937 contains the following:

"During the year, the mill was completed and put into operation on March 17th.

"Since the start of milling operations, 140,307 tons were hoisted; of this, 125,407 tons were ore, which was sent to the mill and treated, and 14,900 tons were waste, which was brought to the surface.

"The 125,407 tons of ore milled yielded bullion containing 28,264.205 ounces of gold, the average yield being 0.2254 oz. or 4.5076 dwt. per ton.

"Broken ore totalling 36,900 tons remains in the stopes and in the drifts as a result of stope preparation.

"In all, 49,890 tons of a grade of 5.98 dwt. were drawn from stopes and from stope preparation and were sent to the mill.

"No preparation has been made for stoping below the 4th level.

"The system of ore and waste passes were completed from the 2nd level to the 8th level, with loading pockets at the 4th and 8th levels. Development continues to be satisfactory. There remains considerable work to be done on the 2nd, 3rd, and 4th levels. Development on the 5th, 6th, 7th, and 8th levels is proceeding.

"On surface at the north part of the property, 643.0 feet of diamond drilling was done without disclosing any veins or grade of interest.

"ORE PRODUCTION:

"Of the tonnage milled, the stopes yielded 49,890 tons averaging 5.98 dwt., development work yielded 33,840 tons averaging 3.36 dwt., and 41,677 tons averaging 3.97 dwt. were drawn from the surface ore-dump.

"ORE RESERVES:

"The total ore reserves are estimated at 463,500 tons. This includes 36,900 tons of broken-ore underground and 10,000 tons on the surface ore-dump.

"MILL:

"The following are the results of milling operations:

Tons treated.....	125,407 tons
Heads.....	4.6287 dwt.
Recovery.....	4.5076 dwt. per ton = 97.38%

"Without additional capital expenditure in the mill, the rate was increased from 300 tons at the beginning of operations to a daily average of 500 tons in the latter part of July, which milling rate has been maintained.

"After the completion of the mill, the following additional construction and installation was necessary and was completed at the end of the year: assay office with assay crusher-house; powder magazine; power house, and 2,000 cu. ft. per min. air compressor installed; new cookery; diamond drill setting room; carpenters' shop, mine and general store room, combined in one building; and manager's residence".

The report also contains the information that 19,694.5 feet of diamond drilling was completed during the year. The net operating profit amounted to \$415,149.67.

VAL D'OR MINERAL HOLDINGS, LIMITED

This Company performed exploratory work, including 4,313 feet of diamond drilling, on a group of claims in Bourlamaque township.

WOLVERINE (QUEBEC) MINES, LIMITED

During 1937, a large amount of stripping and trenching were carried out on this property, and a programme involving 6,720 feet of diamond drilling was completed.

PASCALIS TOWNSHIP**BEAUFOR MINING CORPORATION, LIMITED**

During 1937, the exploration of the Beaufor property was, for the most part, carried out from the underground workings of the adjoining Perron mine. Over 2,500 feet of drifting and cross-cutting were completed, in addition to diamond drilling to the extent of 13,259 feet.

The annual report of the Company for 1937 contains the following information:

"Development work and diamond drilling was continued on the 325-, 500-, and 625-foot levels of the mine. Considerable surface diamond-drilling was done on the South claims of the Company, with favourable results.

"DEVELOPMENT:

"1,576.3 feet of drifting, 1,031.4 feet of cross-cutting, and 140.4 feet of raising, was done during the year.

"On the 625-foot level, drifting has exposed 50 feet, and on the 500-foot level 140 feet, of ore of good grade.

"North of No. 4 shaft, 1,935 feet of diamond drilling was done in the area above the 325-foot level and 4,234 feet between the 325- and the 625-foot levels of the mine.

"In this work, the 501, 602, and 622 veins were located. Other sections, of 3 feet assaying \$6.30, 97 feet south of 604 West drift, 3.9 feet assaying \$30.80 near the east boundary just below the 625-foot level, and low-grade sections in holes 234 and 238 at the 425-foot level, have yet to be opened-up.

"South of No. 4 shaft, 1,370 feet of diamond drilling was done between the 325- and 625-foot levels. North of the shaft a 5.0-foot section assaying \$16.45, and 768 feet south a 0.6-foot section assaying 0.43 oz., was intercepted.

"Eleven diamond-drill holes of 5,582 feet were drilled in an area 600 feet by 500 feet on the South claims, just north of the Cournor boundary. In this work, 15 important ore sections were exposed.

"GENERAL:

"During the year, the Quebec Government road and the C. N. R. branch-line were completed from Senneterre to Val D'Or. These improvements will greatly reduce transportation costs in future operations of the Company.

"The new ore-zone discovery by diamond drilling on the South claims of the Company seems very important. Active work on this zone, and underground developments of the main Beaufor mine, will be continued through 1938".

PERRON GOLD MINES, LIMITED

The following account of operations in 1937 is contained in the annual report of the Company:

"Development work was continued on the 175-, 325-, and 600-foot levels of the mine, with a new sub-level at 500 feet, all with favourable results. Electric haulage is employed on the 325- and 600-foot levels. Electric and air operated slusher hoists are used in all the large, flat-lying stopes in conjunction with favourably located box-holes to more economically remove the ore.

"The mine now supplies sufficient water for mill operations. It is delivered by a complete installation of electric pumps.

"The cyanide mill operated continuously during the year on a very satisfactory recovery basis.

"The mine was equipped with electric lamps, replacing the carbide lamps formerly used. A new Sullivan 1,050 cu. ft. compressor was placed in operation. The steam hoist at No. 2 shaft was converted to electric drive. A modern change-house with suitable bath facilities for the miners was built at No. 2 shaft.

"DEVELOPMENT:

"7,404 feet of drifting and cross-cutting, 1,544 feet of raising, and 20,500 feet of diamond drilling, was done during the year. Development

work revealed new ore-bodies on the 175- and 325-foot levels, the most important being 215 vein, which has proved to be the most productive in the mine to date.

"1,000 feet of \$8.05 grade ore, average width 6 feet, has been developed on the 600-foot level. A very important ore section is just being developed on the 500-foot level. The 400-foot level is still undeveloped.

"Diamond-drilling above the 600-foot level has indicated 17 vein sections yet to be opened up. I believe further drilling will add to these.

"Deep diamond-drilling below the 600-foot level has revealed nine important ore sections to a depth of 1,300 feet.

"Stoping has demonstrated that the Perron veins are continuous on both the strike and dip, that the walls are strong and stand up without timber or frequent pillars, and that ore removal, although expensive, is not difficult and that costs compare favourably with other mining methods where much timber and back-filling is used to support the walls and to prevent dilution.

"Due to the erratic nature of Perron veins, an ore estimate is difficult to arrive at. However, with one year's background in stoping these veins on a comparatively large scale, and therefore a wider knowledge of the ore characteristics, and with more development raises and more diamond-drill holes in and ahead of present workings than we have had, therefore I feel more confident than usual in estimating that we have 300,000 tons of ore indicated of a grade equal to that treated in 1937.

"MILLING:

"The cyanide mill operated continuously throughout 1937 on an average daily tonnage of 335 tons. During the year, 148,329 tons of ore went to the mill. Of this, 25,841 tons, or 17.43 per cent, were discarded as waste. 122,398 tons were milled of an average grade of 0.2417 oz., or \$8.46, per ton. Total production for the year was 29,013 ounces valued at \$1,015,457.26. Average tailings assayed 0.0055 oz., or 19¼ cents, per ton. Average extraction was 97.69 per cent".

SEMORE GOLD MINES, LIMITED

The property of this Company is situated astride the Senneville-Pascal boundary, immediately north of the Perron mine.

In 1937, 11,406 feet of diamond drilling were completed. It is reported that the drilling indicated the presence of two mineralized zones containing encouraging gold values, and further work is planned for 1938.

LOUVICOURT TOWNSHIP

BEAUCOURT GOLD MINES, LIMITED

This Company was incorporated in 1936 to succeed Newroy Gold Mines, Limited. In 1937, a considerable amount of surface work was carried out, and 12,006 feet of diamond drilling was completed. It is reported that some new gold-quartz veins were found.

CENTRECŒUR GOLD MINES, LIMITED

In 1937, over 3,000 feet of diamond drilling was completed on this property. It is reported that results were encouraging.

COURNOR MINING COMPANY, LIMITED

This Company was incorporated in 1937 with a capitalization of 3,000,000 shares of \$1.00 par value stock, to acquire the mining rights to properties formerly held by the Bussières Mining Company, Limited, and Hosking Mining Company, Limited.

Operations were resumed at the Bussières mine in the spring of 1937. The power from the Company's plant at Simon lake was augmented by a supply from the Northern Quebec Power Company's lines. The mill was renovated, and altered to a straight cyanide flow-sheet. The mine was de-watered and milling operations were commenced in August. At the end of the year, production was in progress on a basis of 175 tons of ore per day. Diamond drilling totalling 16,889 feet was also carried out.

FLEMING MINES, LIMITED

During 1937, exploration work was continued on this property. In addition to a considerable amount of surface stripping and trenching, 12,439 feet of diamond drilling was completed.

LOUVRE GOLD MINES, LIMITED

In the early part of 1937, diamond drilling was continued on this property, holes aggregating 2,624 feet being put down.

NUBELL GOLD MINES, LIMITED

Operations were resumed on this property in 1937. Surface exploration work was carried out, and a 4,000-foot diamond-drilling programme was completed. It is reported that this work confirmed the presence of gold in quartz veins.

TIBLEMONT TOWNSHIP**TIBLEMONT ISLAND MINING COMPANY, LIMITED**

In the early part of 1937, underground work was continued on the 485-foot level of this property. Mill construction, begun in the fall of the previous year, was suspended, and at the present time operations are confined to keeping the mine de-watered.

VAUQUELIN TOWNSHIP**AVOCALON MINING SYNDICATE, LIMITED**

Operations were resumed on this property following completion of a geophysical survey. In the year under review, further surface work, as well as 7,500 feet of diamond drilling, was carried out.

BRUELL GOLD MINES (1936), LIMITED

During 1937, an extensive exploration campaign was carried out on the Bruell property. This campaign involved stripping, trenching, and the sinking of several test-pits, in addition to 2,500 feet of diamond drilling. It is reported that this work failed to give conclusive results as to the presence of ore.

CONSOLIDATED MINING AND SMELTING CO. OF CANADA, LIMITED

This Company holds a group of claims in the south-central part of Vauquelin township. In 1937, a considerable amount of exploratory work was carried out on this and on other optioned properties, and over 6,000 feet of diamond drilling was performed.

MANIWAKI MINES, LIMITED

In the summer of 1937, a promising gold discovery was made on the McDonough Syndicate's claims, in the south-central part of Vauquelin township. Maniwaki Mines, Limited, was formed, with a capitalization of 3,500,000 shares of \$1.00 par value stock, to continue operations.

Camp buildings were erected, and a large amount of surface work was carried out. In early 1938, diamond drilling failed to confirm the presence of ore, and operations have been suspended.

GUILLET TOWNSHIP**BELLETERRE MINES, LIMITED**

This Company, a subsidiary of McIntyre-Porcupine Mines, Limited, carried on mining operations continuously throughout 1937. The No. 1 shaft, on the former Beauplace ground, was de-watered, and a part of the mill-feed was obtained from these workings. This ore was hauled to the mill in trucks.

During the summer, a discovery of gold-bearing float was made on claim R.20645. Trenching and diamond drilling to the north of the discovery resulted in the development of a valuable ore-body with a length of 1,650 feet, an average width of four feet, and with average gold values of over 0.28 ounces per ton. The drilling proved the continuity of the ore to a depth of 500 feet.

In December, forty-four diamond-drill holes, aggregating 20,365 feet, had been put down and it was then decided to sink a three-compartment vertical shaft on the new ore-zone.

Due to a shortage of electric power, it was necessary to suspend milling operations on November 30th. In the eleven-month period during which the mill operated, 36,494 tons of ore were treated.

DESMELOIZES TOWNSHIP

NORMETAL MINING CORPORATION, LIMITED

The annual report of the Company for the year ended December 31st, 1937, contains the following summary of operations:

"Mill construction was commenced early in March, but, due to the increased industrial activity at that time, delivery of machinery was much slower than promised, with the result that production did not start until September 18th instead of July 1st, as anticipated. Construction of the standard-gauge tramway from the mine to the Canadian National railway at Dupuy, P. Q., was seriously delayed by adverse weather conditions and was not completed until December, too late to ship zinc concentrates abroad.

"During the approximately three and one-half months the mill was in operation, 20,843 tons of ore assaying 2.185 per cent copper, 8.729 per cent zinc, 0.0268 oz. gold and 2.838 oz. silver per ton, were treated, and 1,819 tons of copper concentrates containing 724,820 pounds of copper, 280 ounces of gold, and 34,789 ounces of silver, and 2,900 tons of zinc concentrates containing 2,655,677 pounds of zinc, were produced.

"It will be noted that the grade treated is lower than the average grade of the mine. The reasons for this are: (a) during the breaking-in of the mill and period of metallurgical experimentation, it was deemed advisable to treat lower grade in order to conserve the higher grade ore; and (b) zinc heads were purposely kept considerably below mine average in order to reduce the tonnage of zinc concentrates that had to be stock-piled and thus avoid re-handling costs. Copper concentrates have been shipped to the smelter, but zinc concentrates are being stock-piled at the mine for shipment abroad if the price warrants, when navigation on the St. Lawrence river opens. In our opinion, indications point to an increase in metal prices.

"Extremely good operating costs have been attained, but, due principally to low metal prices, operations were carried on at a loss.

"Early metallurgical difficulties have been largely overcome and current practice shows a distinct improvement over first results.

"Orders have been placed for additional equipment to bring the mill up to a nominal capacity of 500 tons a day, and production at this rate is expected to commence early in June.

"No development work with the object of locating new ore was done during the year".

LA REINE TOWNSHIP

LA REINE GOLD MINES, LIMITED

Operations were continued on this property in 1937. Following the completion of a diamond-drilling programme, with holes totalling about 5,000 feet, light mining equipment was installed, and the sinking of a three-compartment vertical shaft was commenced. At the end of the year, the shaft had reached a depth of 118 feet, and about 76 feet of lateral work had been carried out at the 100-foot level.

LAUNAY TOWNSHIP

FREGOLD MINES, LIMITED

Early in 1937, a light mining-plant was installed on this property. A vertical, two-compartment shaft was sunk to a depth of 150 feet, and over 800 feet of lateral work was completed on the 125-foot level. It is reported that encouraging results were obtained, and further work is planned in 1938.

ROCHETTE GOLD MINES COMPANY, LIMITED

This property comprises lots 9, 10, 11, and 12, range IV. During the summer of 1937, some surface exploration was carried out and 2,000 feet of diamond drilling was completed.

DALQUIER TOWNSHIP

COLONIAL GOLD MINES, LIMITED

A diamond-drilling programme totalling 2,500 feet was completed on this property during 1937.

DUVERNY TOWNSHIP

CENTRAL DUVERNY GOLD MINES, LIMITED

Diamond drilling in several holes totalling 6,431 feet is reported to have indicated the continuation to depth of the quartz-filled fractures found the previous year in surface exploration, but the presence of ore was not conclusively indicated.

CLAVERNY GOLD MINES, LIMITED

This Company was incorporated in 1937 with a capitalization of 3,000,000 shares of \$1.00 par value stock. The property is situated to the east of Fontana Gold Mines.

A large amount of surface stripping and trenching was carried out to explore some gold-bearing quartz veins, and, supplementing this, 6,057 feet of diamond drilling was completed. Encouraging results attended this work, and, early in 1938, the sinking of an inclined shaft was under way further to explore the deposits.

FONTANA GOLD MINES, LIMITED

Early in 1937, preparations were completed for underground exploration on this property. A headframe was erected, and light mining equipment was installed, including a 6 in. by 5 in. steam hoist, a 40 h.p. locomotive type boiler, and a 315 cu. ft. Diesel-driven compressor. A three-compartment, vertical shaft was completed to a depth of 295 feet, and lateral work was carried out on the 175- and 275-foot levels. The underground work did not indicate the continuity of the high-grade surface showing to depth, but some free gold was observed in drifts on both levels.

WEST DUVERNY GOLD MINES, LIMITED

During 1937, a geophysical survey was made of this property, and a diamond-drilling programme totalling 2,211 feet was completed.

LANDRIENNE TOWNSHIP

MINES DEVELOPMENT CORPORATION, LIMITED

Early in the year, the shaft was deepened to 600 feet, and new levels were established at the 450- and 575-foot horizons. About 1,000 feet of lateral work was completed. The mill was operated intermittently, and a small amount of gold was produced.

COURVILLE TOWNSHIP

HEVA CADILLAC GOLD MINES, LIMITED

Operations of this Company in Courville township were confined to lots 11 to 20, range IX. A promising gold discovery was made. A large amount of surface work was carried out, and ten diamond-drill holes, aggregating 1,911 feet, were put down. It is reported that the work was attended with very encouraging results, and further operations are planned for 1938.

CURRIE TOWNSHIP

LAKE ROSE MINES, LIMITED

In the early part of 1937, lateral work was continued on the lower levels of the Lake Rose property, and 1,494 feet of diamond drilling was completed. This work failed to indicate continuity to the gold-quartz veins, and in May operations were suspended.

Early in 1938, plans were made to instal a small cyanide mill on the property. A more complete record of development, by G. S. MacKenzie, is contained in the Annual Report of the Bureau of Mines, Part A, 1936, pages 109 and 110.

LEVY TOWNSHIP

OPEMISKA COPPER MINES, LIMITED

Early in the year, the shaft at this property was deepened to 550 feet, and lateral work was commenced at the 525-foot level. The annual report of the Company for 1937 contains the following summary of work completed since the commencement of operations:

"In 1935, it was decided to develop underground the main copper-gold ore-bodies, which consisted of four parallel east and west zones, identified from north to south as the North zone, No. 1 zone, No. 2 zone, and No. 3 zone. Crossing these zones in a northwesterly direction is another occurrence known as the Arsenic zone.

"Previous to 1935, 6,725 feet of surface diamond-drilling had been completed on these zones. During 1935, a 140-mile winter road was completed from the railway to the mine. During the same year, a geophysical

survey was completed on an area adjoining the ore-zones and tested by 1,257 feet of surface diamond drilling, which found no ore.

"In 1936, a small mining plant was installed, together with the necessary camp facilities, and a three-compartment shaft was started. Stations were cut on the 150-foot level, the 275 foot-level, and the 525-foot level, and during 1936 and 1937 the following development work was completed:

	150-Ft. LEVEL	275-Ft. LEVEL	525-Ft. LEVEL	TOTAL
Shaft sinking.....				545.7 ft.
Drifting on North zone.....	37.0 ft.	400.9 ft.		437.9 "
Drifting on No. 1 zone.....		970.1 "	1,147.0 ft.	2,117.1 "
Drifting on No. 2 zone.....		648.7 "	936.0 "	1,584.7 "
Drifting on Arsenic zone.....		110.0 "		110.0 "
Cross-cutting.....	371.4 "	692.8 "	382.5 "	1,446.7 "
TOTALS.....	408.4 ft.	2,822.5 ft.	2,465.5 ft.	5,696.4 ft.

"The following additional ground was broken:

	150-Ft. LEVEL	275-Ft. LEVEL	525-Ft. LEVEL	TOTAL
Station cutting.....	7,250 cu. ft.	7,450 cu. ft.	5,725 cu. ft.	20,425 cu. ft.
Sump.....		3,750 "		3,750 "
Slashing for diamond drilling.....		6,700 "	8,500 "	15,200 "
TOTALS.....	7,250 cu. ft.	17,900 cu. ft.	14,225 cu. ft.	39,375 cu. ft.

"During mining operations in 1936 and 1937, a flat diamond-drill campaign was completed on the 275-ft. and 525-ft. levels:

YEAR	275-Ft. LEVEL	525-Ft. LEVEL	TOTAL
1936.....	2,174 ft.		2,174 ft.
1937.....	1,937 "	7,277 ft.	9,214 "
TOTALS.....	4,111 ft.	7,277 ft.	11,388 ft.

"During 1936, an additional 524 feet of surface diamond-drilling was completed for geology. In the same year, an interesting surface showing, identified as the Perry showing, was discovered half a mile east of the main ore-zone. Further surface prospecting on this showing was not encouraging; 2,053 feet surface diamond-drilling on this discovery indicated possibilities of large low-grade ore-bodies in depth. Additional diamond drilling in this area is contemplated in the future.

"The underground development of the main ore-zones was disappointing and did not live up to its surface indications. Operations were suspended in the fall of 1937, as by that time the programme which had been outlined was completed and there was practically no hope of enlarging ore reserves from the present shaft. It was known from the beginning that the ore-zones were underlain by a barren rhyolite basement, but it

was hoped the ore-shoots raked eastward, following the basement contour, but this did not prove to be the case.

"The following is a summary of indicated ore reserves above the 525-ft. level. No commercial ore is allowed in No. 3 zone:

	DEPTH	TONNAGE	COPPER (per cent)	GOLD (oz. per ton)
North zone.....	275 ft.	18,000	13.9	0.18
No. 1 zone.....	525 "	127,000	7.1	0.09
No. 2 zone.....	525 "	138,000	6.8	0.16
TOTAL.....		283,000	7.4	0.13

"These ore-bodies will make a small profitable mine when economic transportation is available".

OBALSKI TOWNSHIP

OBALSKI MINING CORPORATION, LIMITED

Additional diamond drilling was carried out early in the year and very promising results were obtained. Eight holes aggregating 2,509 feet were completed. Four holes, drilled to intersect *D* vein, from west to east, returned the following values:

13 inches.....	\$45.50 gold per ton
12 "	\$11.55 " " "
10 "	\$28.00 " " "
18 "	\$19.60 " " "

Two intersections of *C* vein gave the following assays:

27 inches.....	\$19.95 gold per ton
59 "	\$62.50 " " "

A new vein, encountered in the drilling at 225 feet west, and 60 feet north, of *D* vein, gave values of \$16.45 gold per ton across a core length of 10 inches.

During the winter months, a complete mining plant was transported over the winter road from the Lake Saint-John district to the property. This plant includes a 9 in. by 9 in. steam hoist and two 70 h.p. boilers. In the summer, a head-frame was erected, and the sinking of a three-compartment vertical shaft was commenced. Operations were suspended when the shaft had reached a depth of seventy-five feet.

McKENZIE TOWNSHIP

CENTRAL CHIBOUGAMAU GOLD MINES, LIMITED

During 1937, surface work was continued on the group of claims situated in the west part of McKenzie township, and a diamond-drilling programme totalling 3,644 feet was completed.

CONSOLIDATED CHIBOUGAMAU GOLDFIELDS, LIMITED

A detailed description of the geology of the Cedar Bay property of this Company, by G. S. MacKenzie, is contained in Part A of the Annual Report of the Bureau of Mines for 1936.

Underground work and diamond drilling were continued until the late fall. The drilling totalled 11,732 feet. It is reported that the results failed to justify further work under existing transportation conditions. Ore reserves at March, 1937, were estimated at 55,625 tons of mineralized material averaging 0.27 ounces gold per ton and 1.25 per cent copper.

EMPLOYMENT, WAGES, AND ACCIDENTS IN MINES AND QUARRIES DURING THE YEAR 1937*

EMPLOYMENT AND WAGES

The number of men employed in the mining industry of the Province continues to rise steadily. During 1937, the total was 23,817, an increase of 35 per cent over the previous year. There was marked improvement both in mines and quarries.

The total number of working days for all employees was 5,489,421, which is equivalent to the work of 18,298 men each employed for 300 days, the 'standard' year adopted by the Bureau for statistical purposes.

Returns of employment were received from 299 mines, 160 quarries, 4,494 sand and gravel pits (of which 3,469 were operated by the Provincial Roads Department), and also from numerous claim holders who completed the required amount of assessment work.

TABLE I
WORKMEN EMPLOYED IN MINES AND QUARRIES IN THE PROVINCE OF QUEBEC,
1934 to 1937

	1937	1936	1935	1934
Number of men employed.....	23,817	17,646	15,473	13,180
Number of men on a 300-day basis.....	18,298	13,262	11,326	9,561

The distribution of workmen over the various branches of the industry is given in Table II. In the mines group, the number of men working in gold mines is increasing year after year. Successive increases for 1935, 1936, and 1937, were 85.0, 52.6, and 29.3 per cent. Copper mining in western Quebec was particularly active, as several mines which had remained closed for some years were reopened in consequence of the increase in price of the metal. The figures for zinc and lead that are included in the Table refer to employment at the Tétreault mine. This mine was closed down at the end of May. Employees at other zinc producing mines, operating on complex ore, are included under copper mining. Employees in the asbestos mining industry increased during the year from 2,829 to 3,694, thus reflecting the greatly improved conditions. As shown in the Table, employment gains were registered in all branches of the mines group with the exception of chrome, magnesitic-dolomite, and phosphate.

In the quarry group, also, employment was generally more favourable than in 1936. Marble and sandstone quarries, however, were less active.

The number of men engaged in producing and non-producing mines, and in assessment work on claims, is shown in Table III. Each item shows a very substantial increase over the figures for 1936. Staking of claims and development of mining properties were particularly active in western and northern Quebec.

Wages paid to workmen in the mines and quarries of the Province amounted to \$20,471,502, as compared with \$13,970,672 in 1936. Details

(*) Compiled by Henri Girard, from reports of Inspectors of Mines.

of the wages in the several branches of the industry are given in the table of mineral production on page 7. Of the total, workmen in mines received \$17,208,656 and those in quarries \$3,262,846; these figures compare respectively with \$11,868,497 and \$2,102,175 in 1936. Including both mines and quarries, the average wage earned by a 300-day workman was \$1,118.-78; in 1936 it was \$1,053.

One labour dispute was recorded during the year. Employees in the Tétreault lead and zinc mine ceased work on March 4th, demanding an increase in wages with a minimum of 25 cents per hour. As a result of conciliation by an officer of the Provincial Department of Labour, a settlement was reached in favour of the workers involved. Work was resumed on March 8th.

TABLE II

DISTRIBUTION OF WORKMEN IN THE VARIOUS MINES AND QUARRIES

	NUMBER OF MEN EMPLOYED	NUMBER OF MEN CALCULATED ON 300-DAY BASIS	
	1937	1937	1936
MINES:			
Asbestos.....	3,694	3,540	2,456
Copper.....	2,325	2,486	1,964
Chrome, titaniferous iron ore, zinc, lead.....	247	99	213
Feldspar.....	82	61	34
Gold, silver.....	6,646	6,324	4,594
Industrial lime.....	290	229	194
Magnesitic-dolomite.....	178	212	219
Mica, phosphate.....	263	151	71
Mineral pigments, ochres.....	62	40	33
Mineral water.....	16	6	5
Molybdenite.....	15	6	1
Natural gas.....	14	3	.....
Peat.....	29	8	8
Quartz, silica rock, garnet, kaolin.....	250	193	100
Talc, soapstone.....	43	25	19
Assessment work on claims.....	928	928	662
SUB-TOTALS.....	15,082	14,311	10,571
QUARRIES:			
Brick, pottery.....	723	374	285
Cement.....	417	428	388
Granite.....	733	283	236
Limestone.....	1,192	612	526
Marble, slate, sandstone.....	165	63	124
Sand and gravel.....	5,505	2,227	1,132
SUB-TOTALS.....	8,735	3,987	2,691
TOTALS.....	23,817	18,298	13,262

TABLE III

WORKMEN EMPLOYED IN PRODUCING AND NON-PRODUCING MINES, AND ENGAGED IN ASSESSMENT WORK ON CLAIMS, IN 1937

	NUMBER OF WORKMEN	WAGES	NUMBER OF DAYS' WORK	NUMBER OF 300-DAY WORKERS
Producing mines.....	10,452	\$12,912,962.50	3,183,299	10,610
Non-producing mines.....	3,702	3,328,230.50	831,669	2,772
Assessment work on claims.....	928	967,463.00	278,467	928
TOTAL.....	15,082	\$17,208,656.00	4,293,435	14,310

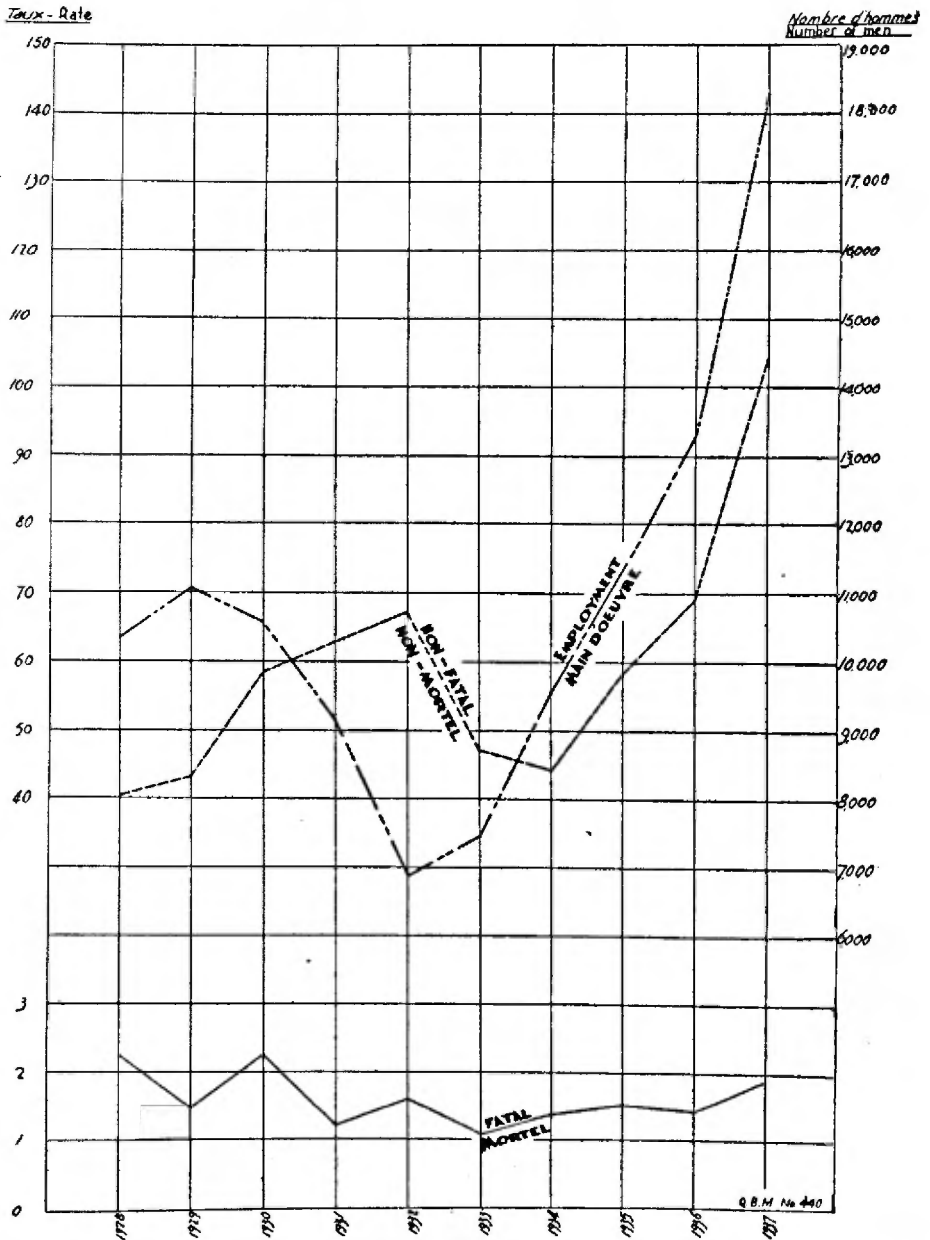


Figure 1.—Employment and accident frequency in the mineral industry of the Province of Quebec for the years 1928-1937. (The number of men is based on a standard of 300 working days).

ACCIDENTS

Accidents to employees in all mines, quarries, and annexed plants in 1937 caused 35 deaths and 1,920 injuries, as compared with 19 deaths and 915 injuries in 1936. The increase is in part accounted for by the greater number of men employed and of companies operating. As shown in the accompanying graph, the trend upward of non-fatal accidents since the year 1934 is in fairly close correspondence with the rapid rise in the employment curve. In the main, it is unquestionably due to the employment, unavoidable under the circumstances, of many untrained and inexperienced men in metal mining. Another factor which contributes to make the accident rate compare unfavourably with that of former years is that accident returns received by the Bureau are much more complete than heretofore, since notices of all mine and quarry accidents are now received through the Workmen's Compensation Commission.

TABLE IV

SUMMARY OF ACCIDENTS IN MINES, QUARRIES, AND ANNEXED PLANTS IN 1937

	NUMBER 300-DAY WORKERS	ACCIDENTS		TOTAL	PER 1,000 300-DAY WORKERS
		FATAL	NON-FATAL		
Mines.....	14,311	31	1,679	1,710	119.5
Quarries.....	3,987	4	241	245	61.4
TOTAL.....	18,298	35	1,920	1,955	106.9

TABLE V

ACCIDENTS IN MINES, QUARRIES, AND ANNEXED PLANTS
IN THE PROVINCE OF QUEBEC DURING 1937

	FATAL		NON-FATAL		TOTALS	
	NO.	%	NO.	%	NO.	%
MINES:						
Underground.....	19	1.0	898	45.9	917	46.9
Open pits.....	6	0.3	158	8.1	164	8.4
Surface.....	2	0.1	332	16.9	334	17.0
	27	1.4	1,388	70.9	1,415	72.3
QUARRIES:						
In pits.....	3	0.2	151	7.7	154	7.9
Surface.....	0		30	1.5	30	1.5
	3	0.2	181	9.2	184	9.4
ANNEXED PLANTS:						
Concentrators.....	3	0.2	222	11.3	225	11.5
Smelters.....	0		31	1.6	31	1.6
Shops.....	1	0.1	65	3.3	66	3.4
Warehouse.....	1	0.1	15	0.7	16	0.8
Power plants.....	0		11	0.6	11	0.6
Construction.....	0		7	0.4	7	0.4
	5	0.4	351	17.9	356	18.3
GRAND TOTAL.....	35	2.0	1,920	98.0	1,955	100.0

Including both fatal and non-fatal accidents, the rate per thousand workers on the 300-day basis was 106.9. In mines proper, the rate was considerably higher than in 1936.

The distribution of accidents, fatal and non-fatal, in mines, quarries, and annexed plants is shown in Table V.

FATAL ACCIDENTS:

Fatalities were 1.91 per thousand full-year workers, as compared with 1.43 in 1936. The various causes of fatal accidents and their percentage of the whole are given in Table VI. In the mines group, 'explosives', which ranked second last year, heads the list, as it did in 1935 and 1934. Insufficient examination of working places for missed shots, careless practice in the handling of explosives, and premature blasts, were responsible for most of these accidents. In quarries, 'slides of rock and ground' accounted for 50 per cent of the total.

TABLE VI
ANALYSIS OF FATAL ACCIDENTS IN MINES, QUARRIES, AND ANNEXED PLANTS
IN THE PROVINCE OF QUEBEC DURING 1937

CAUSE OF ACCIDENT	UNDER-GROUND	OPEN PITS	SURFACE	ANNEXED PLANTS	TOTAL	
					No.	%
MINES:						
Explosives	6	0	0	0	6	19.3
Fall of rock	2	1	0	0	3	9.7
Slides of rock and ground	3	0	0	0	3	9.7
Hoisting	3	0	0	0	3	9.7
Fall of person	2	0	1	0	3	9.7
Rock rolling down pile	0	3	0	3	3	9.7
Haulage	0	1	0	1	2	6.5
Machinery and tools	0	0	1	1	2	6.5
Chute loading	1	0	0	0	1	3.2
Rock rolling down incline	1	0	0	0	1	3.2
Scaffolding and ladders	1	0	0	0	1	3.2
Sealing	0	1	0	0	1	3.2
Gearing, shafting, and belting	0	0	0	1	1	3.2
Miscellaneous	0	0	0	1	1	3.2
TOTALS	19	6	2	4	31	100.0
QUARRIES:						
Slides of rock and ground	0	2	0	0	2	50.0
Explosives	0	1	0	0	1	25.0
Miscellaneous	0	0	0	1	1	25.0
TOTALS	0	3	0	1	4	100.0

NON-FATAL ACCIDENTS:

Table VII classifies the non-fatal accidents according to cause or occupation.

Mines:

'Drilling' was the most frequent source of accidents in mines, accounting for 10.9 per cent of the total, as compared with 10.5 per cent in 1936. Common causes of such accidents were fall of drill on person, strains while handling drill, and the flight of chips of stone while drilling. 'Machinery and tools' came second with 9.6 per cent, followed by 'handling rock or other

material' and 'fall of person', each with more than 8 per cent. 'Tramming' was responsible for 7.6 per cent of the total. Most of the accidents of this type occurred in underground workings.

Quarries:

'Loading cars and boxes' and 'handling rock or other material' were, as usual, the chief causes of accident in quarries. 'Sledging' ranked third with 12.2 per cent.

Annexed Plants:

About one-quarter of the accidents in mills and other annexed plants were attributable to 'machinery and tools'. 'Handling rock or other material', 'fall of object', and 'fall of person', each accounted for more than 10 per cent of the total.

TABLE VII

ANALYSIS OF NON-FATAL ACCIDENTS IN MINES, QUARRIES, AND ANNEXED PLANTS
IN THE PROVINCE OF QUEBEC DURING 1937

CAUSE OF ACCIDENT	UNDER- GROUND	OPEN PITS	SURFACE	TOTAL	
				No.	%
MINES:					
Drilling.....	134	16	2	152	10.9
Machinery and tools.....	32	2	99	133	9.6
Handling rock or other material.....	77	8	39	124	8.9
Fall of person.....	61	9	46	116	8.3
Tramming.....	90	0	15	105	7.6
Fall of rock.....	79	13	1	93	6.7
Chute loading.....	91	0	2	93	6.7
Fall of object.....	32	3	28	63	4.5
Rock rolling down incline.....	46	8	0	54	3.9
Scaffolding and ladders.....	39	1	11	51	3.7
Loading cars and boxes.....	7	42	1	50	3.6
Hoisting.....	36	3	5	44	3.2
Haulage.....	17	1	19	37	2.7
Sledging.....	18	5	6	29	2.1
Mucking.....	25	1	2	28	2.0
Lifting heavy object.....	19	2	7	28	2.0
Scaling.....	15	9	0	24	1.7
Burns.....	8	0	15	23	1.7
Explosives.....	16	2	4	22	1.6
Nails.....	14	0	8	22	1.6
Slides of rock and ground.....	8	5	8	21	1.5
Rock rolling down pile.....	2	17	0	19	1.4
Timbering.....	19	0	0	19	1.4
Dust.....	5	3	5	13	0.9
Gearing, shafting, and belting.....	3	2	2	7	0.5
Mechanical shovel or crane.....	3	3	0	6	0.4
Miscellaneous.....	0	1	5	6	0.4
Electricity.....	2	1	2	5	0.4
Derrick.....	0	1	0	1	0.1
TOTALS.....	898	158	332	1,388	100.0

TABLE VII—Continued

CAUSE OF ACCIDENT	UNDER-GROUND	OPEN PITS	SURFACE	TOTAL	
				No.	%
QUARRIES:					
Loading cars and boxes.....	0	51	0	51	28.2
Handling rock or other material.....	0	21	7	28	15.5
Sledging.....	0	22	0	22	12.2
Fall of person.....	0	9	5	14	7.8
Rock rolling down pile.....	0	13	0	13	7.2
Machinery and tools.....	0	3	6	9	5.0
Haulage.....	0	3	5	8	4.4
Fall of rock.....	0	8	0	8	4.4
Drilling.....	0	5	0	5	2.8
Fall of object.....	0	4	1	5	2.8
Lifting heavy object.....	0	4	1	5	2.8
Scaling.....	0	4	0	4	2.2
Derrick.....	0	1	1	2	1.1
Gearing, shafting, and belting.....	0	0	2	2	1.1
Nails.....	0	0	1	1	0.5
Miscellaneous.....	0	0	1	1	0.5
Slides of rock and ground.....	0	1	0	1	0.5
Scaffolding and ladders.....	0	1	0	1	0.5
Explosives.....	0	1	0	1	0.5
TOTALS.....	0	151	30	181	100.0

CAUSE OF ACCIDENT	CON-CEN-TRA-TORS	SMELT-ERS	REPAIR SHOPS	WARE-HOUSES	POWER PLANTS	CON-STRUC-TION	TOTAL	
							No.	%
ANNEXED PLANTS:								
Machinery and tools.....	52	0	27	0	3	3	85	24.2
Handling rock or other material.....	42	1	6	5	2	0	56	16.0
Fall of object.....	16	5	14	4	2	0	41	11.7
Fall of person.....	24	7	3	0	2	1	37	10.5
Gearing, shafting, and belting.....	21	2	0	0	0	1	24	6.9
Burns.....	5	7	4	0	2	0	18	5.1
Sledging.....	9	2	4	0	0	0	15	4.3
Cobbing.....	14	0	0	0	0	0	14	4.0
Lifting heavy object.....	5	0	2	4	0	0	11	3.1
Dust.....	6	3	0	0	0	1	10	2.8
Miscellaneous.....	6	0	1	0	0	0	7	2.0
Scaffolding and ladders.....	4	1	1	0	0	1	7	2.0
Tramming.....	3	2	0	1	0	0	6	1.7
Loading cars and boxes.....	4	0	1	0	0	0	5	1.4
Electricity.....	2	0	2	0	0	0	4	1.1
Nails.....	4	0	0	0	0	0	4	1.1
Haulage.....	0	1	0	1	0	0	2	0.6
Derrick.....	2	0	0	0	0	0	2	0.6
Chute loading.....	2	0	0	0	0	0	2	0.6
Rock rolling down incline.....	1	0	0	0	0	0	1	0.3
TOTALS.....	222	31	65	15	11	7	351	100.0

PREVENTION OF ACCIDENTS

As will appear from the foregoing summary, the accident statistics for 1937 are not very encouraging. The rate per 1,000 300-day workers was 50 per cent higher than in 1936, and about double the average rate for the previous ten years. As mentioned already, this most regrettable situation is in very large measure a consequence of the rapid expansion of our metal-mining industry. The supply of trained men has long since been absorbed, and, as new mines are opened, and as the older mines enlarge their operations, men with no previous experience have to be employed in and around

the mines. The high accident rate represents the price they pay to become trained miners. The establishment by the Bureau of a practical Mine School, referred to on page 17, will go far to remedy this situation and ensure a steady and adequate supply of trained men to meet the future needs of the industry.

But even with conditions as they were, there can be no question that many of the accidents recorded should never have occurred. Perhaps a majority of them were of the type that should be classed as 'avoidable'. As we have stressed repeatedly in our Annual Report, the most feasible means of lessening the frequency of such accidents is by the establishment of safety organizations by the various mining companies, individually, or in groups or associations.

It is realized by all interested in safety work that the most effective of all safety devices is the habit of working safely—and it should be the duty of the employer to inculcate this habit in his men and to convince them how necessary it is for their own welfare and for that of their fellow workers. The Bureau of Mines is most desirous to see safety campaigns organized and kept active, believing this to be a sure means of decreasing very materially the accident frequency in our mines and milling plants.

LIST OF THE PRINCIPAL OPERATORS AND OWNERS OF MINES AND QUARRIES IN THE PROVINCE OF QUEBEC

I.—METALLIC ORES AND MINERAL PRODUCTS

NOTE.—Operators whose names are preceded by an asterisk have produced or done work in 1937.

ASBESTOS

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Asbestos Corporation, Limited.....	Canada Cement Building, Montreal...	Thetford, Coleraine, Broughton
* Bell Asbestos Mines, Limited.....	Thetford Mines.....	Thetford
* Canadian Johns-Manville Co., Ltd., Compagnie d'Amiante de Thetford, Ltée (La).....	Asbestos.....	Sipton
* Granville, R. Gordon.....	Thetford Mines.....	Adstock
* Johnson's Company.....	625 Burnside Place, Montreal.....	Coleraine
* Nicolet Asbestos Mines, Limited....	Thetford Mines.....	Coleraine, Thetford
* Quebec Asbestos Corporation.....	c-o Greenshields & Greenshields, 820 Transportation Building, Montreal	Tingwick
Queen Asbestos, Limited.....	East Broughton.....	Broughton
* Testagouza, Angelo.....	c-o Mr. R. A. Sawyer, Bon-Conseil, Drummond Co.....	Cleveland
	Thetford Mines.....	Thetford

CHROME

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Asbestos Corporation, Limited.....	Canada Cement Building, Montreal...	Coleraine
Brousseau, Nap.....	Courcelles.....	Garthby
Colonial Chrome Company, Limited....	420 Lexington Avenue, New York, N. Y., U. S. A.....	Coleraine
Gray, Ernest.....	149 St. Maurice Street, Thetford Mines	Coleraine
Plante, Pantaléon (fils Thomas).....	Sainte-Angèle-de-Mérici, Rimouski Co.	Awantjish
Quebec Asbestos & Chrome Co.....	c-o Mr. Lovat Fraser, 31 West 95th Street, New York, N. Y., U. S. A.....	Cleveland
Reed Realities, Limited.....	c-o Mr. H. A. Peverley, 1536 St. Mark Street, Montreal.....	Coleraine
Ross, Frank W.....	67 St. Peter Street, Quebec.....	Coleraine
Victory Chrome Mines, Limited.....	c-o Mrs A. Boyer, 10324 Boulevard des Ormes, Montreal.....	Garthby

COPPER

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Adsit Mining Corporation (The).....	c-o Noranda Mines, Ltd., 2-8 King Street East, Toronto 2, Ont.....	Rouyn
Alamac Mines, Limited.....	1811 Royal Bank Building, Montreal...	Desmeulozes
* Aldermac Copper Corporation, Ltd....	941 Dominion Square Building, Mont- real.....	Beauchastel
Area Mines, Limited.....	Room 1002, 320 Bay Street, Toronto, Ont.....	Dufresnoy
* Bagamac Mines, Limited.....	244 Bay Street, Toronto, Ont.....	Rouyn
* Blake-Chibougamau Mining Corp'n.	c-o Mr. Maurice Samson, 71 St. Peter Street, Quebec.....	McKenzie, Obalski
Carlson Mines, Limited.....	Rouyn.....	Dufay
Centre Boischatel Copper Company, Ltd.....	c-o E. D. Ranck, The Coleman Lamp & Stove Co., Ltd., Queen Street East & Davies Ave, Toronto, Ont...	Beauchastel
Cie Minière Ville-Marie-Rouyn (La)...	Ville-Marie, Témiscamingue Co.....	Rouyn
* Cléry Consolidated Mines, Ltd....	11-12 Carleton Chambers, 74 Sparks St., Ottawa, Ont.....	Cléry

COPPER—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Consolidated Copper & Sulphur Co.	Eustis.....	Ascot
* Consolidated Mining and Smelting Co. of Canada, Limited.....	215 St. James Street West, Montreal..	Desjardins, Pershing
* Despina Gold Mines, Limited.....	c-o A. H. Tanner, 276 St. James Street West, Montreal.....	Dufresnoy, Duprat, Beauchastel, Rouyn
* Dunford (Quebec) Mines, Limited...	Room 714, 320 Bay Street, Toronto, Ont.....	Rouyn
Glenrouyn Mines, Limited.....	Room 920, Castle Building, Montreal.	Rouyn
Jacola Mines, Limited.....	25 King Street West, Toronto, Ont.....	Dubuisson
Junction Gold & Copper Syndicate...	c-o J. P. Manley, Room 302, 330 Bay Street, Toronto, Ont.....	Beauchastel
* Lake Dufault Mines, Limited.....	1507 Victory Building, Toronto, Ont.....	Dufresnoy
Lakeside Mines, Limited.....	Room 2800, 25 King Street West, Toronto, Ont.....	Rouyn
* Mary-Jane Copper Gold Mines, Ltd.	Room 409, 1010 St. Catherine Street West, Montreal.....	Destor
* Mount Royal Mines, Limited.....	210 St. James Street West, Montreal..	Rouyn
Newbec Mines, Limited.....	603 Royal Bank Building, Toronto 2, Ont.....	Dufresnoy
Noranda Exploration Company, Ltd.	Noranda, Témiscamingue Co.....	Holland
* Noranda Mines, Limited.....	804 Royal Bank Building, 2-8 King Street East, Toronto, Ont.....	Rouyn
* Normetal Mining Corporation, Ltd.	350 Bay Street, Toronto, Ont.....	Desmeloizes
* Obalski Mining Corporation.....	1024 Canada Cement Building, Cathcart Street, Montreal.....	Obalski, McKenzie, Roy
Opemiska Copper Mines (Quebec), Limited.....	25 King Street West, Toronto, Ont.....	Levy
Quebec Copper Corporation.....	c-o E. D. Ranck, The Coleman Lamp & Stove Company, Limited, Queen St. East & Davies Avenue, Toronto, Ont.....	Duprat, Dufresnoy
Quemont Mining Corporation, Limited	350 Bay Street, Toronto, Ont.....	Rouyn
* Radio Prospectors, Limited.....	Bourmont (Abitibi).....	Buteux
Rhyolite Rouyn Mines, Limited.....	1004 Bank of Hamilton Building, Toronto 2, Ont.....	Duprat
Robb-Montbray Mines, Limited.....	Room 1001, 85 Richmond Street West, Toronto, Ont.....	Montbray
* Syndicat Industriel (Le).....	c-o Mr. Joseph Hurtubise, 500 Place d'Armes, Montreal.....	Fabre
Turtle Lake Mining Company.....	c-o J. A. Parent, Advocate, 193 Main Street, Hull.....	Dufay
United Copper Syndicate, Limited...	402 Insurance Exchange Building, Montreal.....	Boischatel
* Ventures, Limited.....	Canadian Bank of Commerce Building, 25 King Street West, Toronto, Ont.....	Duprat, Dufresnoy
* Waite-Amulet Mines, Limited.....	804 Royal Bank Building, 2-8 King St. East, Toronto, Ont.....	Duprat, Dufresnoy
Wasamac Mines, Limited.....	4141 St. Denis Street, Montreal.....	Beauchastel

FELDSPAR

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Barr, W. J.....	Westmeath, Ont.....	Aberford
Bertrand, Wilfrid.....	Buckingham.....	Derry
* Brazeau, Maurice A.....	Buckingham.....	Portland West
Cameron, Wm. A., & Donald A.....	Buckingham.....	Portland West
Canadian Amber Mica Company.....	P. O. Box 246, Station B, Montreal.....	Portland West
* Canadian Flint & Spar Co., Ltd.....	900 Victoria Building, Ottawa, Ont.....	Derry
Derry Mining Company.....	Buckingham.....	Derry
* Donaldson, Robert J.....	Glen Almond.....	Buckingham
* Evans, W. E.....	Buckingham.....	Buckingham
Lamarche, J. Hermas, & Arbic, Phrase	Mont-Laurier, Labelle Co.....	Campbell
* Laviolette, Aldeas.....	Buckingham.....	Portland East
* McDonnell, B. A.....	Buckingham.....	Derry
McMillan, A. J.....	P. O. Box 84, Buckingham.....	Buckingham
O'Brien & Fowler, Limited.....	P. O. Box 340, Buckingham.....	Derry
* Parcher, Alfred.....	Glen Almond.....	Derry
* Pedneaud, Gonzague.....	Glen Almond.....	Buckingham
* Perkins Mining Company.....	P. O. Box 63, Pointe Gatineau.....	Derry
* St. Amour, Orphils.....	Notre-Dame-de-la-Salette.....	Villeneuve
Sellers, Walter, & Parcher, Altou.....	Glen Almond.....	Derry
Whitfield, T.....	Buckingham.....	Buckingham

GARNET

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Canada Garnet, Limited	4203 Brebeuf St., Montreal	Joly
Langlade Garnet, Limited	80 St. Peter Street, Quebec	Beaudin, Trévet
McLean-McNicholl, Limited	Hell Telephone Building, Beaver Hall Hill, Montreal	Joly

GAS and OIL

NAME OF OPERATOR	ADDRESS	LOCATION OF HOLDINGS
Cartier Natural Gas Company, Ltd.	167 Main Street, Hull	
Matane Oil & Chrome Corporation	105 Côte de la Montagne, Quebec	Matane
* Minéraux et Pétroles de Gaspé Compagnie, Ltée.	St-Joachim-de-Tourelle, Gaspé Co.	Baie de Gaspé-Nord
* Tremblay-Joubert Coal Oil Co., Ltd.	26 St. James Street East, Montreal	St-Elie-de-Caxton
* Roumefort, Vicomte Roger de	5 St. James Street, Montreal	St-Thérèse-de-Terrebonne

GOLD

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Abbeville Gold Mines, Limited	388 St. James Street West, Montreal	Rouyn
Acme Cadillac Gold Mines, Limited	Room 116, 276 St. James Street West, Montreal	Cadillac
Adanac-Quebec Mines, Limited	Room 405, 100 Adelaide Street West, Toronto, Ont.	Rouyn
* Admiral Cadillac Gold Mines, Ltd.	Room 4, 381 Eglinton Avenue West, Toronto, Ont.	Cadillac
Afton Mines, Limited	Room 403, 217 Bay Street, Toronto, Ont.	Malartic
* Agaura Explorations, Limited	c-o Royal Trust Company, 105 St. James Street West, Montreal	Carpentier, Montbray
Airquests, Limited	Room 902, 217 Bay Street, Toronto, Ont.	Currie, Vauquelin
Algray Mines (Quebec), Limited	Room 1309, 44 Victoria St., Toronto, Ont.	Beauchastel
Amity Gold Mines (Quebec), Limited	c-o Mr. Howard Webb, Sec-Treas., Matheson, Ont.	Bourlamaque, Dubuisson
* Ann Gold Mines (Quebec), Limited	80 King Street West, Toronto, Ont.	Cadillac
* Amos-Cadillac (Quebec), Limited	Room 303, 330 Bay Street, Toronto, Ont.	Bousquet
* Amos Duvernay Gold Mines, Limited	2 Elmwood Avenue, Montreal	Duvernay
* Amphi Gold Properties, Limited	General Assurance Building, Bay & Temperance Streets, Toronto 2, Ont.	Malartic, Varsan
Amulet-Montgomery (Syndicat)	4141 St. Denis Street, Montreal	Beauchastel, Montbeillard
Appalachian Mining Syndicate	192 Robinson Street, Moncton, N. B.	Stratford
* Arceur Gold Mines, Limited	159 Bay Street, Toronto, Ont.	Dasserat
* Arno Mines, Limited	63 Sparks Street, Ottawa, Ont.	Rouyn
* Arntfield Gold Mines, Limited	159 Bay Street, Toronto, Ont.	Beauchastel
* Arrowhead Gold Mines, Limited	240 St. James Street West, Montreal	Joannès
* Ascot Holdings, Limited	Amos (Abitibi)	Malartic, Varsan
Astoria Quebec Mines, Limited	70 St. Paul Street, Quebec	Louvicourt, Rouyn
* Athlone Gold Mines, Limited	388 St. James Street West, Montreal	Bourlamaque, Senneville
Aurel Mines, Limited	Room 200, 129 Main Street, Hull	Cléry
* Aurjac Mines, Limited	465 St. John St., Montreal	Bourlamaque
Auroc Mines, Limited	c-o René Chênevert, 276 St. James St. West, Montreal	Dubuisson
Aurora Mines, Limited	Room 428, 67 Yonge Street, Toronto, Ont.	Vauquelin
Avocalon Extension Syndicate, Ltd.	Room 1701, 372 Bay Street, Toronto, Ont.	Vauquelin
* Avocalon Mining Syndicate, Limited	428 Bank of Hamilton Building, 67 Yonge Street, Toronto, Ont.	Vauquelin
Bapoma Bousquet Gold Mines, Ltd.	407 McGill Street, Montreal	Bousquet
* Barraute Mining Company, Limited	369 Mount Royal Avenue West, Montreal	Barraute
* Barry Lake Mining Company, Ltd.	c-o Savard & Savard, 71 St. Peter St., Quebec	Barry
Basin Gold Mining Corporation	5660 Park Avenue, Montreal	Dubuisson, Varsan
* Bayside Malartic Mines, Limited	206 Coronation Building, Montreal	Launay, Malartic
* Beattie Gold Mines (Quebec), Ltd.	25 King Street West, Toronto, Ont.	Destor, Duparquet

GOLD - Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Beauce Gold Mines Company, Ltd. (The)	74 St. Joseph Street, Quebec	Watford
* Beauchastel Mines, Limited	360 St. James Street West, Montreal	Beauchastel
* Beaucourt Gold Mines, Ltée	1604 Aldred Building, Montreal	Louvicourt
* Beaufor Mining Corporation	355 St. James Street West, Montreal	Louvicourt, Pascais
Belgo-Canadienne de Prospection Minière Limitée (La Compagnie)	417 St. Peter Street, Montreal	Duparquet
* Belleterre Quebec Mines, Limited	15 King Street West, Toronto, Ont.	Gaudet
Bell River Gold Mines, Limited	Room 702, 407 McGill Street, Montreal	Louvicourt
Benard Cadillac Gold Mines, Limited	c-o Henri Crépeau, K. C., 132 St. James Street West, Montreal	Cadillac
* Bidquebec Mines, Limited	320 Bay Street, Toronto, Ont.	Boullamaque
Big Bend Mining Corporation, Limited	c-o Mr. W. J. Hosking, Rouyn	Joannès
* Big Four Mining Syndicate, Ltd.	464 St-François-Xavier Street, Montreal	Beauchastel, Dufresnoy, Rouyn
* Blouin Lake Gold Mines (Quebec), Ltd.	516-517 Canada Cement Building, Montreal	Boullamaque
Bloumaque Mining Company, Limited	112 St. James Street West, Montreal	Boullamaque
Bonaventure Mining Company, Ltd.	407 McGill Street, Montreal	Senneville
Bontoc Mining Company, Limited	c-o Mr. Henri Crépeau, 132 St. James Street West, Montreal	Dasserat
Border-Cadillac Gold Syndicate	Room 1103, 45 Richmond Street West, Toronto, Ont.	Bousquet
Bouchard Clérier Gold Mines, Limited	715 Metropolitan Building, Toronto, Ont.	Clérier
* Bourbeau Lake Gold Mines, Ltd.	New Liskeard, Ont.	McKenzie
Boullamaque Central Mines, Limited	Room 33, 266 Notre-Dame Street West, Montreal	Boullamaque
* Boullamaque Gold Mines, Limited	726 Insurance Exchange Building, Montreal	Boullamaque, Senneville
* Bouscadillac Gold Mines, Limited	1116 Federal Building, Toronto, Ont.	Bousquet
Bowes Gold Mines, Limited	Rouyn	Rouyn
* Brooke Cadillac Gold Mines, Ltd.	Room 1, 400 St. James Street West, Montreal	Cadillac
* Brown-Bousquet Mines, Limited	437 St. James Street West, Montreal	Bousquet, Cadillac
* Brown Cadillac Gold Mines, Ltd.	486 St. John Street, Montreal	Bousquet
* Brownlee Mines (1936), Limited	200 Bay Street, Toronto, Ont.	Rouyn
* Bruell Gold Mines (Quebec), Ltd.	402 Victory Building, Toronto, Ont.	Vauquelin
* Burwell Gold Mines, Limited	231 St. James Street, Montreal	Senneville, Varsan
Bytown Rouyn Mining Syndicate	c-o T. E. Clendinner, 140 Wellington Street, Ottawa, Ont.	Rouyn
* Cache d'Or Gold Mines (Quebec), Limited	c-o Mr. John C. R. MacPherson, Val d'Or, Abitibi	Boullamaque
* Cache Lake Chibouganau Mines, Limited	132 St. James Street West, Montreal	Obalski
* Cadillac Goldfields, Limited	726 Insurance Exchange Building, Montreal	Cadillac
* Calder-Bousquet Gold Mines, Ltd.	5 St. James Street East, Montreal	Bousquet
* Caledonia Cadillac Gold Mines, Ltd.	276 St. James Street West, Montreal	Bousquet
* Canabec Exploration Company	516 Canada Cement Building, Montreal	Vauquelin, Villabon
* Canadian Cadillac Gold Mines, Ltd.	276 St. James Street West, Montreal	Cadillac
Canadian Gold Hunters	Cookshire, Compton Co.	Laverlochère
* Canadian Malartic Gold Mines, Ltd.	26 King Street West, Toronto, Ont.	Fournière
* Candiac (Quebec) Gold Mines, Limited	18 Toronto Street, Toronto, Ont.	Cadillac
Capital Rouyn Gold Mines, Limited	301 First Avenue, Ottawa, Ont.	McKenzie, Roy
* Capital Traders, Limited	276 St. James Street, Montreal	Cuvier, McKenzie, Obalski
* Cassels Duval Mines, Limited	244 St. James Street, Montreal	Bousquet
* Celsa Quebec Exploration, Ltée	465 St. John Street, Montreal	Malartic, Senneville, Tiblémont
Centerline Mines, Limited	Room 33, 266 Notre-Dame Street West, Montreal	Boullamaque
* Central Cadillac Gold Mines, Ltd.	720 Transportation Building, Montreal	Cadillac
* Central Chibouganau Gold Mines, Limited	Room 405, 276 St. James Street West, Montreal	McKenzie
* Central Duvernay Gold Mines, Ltd.	1010 St. Catherine Street West, Montreal	Duvernay
* Central Louvicourt Gold Mines, Limited	c-o Mr. C. N. Clermont, 5363 St. Denis Street, Montreal	Louvicourt, Vauquelin
* Centrecoeur Gold Mines, Limited	405 Atlas Building, Toronto, Ont.	Louvicourt

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Centremaque Gold Mines, Limited..	Suite 118, 276 St. James Street, Montreal.....	Bourlamaque
* Century Mining Corporation, Ltd..	266 Notre-Dame Street West, Montreal.....	Cadillac
Ceres Explorations, Limited.....	85 Sparks Street, Ottawa, Ont.....	Beauchastel, Dufresnoy, Rouyn
* Chibmac Mines, Limited.....	132 St. James Street West, Montreal..	Beauchastel
* Chibougamau North Gold Mining Corporation.....	80 St. Peter Street, Quebec.....	McKenzie, Roy
Chibougamau Opemiska Explorers, Limited.....	1178 Phillips Place, Montreal.....	Levy
* Chibougamau Properties, Ltd.....	132 St. James St. West, Montreal....	Abitibi and Chibougamaudist.
* Chibougamau Proulx Bay Gold Mine, Ltd. (The).....	Chambord Junction.....	Bignell, McKenzie
* Christie Mining Syndicate, Inc.....	4219 West Hill Avenue, Montreal....	Christie, Dalquier
* Churchill Mining & Milling Co., Ltd	Central Building, 45 Richmond St. West, Toronto, Ont.....	Cadillac, Knox
* Cie Petosa Roy Tungstene Premier (La).....	Guigues, Témiscamingue Co.....	Gaboury
Claudor Crossroads Mines, Limited..	1801-2 Victory Building, 80 Richmond Street West, Toronto, Ont.....	Dubuisson
* Claverny Gold Mines, Limited.....	Transportation Building, Montreal...	Duverny
* Clerno Mines, Limited.....	74 Sparks Street, Ottawa, Ont.....	Rouyn
* Colonial Gold Mines, Limited.....	1410 Stanley Street, Montreal.....	Cadillac, Dalquier
* Commander Mines, Limited.....	715 Metropolitan Building, Toronto, Ont.....	Duverny
Compagnie Minière Franco-Canadienne Ltée (La).....	Amos (Abitibi).....	Dubuisson, Duverny
* Consolidated Chibougamau Goldfields, Ltd.....	401 Canadian Pacific Express Bldg., 215 St. James Street, Montreal.....	McKenzie, Obalski
Consolidated Quebec Mines, Limited..	10 St. James Street West, Montreal....	Launay
Contactlamque Gold Mines, Limited..	Room 718, 65 St. Anne Street, Quebec.	Bourlamaque
Continental Explorations, Limited....	726 Insurance Exchange Building, Montreal.....	Dasserat
* Coronation Cadillac Gold Mines (Quebec), Limited.....	132 St. James Street West, Montreal..	Cadillac
* Cournor Mining Company, Ltd.....	Room 10, 215 St. James Street West, Montreal.....	Louvicourt, Vauquelin
* Courvak Gold Mines, Limited.....	407 McGill Street, Montreal.....	Louvicourt, Vauquelin
Crow River (Quebec) Development Co., Ltd.....	c-o Mr. Raymond Caron, Aldred Bldg., Montreal.....	Rouyn
* Cummings-Trudel Holdings, Ltd.....	c-o Mr. Alfred P. Trudel, 404 Laurier Avenue East, Ottawa, Ont.....	Barraute, Malartic
Dasserat Rouyn Goldfields, Limited..	129 Cooper Street, Ottawa, Ont.....	Rouyn
* Deane-Cadillac Mining Corporation	360 St. James Street West, Montreal..	Cadillac, Malartic
Delandore-Quebec Mines, Limited....	Senneterre (Abitibi).....	Delestre
* Dempsey-Cadillac Gold Mines, Ltd..	1008 Royal Bank Building, Toronto, Ont.....	Cadillac, Malartic
* Descar Corporation, Limited.....	Room 204, 680 Sherbrooke St. West, Montreal.....	Deator
Desjardins Mines, Limited.....	Rouyn.....	Desjardins
* Dion, Georges A.....	19 St. Etienne Street, Lévis.....	Watford
Donchester Mines (Quebec), Limited..	25 King Street West, Toronto, Ont....	Duparquet
Doramir Mining Company, Limited....	Room 718, Price Building, Quebec....	Joannès
Dorecu Mines, Limited.....	18 Toronto Street, Toronto, Ont.....	La Sarre
Doreva (Quebec), Limited.....	809 Northern Ontario Building, Toronto, Ont.....	Bousquet
Dorex (Quebec), Limited.....	330 Bay Street, Toronto, Ont.....	Bousquet
* Dorval Siscoe Mines, Limited.....	Val d'Or (Abitibi).....	Varsan
* Dransfield Mining Company, Ltd....	9 Toronto Street, Toronto, Ont.....	Rouyn
* Dubuisson Goldfields, Limited.....	726 Insurance Exchange Building, Montreal.....	Dubuisson
* Dubuisson Gold Mining Co., Ltd. (The).....	Pine Street, Timmins, Ont.....	Dubuisson
* Dubuisson Mines (Quebec), Limited	516 Canada Cement Building, 620 Cathcart Street, Montreal.....	Bourlamaque, Dubuisson
Dugold Mining Company, Limited....	Amos (Abitibi).....	Dubuisson
* Dumico Gold Corporation.....	60 St. James Street West, Montreal..	Duparquet
Dunlop (Quebec) Mines, Limited.....	Room 403, 217 Bay Street, Toronto, Ont.....	Cadillac, Louvicourt, Malartic
* Duquesne-Quebec Mines, Limited..	159 Craig Street West, Montreal....	Deator, Duparquet
Duver Creek Gold Mines, Limited....	Room 316, Canada Cement Building, Montreal.....	Duverny

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Duverny Consolidated Gold Mines, Inc.	Room 316, Canada Cement Building, Montreal	Duverny
* Duverny-Dalquier Gold Mines Co., Ltd.	Room 53, 152 Notre-Dame Street East, Montreal	Duverny, Dalquier
* Duverny Goldfields Corporation	c-o Mr. Leopold Choquette, 60 St. James Street West, Montreal	Duverny
Earlacour Gold Mines, Limited	Fort Erié, Ont.	Bourlamaque
East Bay Gold, Limited	P. O. Box 456, Noranda	Joannès, Rouyn
East Cadillac Syndicate, Limited	Room 720, 132 St. James Street West, Montreal	Cadillac
East Lacoma Mines, Limited	Aldred Building, Place d'Armes, Montreal	Haig, Jurie, Tavernier
Eastmac Holdings, Limited	320 Bay Street, Toronto, Ont.	Bourlamaque
* East Malartic Mines, Limited	913 Royal Bank Building, Montreal	Fournière
* East Rouyn (Quebec), Limited	603-4 Royal Bank Building, Toronto, Ont.	Rouyn
* Eclipse Gold Mining Company, Limited	c-o A. H. Tanner, 276 St. James St. West, Montreal	Destor, Dasserat
Elk Mudlake Mining Syndicate, Ltd. (The)	167 Main Street, Hull	Guillet
* Embergold Mines, Limited	956 New Birks Building, Montreal	Ditton, Emberton
* Emperor Gold Syndicate, Limited	Room 704, 357 Bay Street, Toronto, Ont.	Villebon
* Erie Canadian Mines, Limited	Kirkland Lake, Ont.	Dasserat, Varsan
Excealda Gold Mines, Limited	Rouyn	McKenzie
Fabreor, Ltée	4125 St. Denis Street, Montreal	Fabre
* Farrell Rouyn Mines (Quebec), Ltd.	25 King Street West, Toronto, Ont.	Rouyn
Flavrian Gold Mines, Limited	Noranda	Duprat
* Fleming Mines, Limited	Room 515, 215 St. James Street West, Montreal	Louvicourt
* Fleming-Thompson Gold Mines, Limited	P. O. Box 308, Rouyn	Destor, Duparquet
* Fleury Chibougamau Exploration Syndicate	c-o Mr. Philémon Vallière, 65 St. Peter Street, Quebec	Roy
* Fontana Gold Mines, Limited	Room 1022, Transportation Building, Montreal	Duverny
Ford Cadillac Gold Mines, Limited	c-o Messrs Lafleur, Fortier & Lathippe, 507 Place d'Armes, Montreal	Cadillac
* Francœur Gold Mines, Limited	491 Dominion Square Building, Montreal	Beauchastel
* Freegold Mines, Limited	Suite 100, 45 St. James Street West, Montreal	Launay
Garth Chiboug Holdings, Limited	402 Insurance Exchange Building, Montreal	McKenzie
* Gignac Gold Mines, Limited	402 Perrault Street, Rouyn	Dasserat
Gilbec Mines, Limited	200 Bay Street, Toronto 2, Ont.	Pascalis
* Gilson Duverny Gold Mines, Ltd.	1010 St. Catherine Street West, Montreal	Duverny
G. L. Mining Company, Limited	112 St. James Street West, Montreal	Bourlamaque
Gladstone Gold Mines, Limited	6334 St. Denis Street, Montreal	Pershing
Globe Rouyn Gold Mines, Limited	Room 1102, 1010 St. Catherine St. West, Montreal	Rouyn
* Gold Bar Mines (Quebec), Limited	244 Bay Street, Toronto, Ont.	Rouyn
Golden Road Mine, Limited	Room 409, 1010 St. Catherine St. West, Montreal	Rouyn
Gold Mining Claims, Limited	906 Transportation Building, 132 St. James Street West, Montreal	Duverny
* Gold Quartz (Quebec) Company, Limited	26 Queen Street East, Toronto, Ont.	Courville, Franquet
* Goldstream Mining Company, Ltd.	9 Toronto Street, Toronto, Ont.	Rouyn
Gold Valley Mines, Limited	Room 409, 1010 St. Catherine Street West, Montreal	Rouyn, Poularies
* Granada Gold Mines, Limited	244 Bay Street, Toronto, Ont.	Rouyn
* Granby-Kent Gold Mines, Limited	c-o Mr. René Chenevert, 276 St. James Street West, Montreal	Varsan
Greater Malartic Gold Mines, Ltd.	Malartic (Abitibi)	Fournière
Guinard Gold Mine, Limited	111 Bagshaw Street, Rouyn	Beauchastel
* Halliwell Gold Mines, Limited	360 St. James Street West, Montreal	Beauchastel, Pershing
Hannam Exploration, Limited	Rouyn	Dasserat
* Harpers Malartic (Quebec) Gold Mines, Ltd.	c-o Mr. Henri Crépeau, K. C., Transportation Building, Montreal	Dubuisson

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Harricana Amalgamated Mines, Inc. (The).....	56 St. Peter Street, Quebec.....	Louvicourt
* Harricana Basin Mining Company, Havelock Development Company, Ltd.	Amos.....	Beauchastel
* Hayes Cadillac Mines, Limited.....	P. O. Box 535, Rouyn.....	Cadillac, Tiblemont
* Heva Cadillac Gold Mines, Ltd.....	18 Toronto Street, Toronto, Ont.....	
	1008 Royal Bank Building, Toronto, Ont.....	Courville
* Higginson Gold Mines, Limited.....	407 McGill Street, Montreal.....	Varsan
* Higg Varsan Syndicate.....	Room 1306, 80 King Street West, Toronto, Ont.....	Varsan
High Camp Mines, Limited.....	Room 605, 637 Craig Street West, Montreal.....	Barraute
Hood Vauquelin Gold Mines, Limited.....	c-o Mr. R. Bédard, 129 Main Street, Hull.....	Vauquelin
* Inspiration Mining and Development Co., Ltd.....	Amos (Abitibi).....	Abitibi and Chibougamau dist.
International Mining Corporation (Quebec), Limited.....	85 Richmond Street West, Toronto, Ont.....	Beauchastel, Desjardins, Malartic
* Jacola Mines, Limited.....	25 King Street West, Toronto, Ont.....	Dubuisson
* Jacques Cartier Mining Corporation	Room 715, 215 St. James Street West, Montreal.....	Bourlamaque
* Joannès-Davidson Mines, Limited.....	276 St. James Street West, Montreal.....	Joannès
* Joannès Gold Mines, Limited.....	New Liskeard, Ont.....	Bousquet, Joannès
* Jupiter Gold Syndicate, Limited.....	601 Northern Ontario Building, Toronto, Ont.....	Rouyn
* Kanasuta Gold Mines, Limited.....	616 Confederation Life Building, 12 Richmond Street East, Toronto, Ont.....	Duparquet, Hébécourt
* Kegamione Development and Mining Co., Ltd.....	18 Toronto Street, Toronto, Ont.....	Privat
* KeKeKo (Quebec) Gold Mines, Ltd.....	Arntfield, Témiscamingue Co.....	Beauchastel
* Kewagama Gold Mines (Quebec), Limited.....	25 King Street West, Toronto, Ont.....	Cadillac
* Keyroc (Quebec) Gold Mining Co., Ltd.....	Rouyn, Témiscamingue Co.....	Rouyn
* Kiema Holdings, Limited.....	302 Bay Street, Toronto, Ont.....	Dubuisson
* Kindale Mines (Quebec), Limited.....	217 University Tower, Montreal.....	Joannès, Rouyn
* Kinghorn Sturgeon Holdings, Ltd.....	320 Bay Street, Toronto, Ont.....	Bourlamaque
* Kirkfield Mines, Limited.....	9 Toronto Street, Toronto, Ont.....	Rouyn
* Kirmack Mining Company.....	Room 201, 34 King Street East, Toronto, Ont.....	Bourlamaque
* Kongor Mines Corporation.....	625 Burnside Place, Montreal.....	Dalquier
Kotter Gold (Quebec), Limited.....	c-o D. B. Mulholland, 330 Bay Street, Toronto, Ont.....	Lavergne
* Lacoma Gold Mine (Quebec), Ltd.....	c-o R. S. Potter, Matheson, Ont.....	Jurie, Tavernier
* Lac Varsan Gold Mines, Limited.....	507 Place d'Armes, Montreal.....	Varsan
Lago Gold Mines, Limited.....	187 Main Street, Hull.....	Beauchastel
Lake Doré Mines, Limited.....	414 St. James Street West, Montreal.....	Obaleki, McKenzie
Lake Expanse Gold Mines, Limited.....	Room 510, 320 Bay Street, Toronto, Ont.....	Guillet
Lake Fortune Gold Mines, Limited.....	941 Dominion Square Building, Montreal.....	Beauchastel
* Lake Montigny Gold Mines, Limited	276 St. James Street West, Montreal.....	Varsan
* Lake Rose (Quebec) Mines, Limited.....	80 King Street West, Toronto, Ont.....	Currie
* Lamaque Mining Company, Limited	Bourlamaque (Abitibi).....	Bourlamaque, Dubuisson
Lamont Mines, Limited.....	Room 507, 112 Yonge Street, Toronto, Ont.....	Montbray, Rouyn
* Landor Gold Mines, Limited.....	221 Notre-Dame Street West, Montreal.....	Varsan
* Landry Mines, Limitée.....	Mont-Joli.....	Aubin-de-l'Île-Seigniory
* Lapa Cadillac Gold Mines (1937), Limited.....	25 King Street West, Toronto, Ont.....	Cadillac
* La Pause Gold Mining Corporation, Ltd.....	5660 Park Avenue, Montreal.....	La Pause
* La Reine Holdings, Limited.....	305 C. P. R. Building, Toronto, Ont.....	La Reine
La Roc Mines, Limited.....	132 St. James Street West, Montreal.....	Louvicourt, Vauquelin
Lartic Mines, Limited.....	c-o Holden & Murdoch, Suite 603-4, 2-8 King Street, Toronto 2, Ont.....	Malartic
LaSalle Gold Mines, Limited.....	930 Clarke Street, Montreal.....	Malartic
La Sarre Exploration Company, Ltd.....	Room 313, Transportation Building, Montreal.....	Launay
* La Sarre Holdings, Limited.....	314 C. P. R. Building, Toronto, Ont.....	La Sarre
Launay Exploration Company, Ltd.....	c-o Shulman & Shulman, 276 St. James Street, Montreal.....	Launay

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Lavalie Mines (Quebec), Limited.	Room 202, 465 St. John Street, Montreal.	Bourlamaque
Legault Gold Mines, Limited.	1604 Aldred Building, 507 Place d'Armes, Montreal.	Dubuisson
* LeRoy Mines, Limited.	266 St. James Street West, Montreal.	Clérycy
Locarno Gold Mines, Limited.	18 Rideau Street, Ottawa, Ont.	Clérycy
* Louvre Gold Mines, Limited.	407 McGill Street, Montreal.	Louvicourt
Lusko Gold Mines, Limited.	Room 200, 129 Main Street, Hull.	Clérycy
* MacDonald Mines, Limited.	132 St. James Street West, Montreal.	Dufresnoy
* McIntyre-Porcupine Mines, Ltd.	15 King Street West, Toronto, Ont.	Dasserat
* McKay (Quebec) Exploration, Ltd.	401 Canadian Pacific Express Building, 215 St. James Street West, Montreal.	Scott
* McWatters Gold Mines, Limited.	McWatters.	Rouyn
* Mainland Chibougamau Mines, Ltd.	132 St. James Street West, Montreal.	Obalski
* Malartic Gold Fields, Limited.	P. O. Box 667, Place d'Armes, Montreal.	Malartic
* Malartic Lakeshore Mines, Limited.	Room 221, 276 St. James Street West, Montreal.	Malartic
Malrobic Mines, Limited.	350 Bay Street, Toronto, Ont.	Malartic
* Manitou Mines (Quebec), Limited.	48 Sparks Street, Ottawa, Ont.	Bourlamaque
* Maniwaki Mines, Limited.	Vauquelin Township, Via Senneterre.	Vauquelin
Manobec Prospectors (Quebec), Ltd.	P. O. Box 188, Noranda.	Monbray, Pershing
* Mariette Gold Mines, Limited.	Amos (Abitibi).	Courville
Maritime Cadillac Gold Mines (Que.) Ltd.	330 Bay Street, Toronto, Ont.	Cadillac
* Marjac (Duvernay) Gold Mines, Ltd.	La Sarre (Abitibi).	Desmeloizes
* Marva Gold Mines (1937), Limited.	357 Bay Street, Toronto, Ont.	Bousquet
* Matchi-Manitou, Ltée (Syndicat des Mines d'Or).	56 St. Peter Street, Quebec.	Pershing, Vauquelin
Mentor Exploration and Development Co., Limited.	Canadian Bank of Commerce Building, 25 King Street West, Toronto 2, Ont.	Beauchastel, Rouyn
Mervyn Malartic Gold Mines, Limited	c-o W. B. McHenry, 217 Bay Street, Toronto, Ont.	Malartic
Met-Mac Prospectors, Limited.	Suite 701, 407 McGill Street, Montreal.	Louvicourt
Metz-Rouyn Gold Mining Syndicate, Limited.	Rouyn.	Rouyn
* Midland Mining Corporation, Ltd.	31 St. James Street West, Montreal.	Desmeloizes, Ferron
* Midway Malartic (Quebec), Limited.	80 Richmond Street West, Toronto, Ont.	Fournière
Mill-Rock Mines (Quebec), Limited.	1306 Star Building, Toronto, Ont.	Bourlamaque
* Mine d'Or Champlain, Ltée (La)	Arntfield (Abitibi).	Beauchastel
Mine d'Or Vénus, Consolidée (La).	108 des Commissaires Street, Quebec.	Barraute
* Minelands (Quebec), Limited.	Arntfield, Témiscamingue Co.	Beauchastel
Mineral Prospectors, Limited.	Room 216, 215 St. James Street West, Montreal.	Vauquelin, Villebon
* Mines Development Corporation	189 St. John Street, Quebec.	Landrienne, Launay
Mines d'Or Bellehumeur, Limitée (Les)	Béarn, Témiscamingue Co.	Laverlochère
* Mines d'Or Provencher, Limitée (Les)	Rouyn.	Beauchastel
* Mineseeker Forgold, Limited.	Rouyn.	Destor
* Mining Corporation of Canada, Ltd.	350 Bay Street, Toronto, Ont.	McKenzie
* Misbec Mining Company, Limited.	Amos (Abitibi).	Barlow, Bousquet, Levy
* Monarch Mines (Quebec), Limited.	P. O. Box 712, Rouyn.	Dasserat
Montmagny Gold Mines, Limited.	2-8 King Street East, Toronto, Ont.	Beauchastel, Rouyn
* Moosha Gold Mines Company (1937), Limited.	25 King Street West, Toronto, Ont.	Bousquet
Mud Lake Gold Mines, Limited.	c-o H. C. Rowett, Shawville.	Guillet
* Mylamaque Gold Mines, Limited.	10 Adelaide Street East, Toronto, Ont.	Bourlamaque
Natagan Gold Mines Syndicate, Ltd.	c-o A. P. Robitaille, Charlesbourg.	Barraute
* National Malartic Mining Company, Limited.	Room 110, 215 St. James Street West, Montreal.	Fournière, Malartic
* Nelson Gold Mines, Limited.	388 St. James Street West, Montreal.	Joannès
New Ribago Mines, Limited.	426-32 Bank of Hamilton Building, Toronto, Ont.	Beauchastel, Rouyn
* Niagara Gold Mines, Limited.	2177 Dawlish Avenue, Niagara Falls, Ont.	Beauchastel
* Nipissing Mining Company, Limited	Excelsior Life Building, Toronto, Ont.	Beauchastel, Destor
* Noranda Mines, Limited.	804 Royal Bank Building, Toronto, Ont.	Rouyn
Norbeau Mines (Quebec), Limited.	1600 Royal Bank Building, Toronto, Ont.	McKenzie
Norbell Gold Mines, Limited.	171 Yonge Street, Toronto, Ont.	Tiblemont
* Norgold Mines (1937), Limited.	25 King Street West, Toronto, Ont.	Bousquet
Norlake Mining Corporation.	920 Castle Building, Montreal.	Cuvier

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Nor-Que Developments, Limited.	c-o Mr. Henri Crépeau, K.C., 132 St. James Street West, Montreal.	Barlow, Obalski, McKenzie, Scott
* Northern Quebec Gold Fields & Exploration Company (The).....	Trois-Rivières.....	Joannès, Duparquet
* North King Gold Syndicate.....	Room 222, 1 Toronto Street, Toronto, Ont.....	Haig
Nortrac Mining Company, Limited....	132 St. James Street West, Montreal....	Dalquier, Rouyn
* Norwin Holdings, Limited.....	Suite 626, 132 St. James Street West, Montreal.....	Duverny
* Nubell Gold Mines, Limited.....	Room 216, 215 St. James Street West, Montreal.....	Vauquelin
* Numaque Mining Company.....	465 St. John Street, Montreal.....	Bourlamaque
* O'Brien Gold Mines, Limited.....	Box 939, Cobalt, Ont.....	Cadillac, Clérycy
* O'Leary-Malartic Mines, Limited....	P. O. Box 120, Noranda.....	Beauchastel, Rouyn
Onagor Investments, Limited.....	132 St. James Street West, Montreal....	Cuvier
O'Neill Thompson Gold Mines, Ltd....	Roxborough Apartments, Ottawa, Ont....	Joannès
Opemil Mining Company, Limited....	c-o Turpin & Company, Bank of Nova Scotia Building, Montreal.....	Levy
* Orcour Gold Mines (1937), Limited..	357 Bay Street, Toronto, Ont.....	Louvicourt
Oremonte Mines, Limited.....	Room 208, 266 St. James St. West, Montreal.....	Dalquier
Orexplorers Corporation, Limited....	434 Boulevard St-Joseph West, Montreal.....	Fournière
* Orland Gold Mines(Quebec), Ltd....	P. O. Box 54, Arntfield (Abitibi).....	Beauchastel
Osisko Lake Mines, Limited.....	Room 2800, 25 King Street West, Toronto, Ont.....	Rouyn
Osisko Rouyn Exploration Company, Limited.....	Room 710, Transportation Building, Montreal.....	Rouyn
Ottman Gold Mines, Limited.....	c-o Francis J. McNally, 360 Perrault Street, Rouyn.....	Duparquet
* Pan-Canadian Gold Mines, Limited..	407 McGill Street, Montreal.....	Cadillac
* Pandora Cadillac Gold Mines, Ltd..	New Liskeard, Ont.....	Cadillac
* Paquette Malartic Mines (Quebec), Limited.....	c-o Maurice Déry, 71 St. Peter Street, Quebec.....	Malartic
* Paradis Mining Corporation.....	1463 Sun Life Building, Montreal.....	Louvicourt
* Partanen Malartic Gold Mine, Ltd..	320 Bay Street, Toronto, Ont.....	Malartic
Pascalis Gold Mines (Quebec), Limited	25 King Street West, Toronto, Ont.....	Louvicourt, Pascalis
* Payore Holdings, Limited.....	504 General Assurance Building, Toronto, Ont.....	Bourlamaque, Senneville
* Pelletier Lake Gold Mines (Quebec), Limited.....	25 King Street West, Toronto, Ont....	Rouyn
Peninsula Mines, Limited.....	132 St. James Street West, Montreal....	Obalski, McKenzie
Penn Cadillac Gold Mines, Limited....	c-o Jack Home, 80 St. Peter St., Quebec.....	Cadillac
* Perron Gold Mines, Limited.....	Perron (Abitibi).....	Pascalis, Senneville
* Pershing Manitou Gold Mines, Ltd..	c-o J. H. Paré, 220 Grande Allée, Quebec.....	Pershing
Peter Gladstone McKenzie Mines Development Company, Limited.....	Room 316, 215 St. James Street West, Montreal.....	Scott
* Plaindor Mines Company.....	20 St. James Street East, Montreal....	Cadillac
Playsafe Mines, Limited.....	Rouyn.....	Tavernier, Vauquelin
Pontiac & Abitibi Gold Mines, Limited	c-o J. C. Lamothe, K.C., Suite 204, 25 St. James Street West, Montreal....	Beauchastel
* Pontiac Rouyn Mines, Limited.....	Room 706, 100 Adelaide Street, Toronto, Ont.....	Rouyn
* Powell Rouyn Gold Mines, Limited..	P. O. Box 300, Noranda.....	Rouyn
* Pre-Cambrian Prospectors, Limited..	Room 629, 67 Yonge Street, Toronto, Ont.....	Rouyn
Primrose Exploration Company, Ltd..	78 Sparks Street, Ottawa, Ont.....	Clérycy
* Prospectors Airways (Quebec) Co., Limited.....	80 King Street West, Toronto, Ont....	Obalski, McKenzie, Senneville
Prospects, Limited.....	603-4 Royal Bank Building, Toronto 2, Ont.....	Varsan
Quebec Barlow Gold Mines, Limited....	276 St. James Street West, Montreal....	Dubuisson
* Quebec Exploration, Limitée.....	465 St. John Street, Montreal.....	Bourlamaque, Dubuisson
* Quebec Gold Mining Corporation....	Suite 110, 215 St. James Street West, Montreal.....	Dubuisson, Courville, Louvicourt, Malartic
Quebec Gold Research, Limited.....	Room 320, Castle Building, 1410 Stanley Street, Montreal.....	Desmeloizes
Quebec Mining Explorers, Limited....	4 Notre-Dame Street East, Montreal..	Bourlamaque

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Quebec Mining Properties Exchange, Inc.	Amos (Abitibi)	Bourlamaque, Joannès, Malartic, Varsan
* Quebec United Mines, Limited.	Room 25, 354 St. Catherine Street West, Montreal	Ascot
Quemaque Gold Mines, Limited.	Room 207, 71 St. Peter Street, Quebec	Bourlamaque
* Quemartic Mines (Quebec), Ltd.	Room 1507, Victory Building, Toronto, Ont.	Fournière, Vauquelin
* Questor Gold Mines, Limited.	310 Confederation Building, Montreal	Joannès, Rouyn
Radisson Gold Mines, Limited	Arntfield (Abitibi)	Dasserat
Radius Exploration, Limited	60 St. James Street West, Montreal	Aiguebelle
Ramsey Gold Mines, Limited	27 St. John Street, Quebec	Clermont
* Randall Mines Corporation	189 St. John Street, Quebec	Barraute, Landrienne
* Rand Malartic Mines, Limited.	418 Ottawa Electric Building, Ottawa, Ont.	Fournière
Ranic Gold Mines, Limited.	Amos (Abitibi)	Duverny
Raymond Tiblemont Syndicate.	Room 207, 200 Bay Street, Toronto, Ont.	Tiblemont
* Red Gold (Quebec) Mining Co., Ltd.	159 Craig Street West, Montreal	Rouyn
Renault, Auguste	Kanasuta, Pontiac Co.	Dasserat
* G. H. Reynolds-Quebec Gold Mines, Limited.	— Messrs Weinfeld & Rudenko, 132 St. James Street West, Montreal	Duverny
* Ricanaw Mines, Limited.	445 St. François-Xavier Street, Montreal	Dubuisson
Riverside Gold Mines, Incorporated.	495 Gamble Street, Rouyn	Beauchastel
* Rocard Mines, Limited.	1008 Royal Bank Building, Toronto, Ont.	Bourlamaque, Dubuisson
* Rochette Gold Mines Company, Ltd.	Taschereau (Abitibi)	Launay
* Rouleau Mines, Limited.	Room 605, 660 St. Catherine Street West, Montreal	118
* Routhier Cadillac Gold Mines, Ltd.	266 St. James Street West, Montreal	Cadillac, Trécesson, Rouyn
Rouyanda Gold Syndicate.	244 Bay Street, Toronto, Ont.	Rouyn
* Rouyn Reward (Quebec), Limited.	330 Bay Street, Toronto, Ont.	Rouyn
Roybell Mines, Limited.	215 St. James Street West, Montreal	Clérycy
* Rubec (Quebec) Mines, Limited.	402 Insurance Exchange Building, Montreal	Cadillac, Scott
* Saint-Jude Gold Mines, Limited.	4 Notre-Dame Street East, Montreal	Duprat
* St-Pierre Cadillac Gold Mines, Ltd.	6720 Sherbrooke Street East, Montreal	Cadillac, Duverny
Sandlac Gold Mines, Limited.	407 McGill Street, Montreal	Guillet
* Scott Chibougamau Mines, Limited.	Room 401, 215 St. James Street West, Montreal	Bousquet, Fournière, Scott
* Seguin Consolidated Mines, Limited	Room 310, 1253 McGill College Avenue Montreal	Rouyn
* Senator-Rouyn, Limited	187 Main Street, Hull	Rouyn
* Sennevar Mines, Limited.	Room 1106, 320 Bay Street, Toronto, Ont.	Varsan
* Senore Gold Mines, Limited.	Perron (Abitibi)	Senneville, Pascalis
* Shawkey Gold Mining Co., Ltd.	51 King Street, Toronto, Ont.	Dubuisson
* Shawmaque Gold Mines, Limited.	Suite 1520, 660 St. Catherine Street West, Montreal	Dubuisson
* Sigma Mines (Quebec), Limited.	Bourlamaque (Abitibi)	Bourlamaque
* Sim-Clerc Gold Mines, Limited.	Room 25, 84 Notre-Dame Street West, Montreal	Louvicourt
* Siscoe Extension Holdings, Limited.	Suite 930, 25 King Street West, Toronto, Ont.	Dubuisson, Varsan
* Siscoe Gold Mines, Limited.	Room 905, Dominion Square Building, St. Catherine Street, Montreal	Dubuisson, Varsan
* Sladen Malartic Mines, Limited.	Trust Building, Ottawa, Ont.	Cadillac, Fournière
Smith-Tiblemont Mines, Limited.	1300 Aldred Building, 507 Place d'Armes, Montreal	Tiblemont
Snowhoe Gold Mines, Limited.	506 Federal Building, 85 Richmond St. West, Toronto, Ont.	Dubuisson, Varsan
* Soma-Duvernay Gold Mines, Ltd.	Transportation Building, Montreal	Duverny
* South Malartic Gold Mines, Limited.	231 St. James Street West, Montreal	Fournière
* South Shore, Limited.	465 St. John Street, Montreal	Malartic
* Stadacona Rouyn Mines, Limited.	719 Tramways Building, 159 Craig Street West, Montreal	Rouyn
* Stadore Gold Corporation	407 McGill Street, Montreal	Rouyn
* Standard Gold Mines, Limited.	1604 Aldred Building, 507 Place d'Armes, Montreal	Bourlamaque
Stanich Gold Mines, Limited.	Room 32, 126 St. Peter Street, Quebec	Duparquet
* Sturgeon Goldfields, Limited.	Room 409, 1010 St. Catherine Street West, Montreal	Destor
* Sudbury Contact Mines (1937), Ltd.	25 King Street West, Toronto, Ont.	Bousquet

GOLD—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Sulcoe Gold Mines, Limited	c-o Millar & Hunter, 59 Yonge Street, Toronto, Ont.	Dubuisson
Sullivan Bourlamaque Gold Mines, Limited	610 St. James Street West, Montreal	Bourlamaque
* Sullivan Consolidated Mines, Ltd.	1207 Aldred Building, Montreal	Dubuisson
Sungold Prospectors, Limited	Amos (Abitibi)	Louvicourt
* Syndicat Minier de Gaboury	Guigues	Gaboury
Taylor Cadillac Gold Mines, Limited	c-o Dupré, de Billy, Prévost & Home, 80 St. Peter Street, Quebec	Cadillac
* Teek-Hughes Gold Mines, Limited	25 King Street West, Toronto, Ont.	Dubuisson
* Tétrault, Succession Pierre	70 Holyrood Avenue, Outremont	Montauban
* Thompson Bousquet Gold Mines, Limited	1835 Bell Telephone Building, Montreal	Bousquet
* Thompson Cadillac Mining Corporation	388 St. James Street West, Montreal	Cadillac
Thompson Joanne Gold, Limited	Rouyn	Joannès
Tiblemont Consolidated Mines, Ltd.	465 St. John Street, Montreal	Tiblemont
Tiblemont Siscoe Mining, Limited	132 St. James Street West, Montreal	Tiblemont
Tonawanda Mines, Limited	67 Yonge Street, Toronto, Ont.	Cadillac
Twinklake Cadillac Gold Mines, Ltd.	407 McGill Street, Montreal	Cadillac
* Valco Cadillac Mines, Limited	65 St. Peter Street, Quebec	Cadillac, Malartic, Roy
Valco Mines Company	65 St. Peter Street, Quebec	Cadillac, Malartic
* Val d'Or Mineral Holdings, Limited	Canadian Bank of Commerce Building, 25 King Street West, Toronto, Ont.	Bourlamaque, Dubuisson
* Val d'Or Mines, Limited	Val d'Or (Abitibi)	Louvicourt, Bourlamaque
* Valkyrie Mines, Limited	Room 2, 187 Main Street, Hull	Beauchastel
* Valmac Gold Mines, Limited	c-o Lafleur, Fortier & Latulippe, 507 Place d'Armes, Montreal	Bourlamaque
* Val-Malartic (Quebec), Limited	330 Bay Street, Toronto, Ont.	Fournière
Vantage Mines (Quebec), Limited	507 Place d'Armes, Montreal	Guillet
* Varsan Gold Mines (Quebec), Ltd.	Amos (Abitibi)	Varsan
Ventures (Quebec) Claims, Limited	25 King Street West, Toronto, Ont.	Dufresnoy, Duprat, Duprat-quet
* Vicour (Quebec) Mines, Limited	P. O. Box 190, Fort Erie, Ont.	Louvicourt
Vipond-Cameron Mines, Limited	276 St. James Street West, Montreal	Rouyn
Wahu Mines, Limited	P. O. Box 3225, Montreal	Tiblemont
* Waite-Amulet Mines, Limited	804 Royal Bank Building, 2-8 King Street East, Toronto, Ont.	Duprat, Dufresnoy
Warrenmac Mines, Limited	P. O. Box 120, Noranda	Bousquet
Washington Golds, Limited	80 St. Peter Street, Quebec	Joannès
* Wawbano Mines, Limited	Room 411, 132 St. James Street, Montreal	McKenzie, Roy
Wedding River Gold Mines, Limited	1005 Bank of Hamilton Building, Toronto, Ont.	Desjardins
* West Duverny Gold Mines, Limited	738 Dominion Square Building, Montreal	Duverny
West Shore Malartic Gold Mines, Ltd.	Room 816, 1440 St. Catherine St., Montreal	Dubuisson, Malartic
* West Siscoe Gold Mines, Limited	Room 907, 1010 St. Catherine Street West, Montreal	Dubuisson
* Westwood Cadillac Mines, Limited	Room 802, 437 St. James Street West, Montreal	Bousquet
White Quartz Gold Mines, Limited	Room 92, 84 Notre-Dame St. West, Montreal	Beauchastel, Duprat
Wildor Quebec Mines, Limited	115 Seventh Street, Noranda	Bourlamaque
Wiltsey-Coghlan Mines (Quebec), Ltd.	25 King Street West, Toronto, Ont.	Dufresnoy, Rouyn
* Wisik Holdings, Limited	302 Bay Street, Toronto, Ont.	Dubuisson
* Wolverine (Quebec) Mines, Limited	320 Bay Street, Toronto, Ont.	Bourlamaque
* Wood Cadillac Mines, Limited	437 St. James Street West, Montreal	Cadillac
* Yates United Mines, Limited	132 St. James Street West, Montreal	Dubuisson
* Ypres Cadillac Mines, Limited	Suite 45, 171 Yonge Street, Toronto, Ont.	Cadillac

KAOLIN

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Canada China Clay, Limited	Lac Rémi	Amherst
* Canadian Kaolin Silica Products, Limited	1007 Canada Cement Building, Montreal	Amherst

MAGNESITIC DOLOMITE

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Canadian Refractories, Limited . . .	Canada Cement Building, Montreal . . .	Grenville
* International Magnesite Company . .	Calumet	Harrington

MICA

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Abearn, Wm.	538 McLaren Street, Ottawa, Ont.	Hull
Barrette, Thomas	Chénier, Via Gracefield, Gatineau Co. . .	Joliette
Bazinot, François	5778 Cartier Street, Montreal	Joliette
Bergeronnes Mining, Exploration, and Development Company, Limited	4115 Boulevard St-Laurent, Montreal . .	Bergeronnes, Saguenay, Sagard
* Blackburn Bros., Limited	Blackburn Building, Ottawa, Ont.	Portland East, Templeton
* Blais, F. X.	Scott Junction, Beauce Co.	Wentworth
Brown Bros.	Lucky Reserve, Cantley, Wright Co. . . .	Hull
Canadian Amber Mica Company	P. O. Box 246, Station B, Montreal	Portland West
Carman, Osborn	Farm Point	Hull
* Charlevoix General Mining Co., Ltd. (The)	111 Côte de la Montagne, Quebec	Lacoste, De Sales
Chenier, Z. E.	148 Laurier Street, Rockland, Ont.	Grenville
Cross, S. H.	Farm Point	Hull
Cross, W. C.	209 Bridge Street, Hull	Hull
* Dechènes, Pierre, & McGlashan, W. . . .	Wilson's Corners	Wakefield
* Duquette, Maldick	Gatineau	Cantley
Ellard, Estate J.	Wright	Alley
Ellard, Herbert M.	Gracefield	
* Erickson, Erik J.	Alcove	Denholm
Gauthier, J. B.	P. O. Box 226, Buckingham	Buckingham
Gourdeau, J. I.	Tadoussac West, Saguenay Co.	Bergeronnes
Gracefield Mica Mining Co. (The)	c/o Dr. J. Albert Rouleau, 1300 Sherbrooke St. East, Montreal	Northfield
Grenville Mica Mining Company, Limited	Grenville	Grenville
Kent Brothers	Kingston, Ont.	Hull
* Kilfoyle, R. H.	523 Lyon Street, Ottawa, Ont.	Meach Lake (mine loc'n)
Lake Rheume Mining, Company	182 Lisgar Street, Ottawa, Ont.	Gore of Templeton
* Laurentian Mica Mine & Products, Limited	1962 Galt Street, Montreal	Viel
L'Heureux, Georges	637 Notre-Dame, Cap de la Madeleine . .	Wentworth
* McGarry, Edward	Wakefield	Wakefield
McGlashan (R. J.) & Co.	190 Montcalm Street, Hull	Wakefield
McManiman, C.	Rawdon	Rawdon
Marcel, Ephrem	445 Gifford Street, Montreal	Bergeronnes
* Martin, A. G.	236 Beaserer Street, Ottawa, Ont.	Hull
* Morlot, Charles	Low, Gatineau Co.	Low
* Morris, Jos. & Matthew	Wilson's Corners	Hull, Wakefield
O'Brien & Fowler, Limited	900 Victoria Building, Ottawa, Ont.	Val des Bois, Villeneuve
Papineauville Lumber Co., Limited	Papineauville	Templeton
* Perkin's Mining Company	Pointe Gatineau	Templeton
* St. Lawrence Mica Mines, Limited	105 Côte de la Montagne, Quebec	Côte de Beaupré Seigniory
Sparks, Wm. J.	343 Bell Street, Ottawa, Ont.	Hincks
Syndicat de Mica de Quebec, Enrg	61 D'Auteuil Street, Quebec	Bergeronnes
* Sergeant, Fred. & Poirier, Adelard	Wilson's Corners	Hull
Tidewater Minerals & Mines Co., Ltd. . . .	477 St. François-Xavier St., Montreal . .	Lacoste, De Sales
* Toutloff, Frank	Pointe Gatineau	Joliette
* Trudeau, William	Old Chelsea	Hull
* Wallingford, Edward	Perkins	Templeton
Wallingford, Edward, Jr.	Perkins	Gore of Templeton
* Wallingford, E. B.	St-Pierre-de-Wakefield	Gore of Templeton
* Wallingford, W. A., & J. N.	Perkins Mills	Templeton
Wilson, Estate S.	Cascades	Thorne

MINERAL WATER

NAME OF OPERATOR	ADDRESS	LOCATION OF SPRING
* Abenaki Springs Company	Blondin	St-François-du-Lac
* Bellemarre, Josaphat	St-Barnabé Nord, St-Maurice Co.	Saint-Barnabé
* Cie d'Eau Minérale (La)	148 Concorde St., St-Hyacinthe	St-Hyacinthe-le-Confesseur

MINERAL WATER—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF SPRING
* Cie d'Embouteillage Idéal (La).....	3 St-Germain Street, St-Hyacinthe....	Abénakis Springs
* Cie d'Embouteillage St-Laurent (La)	64 St-Peter Street, St-Hyacinthe....	St-Hyacinthe
* Coulombe, J.	L'Epiphanie, L'Assomption Co.....	L'Epiphanie
* Eau Minérale Etoile.....	Ste-Geneviève-de-Batiscan.....	Batiscan
* Eau Naturelle Purgative de Cham- bord, Ltée (L').....	c-o David Doré, Desbiens, Lac St-Jean	Metabetchouan
* Gurd, Chas., & Co., Limited.....	1016 Bleury Street, Montreal.....	Varennes, Verchères
* Laboratoire Mont-Clair.....	935 Robillard Street, Montreal.....	Chambly Basin
* Lacerte, Mrs. Adelard.....	St-Sévère, St-Maurice Co.....	St-Sévère
* Maski Bottling Works.....	Maskinongé.....	Maskinongé
Pellerin, Albert.....	St-Barnabé Nord, St-Maurice Co.....	Saint-Barnabé
* Radnor Mineral Water Springs.....	St-Maurice, Champlain Co.....	Badnor Forges
* Richard, Gérard.....	St-Grégoire, Nicolet Co.....	St-Grégoire
Thomson, R. G. O., & Moore, W. H.....	Room 1311, Victoria Street, Toronto 2, Ont.....	Saint-Léon, Maskinongé Co.

MOLYBDENITE

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Height of Land Co. (The).....	4327 Old Orchard Avenue, Montreal...	Preissac
* Kindale Mines, Ltd.....	217 University Tower, Montreal.....	Masham
Lalonde, T. A., Ltée.....	Amos, Abitibi.....	Preissac
Madore, W. W., & Germain, Gabriel.....	4321-A Brébeuf Street, Montreal.....	Seignioriy of Deschambault
Maniwaki Molybdenum Mines, Ltd.....	445 St. François-Xavier Street, Mont- real.....	Maniwaki
Molybdenite Corporation of Canada, Limited.....	445 St. François-Xavier Street, Mont- real.....	Varsan, La Corne, Malartic, La Motte
Molybdenum Quebec, Limited.....	Suite 1101, 1410 Stanley Street, Mont- real.....	La Motte

OCHRE and IRON OXIDE

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE
* Argall, Thos. H.....	639 Ste-Angèle St., Trois-Rivières....	Pointe du Lac
* Girardin, Charles D.....	P. O. Box 104, Yarnachiche.....	Almaville
* Iron Oxide Products Co., Ltd.....	680 Sherbrooke St. West, Montreal....	Marchand township
* Sherwin-Williams Co. of Canada, Ltd. (The).....	2875 Centre Street, Montreal.....	Red Mill
* Venne, William.....	Grand'Mère.....	St-Adelphe

PEAT

NAME OF OPERATOR	ADDRESS	LOCATION OF BOG
Compagnie de Tourbe, Ltée (La).....	P. O. Box 2468, Montreal.....	Ile Verte
* Insulation, Limited.....	1217 University Street, Montreal....	Rivière Ouelle
* Lambert, F. X.....	Ste-Anne-de-la-Pocatière.....	
Thériault & Malenfant, Inc.....	Post Office, Saint-Arsène, Rivière-du- Loup Co.....	Rivière-du-Loup
* Waterville Moss & Peat Mines.....	Waterville, Compton Co.....	Compton

PHOSPHATE

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Blackburn Bros.....	301 Blackburn Building, Ottawa, Ont..	Templeton township
Kent Bros.....	Mica Dealers, Kingston, Ont.....	Chelsea
St-Amour, Abbé.....	Notre-Dame-de-la-Salette.....	Portland East township

PYRITE

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Aldermac Copper Corporation, Ltd.	Room 941, Dominion Square Building, Montreal	Beauchastel
* Consolidated Copper & Sulphur Co.	Eustis	Ascot

SILICA (Rock and Sand)

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Canadian Carborundum Company.	Shawinigan Falls	Saint-Canut parish
* Canadian Flint and Spar Co., Ltd.	900 Victoria Building, Ottawa, Ont.	Derry
* Canadian Kaolin Silica Products, Limited.	1007 Canada Cement Building, Montreal	Amherst Buckingham
Donaldson, Robert J. Flint Sands, Limited.	Glen Almond 605 Royal Bank Building, Toronto, Ont.	Guigues Buckingham
* Hill, Nelson	Glen Almond	Derry
* McDonnell, B. A.	Buckingham	Derry
* Montpetit, Euclide	Melocheville	Beauharnois parish
O'Brien & Fowler, Limited.	900 Victoria Building, 140 Wellington Street, Ottawa, Ont.	Derry
* Ottawa Silica and Sandstone, Ltd.	Plaza Building, Ottawa, Ont.	Templeton
Parcher, Alfred.	Glen Almond	Derry
* Pedneaud, G.	Buckingham	Buckingham
* St-Amour, Orphila	Notre-Dame-de-la-Salette	Villeneuve
Sellers, Walter, & Parcher, Alton.	Glen Almond	Derry
Stewart, Wm.	P. O. Box 19, Buckingham	Buckingham
Warwick, Wm.	Glen Almond	Buckingham
Winning, Bush	Notre-Dame-de-la-Salette	Buckingham

SILVER

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
* Aldermac Copper Corporation, Ltd.	941 Dominion Square Building, Montreal	Beauchastel
* Arntfeld Gold Mines, Limited.	159 Bay Street, Toronto, Ont.	Beauchastel
* Beattie Gold Mines, Limited.	Canadian Bank of Commerce Bldg., 25 King Street West, Toronto, Ont.	Duparquet Guillet
* Belleterre Mines, Limited.	15 King Street West Toronto, Ont.	Fournière
* Canadian Malartic Gold Mines, Ltd.	25 King Street West, Toronto, Ont.	Ascot
* Consolidated Copper & Sulphur Co.	Eustis	Ascot
* Cournor Mining Company, Ltd.	Room 10, 215 St. James St. West, Montreal	Louvicourt
Granada Gold Mines, Limited.	244 Bay Street, Toronto, Ont.	Rouyn
Gulf Development Company, Ltd.	486 St. John Street, Montreal	Miann
* Jacola Mines, Limited.	25 King Street West, Toronto, Ont.	Dubuisson
* Lamaque Gold Mines, Limited.	Bourlamaque, Abitibi Co.	Bourlamaque
* McWatters Gold Mines, Limited.	P. O. Box 689, Rouyn	Rouyn
Mines Development Corporation	189 St. John Street, Quebec	Landrienne
* Noranda Mines, Limited.	804 Royal Bank Building, Toronto, Ont.	Rouyn
* Normetal Mining Corp'n, Ltd.	350 Bay Street, Toronto, Ont.	Desmeloizes
* O'Brien Gold Mines, Limited	Kewagama	Cadillac
O'Neill Thompson Gold Mines, Ltd.	Roxborough Apartments, Ottawa, Ont.	Joannés
* Perron Gold Mines, Limited.	Perron	Pascalis
Pontiac Rouyn Mines, Limited.	Room 706, 100 Adelaide Street, Toronto, Ont.	Rouyn
* Shawkey Gold Mining Co., Ltd.	67 Yonge Street, Toronto, Ont.	Dubuisson
* Sigma Mines (Quebec), Limited.	Bourlamaque	Bourlamaque
* Siscoe Gold Mines, Limited.	Room 905, Dominion Square Building, Montreal	Varsan, Dubuisson
* Stadacona Rouyn Mines, Limited.	719 Tramways Building, 159 Craig St. West, Montreal	Rouyn
* Sullivan Consolidated Mines, Ltd.	1207 Aldred Building, Montreal	Dubuisson
* Tétrault, Succession Pierre	70 Holyrood Avenue, Montreal	Montauban
* Thompson Cadillac Mining Corporation	Room 1835, Bell Telephone Building, Montreal	Cadillac
* Waite Amulet Mines, Limited.	804 Royal Bank Building, 2-8 King Street East, Toronto, Ont.	Duprat, Dufresnoy

SOAPSTONE

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Baker Mining & Milling Co., Ltd.	4010 St. Catherine St. West, Montreal.	Highwater, Brome Co. (mine loc'n)
* Broughton Soapstone & Quarry Co., Limited	Broughton Station, Beauce Co.	Broughton
* Cyr, L. R.	Lemesurier, Mégantic Co.	Leeds
* Fortin, Charles	Robertsonville	Thetford
Mégantic Mining Company (The)	Rock Hill Woodington P.O., Lake Roseau, Muskoka, Ont.	Ireland
* Pharo, L. C.	187 Coleraine Avenue, Thetford Mines	Broughton
Pibus, Mrs. George R.	Knowlton	Bolton West
Reed Realities, Limited	c-o H. A. Peverley, 1536 St. Mark Street, Montreal.	Thetford

TITANIC IRON

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE
American Titanic Iron Co., Ltd.	c-o J. H. Boisvert, Parliament Buildings, Quebec.	Saint-Urbain parish
* Baie St. Paul Titanic Iron Ore	c-o Mr. Chas. Ed. Tremblay, N.P., Baie St. Paul	Saint-Urbain parish
Canadian Pyrites Company	c-o Dupont de Nemours, Wilmington, Delaware, U. S. A.	Saint-Urbain parish
Loughborough Mining Company, Ltd.	Sydenham, Ont.	Saint-Urbain parish
Titanium (Canada), Limited	11 Bates Road, Outremont.	Beresford township
Titanium Products Corporation	c-o G. C. Piché, Pres., 874 Sherbrooke Street East, Montreal.	Bourget township

ZINC and LEAD

NAME OF OPERATOR	ADDRESS	LOCATION OF MINE (Township)
Alpha Mining Company	c-o Hollinger Consolidated Gold Mines, Limited, Timmins, Ont.	Duhamel
* Calumet Mines, Limited	360 St. James Street, Montreal.	Calumet Island
Federal Zinc & Lead Company, Ltd.	Room 708, 1117 St. Catherine St. West, Montreal.	Lemieux
Gulf Development Company, Ltd.	486 St. John Street, Montreal.	Mann
Gaspé Mines	c-o Hon. John Hall Kelly, Chateau Frontenac, Quebec.	Lemieux
Lyll & Beidelman	Room 708, Drummond Building, 1117 St. Catherine Street West, Montreal	Lemieux
North American Mining Company	New Carlisle	Lemieux
Shawinigan Mining & Smelting Co., Limited	c-o Hon W. T. Henderson, Sec'y, 116 Dalhousie Street, Brantford, Ont.	Montauban, Chavigny
* Tétréault, Estate Pierre	70 Holyrood Avenue, Outremont.	Montauban
United Metals, Limited	201 Notre-Dame Street West, Montreal.	Montauban
* Waite-Amulet Mines, Limited	804 Royal Bank Building, 2-8 King St. East, Toronto, Ont.	Duprat, Dufresnoy

II.—STONE QUARRIES, CLAY AND SAND PITS

BRICK

NAME OF OPERATOR	ADDRESS	LOCATION OF PLANT
Ascot Tile & Brick Co., Ltd.	Ascot Corner	Ascot Corner
Bourbeau, Georges	R. R. No. 1, Danville.	Kingsey Falls
Brique Champlain, Ltée (La)	56 de la Chapelle Street, Quebec.	Beauport
Brique Citadelle, Ltée (La)	14 St. Joseph Street, Quebec.	Boischatel
Brique de Scott, Enrg. (La)	Scott.	Scott Junction
Cie de Brique Panet, Ltée (La)	L'Islet.	L'Islet

BRICK—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF PLANT
Côté, Albert.....	Victoriaville.....	Victoriaville
Crête, Freddy.....	St-Tite.....	St-Tite
Desmarais, Stanislas.....	Richmond.....	Richmond
Duquette, Isidore.....	East Angus.....	Westbury township
Gaulin, Évangéliste.....	Princeville.....	Stanford township
Hodgins, David T.....	Shawville.....	Clarendon township
Laprairie Company, Inc. (The).....	University Tower Building, 660 St. Catherine Street West, Montreal.....	Laprairie, Delson
Longpré, Emile.....	St-Félix-de-Valois.....	St-Félix-de-Valois
Parrot, Michel H.....	Deschailions.....	Deschailions
Potvin, Alphonse.....	Deschailions.....	Deschailions
St. Lawrence Brick Company, Ltd.....	935 Dominion Square Building, 1010 St. Catherine Street West, Montreal.....	Laprairie
Stone Bros.....	Brôme.....	Brôme
Tremblay, Jules.....	Chicoutimi.....	Chicoutimi

CEMENT

NAME OF OPERATOR	ADDRESS	LOCATION OF PLANT
Canada Cement Company.....	P. O. Box 290, Station B, Montreal.....	Montreal East, Hull

GRANITE

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Alcoa Power Company, Limited.....	Post Office, Racine, Chicoutimi.....	Kénogami
Belley, Jos. Didier.....	330 St. Dominique Street, Jonquière.....	Roberval township
Bernier, Auguste.....	Roberval.....	Stanstead township
Berry and Redicker Granite Quarry.....	Beebe.....	Chatham township
Bérubé, Lucien & Fils.....	Brownsburg.....	Grenville township
Bigras, Édouard.....	3275 Desautels Street, Montreal.....	
Boisvert, Léonidas.....	La Sarre, Abitibi.....	Dalquier township
Brasseur, Stanislas.....	930 Clark Street, Montreal.....	Graniteville, Guenette, Mount Johnson
Brodie's, Limited.....	1070 Bleury Street, Montreal.....	Chatham township
Brunet, Joseph.....	4411 Côte des Neiges Road, Montreal.....	Stanstead township
Bullock, Wright.....	Graniteville.....	Barnston & Whitton tps.
Bussière, Amédée.....	Ste-Cécile, Compton Co.....	Chicoutimi
Chicoutimi, City of.....	Chicoutimi.....	Stanstead township
Cloutier (Ernest) & Lavers (Clifford).....	Beebe.....	Stanstead township
Cloutier, R. L.....	Beebe.....	Chicoutimi & Simard tps.
Delwaide & Goffin.....	12-16 du Havre Street, Chicoutimi.....	Stanstead township
Denny & Emslie.....	Beebe.....	Stratford township
Deschambault Quarry Corporation.....	52 St. Paul Street, Quebec.....	Stanstead township
Diamond Granite Company.....	Beebe.....	Glenada
Dontigny, Alphonse.....	112 de la Station St., Shawinigan Falls.....	Wendover township
Drummond Quarry, Limited.....	Drummondville.....	Colbert township
Dubois, Honoré.....	Rivière à Pierre.....	Bois township
Dumas (Arthur) Cie, Engr.....	Rivière à Pierre.....	Bois township
Dumas, Auguste.....	Rivière à Pierre.....	Grenville
Gaboriault (Victor) & Nevers (G.).....	4116 St. Denis Street, Montreal.....	Grand'Mère
Gagnon, Arthur.....	Grand'Mère.....	Arvida
Gauthier, Jos. & Fils.....	81 Taché Street, Chicoutimi.....	Barnston township
Gingras & Frères, Ltée.....	St-Marc-des-Carières.....	St-Sébastien
Gosselin, Oscar.....	Mégantic.....	Chicoutimi
Granit Rose de Chicoutimi, Engr. (Le).....	54 Bégin Street, Chicoutimi.....	
Granite Rouge de St-Canut, Engr.....	757 Mount Royal Avenue East, Montreal.....	St-Colomban
Granit National, Limitée (Le).....	St-Joseph-d'Alma, Lac St-Jean.....	Signay township
Grenier, Elie.....	Glenada.....	St-Flore parish
Guenette Granite Company, Ltd.....	Guénette, Labelle Co.....	Campbell township
Hartley, A. C.....	Beebe.....	Stanstead township
Haselton, Wm.....	Beebe.....	Stanstead township
Henrikson (Anton) & Hokenson (John).....	Graniteville.....	Stanstead township
Inter-Provincial Construction, Ltd. (The).....	Vaudreuil Station, Vaudreuil Co.....	Rigaud
Jonquière, City of.....	Jonquière.....	Jonquière township
Lacasse & Boudais.....	P. O. Box 23, Beebe.....	Stanstead township
Laroche, Omer.....	Rivière à Pierre.....	Rivière à Pierre

GRANITE—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
McIntosh, Robert.....	R. R. No 1, Beebe.....	Stanstead township
Maltais, Charles.....	St-Joseph-d'Alma.....	St-Gédéon
Montreal Construction Supply & Equipment, Limited.....	1460 Sherbrooke Street West, Montreal.....	Montreal
Ontario Paper Company, Limited.....	Baie Comeau.....	Lafèche township
Perron, Arthur.....	Rivière à Pierre.....	Bois township
Perron, Stanislas.....	Rivière-à-Pierre.....	Bois township
Port Alfred, City of.....	Port Alfred.....	Port Alfred
Riverin & Riverin, Enrg.....	Chicoutimi.....	Rivière du Moulin
Saint-Bruno Quarry & Paving Co., Limited.....	636 Querbes Avenue, Outremont.....	Saint-Bruno
St-Jérôme, City of.....	c-o City Engineer, St-Jérôme, Terrebonne Co.....	Saint-Jérôme
Saint-Joseph-d'Alma, City of.....	Saint-Joseph-d'Alma.....	Saint-Joseph-d'Alma
Scotstown Granite Company, Ltd.....	Scotstown.....	Scotstown
Silver Granite Company.....	180 Côte d'Abraham, Quebec.....	St-Samuel
Stanstead Granite Quarries Co., Ltd. (The).....	Beebe.....	Stanstead township
Thibaudeau & St-Pierre.....	Rivière à Pierre.....	Bois township
Voyer (Fortunat) & Frère.....	Rivière à Pierre.....	Bois township
Wilkinson, Frank.....	Beebe.....	Stanstead township

LIME

NAME OF OPERATOR	ADDRESS	LOCATION OF KILN
Arnaud & Beaudry.....	16 Ste-Angelique Street, Joliette.....	Joliette
Boivin, Arthur.....	Pont Rouge, Portneuf Co.....	Pont Rouge
Bouchard, Fabien.....	Ste-Anne-de-Chicoutimi.....	Tremblay township
Canada Lime & Stone, Limited.....	St-Marc-des-Carières, Portneuf Co.....	St-Marc-des-Carières
Carrière St-Maurice, Ltée.....	307 Alexandre Street, Trois-Rivières.....	St-Louis-de-France
Carswell, E. W.....	Bryson, Pontiac Co.....	Bryson
Côté, Xavier.....	Metabetchouan.....	Metabetchouan
Desfonds, Gaspard.....	St-Cuthbert, Berthier Co.....	St-Cuthbert
Dominion Lime, Limited.....	Lime Ridge, Wolfe Co.....	Dudswell township
Drouin, Eva Cimon.....	Ste-Justine, Dorchester Co.....	Sainte-Justine
Fillion, Narcisse.....	St-Joachim, Montmorency Co.....	Saint-Joachim
Gagné, Octave.....	St-Ulric, Matane Co.....	St-Ulric
Giroux, Pierre Gédéon.....	Beauport Est.....	Beauport Est
Héon & Héon.....	St-Louis-de-Champlain.....	St-Louis-de-France
Lalumière, Joseph.....	St-Dominique-de-Bagot.....	St-Dominique-de-Bagot
Limoges, Henri.....	552 Poupard Street, Montreal.....	Montreal
Mercure, Camille.....	9 St. Denis Street, St-Hyacinthe.....	St-Dominique-de-Bagot
National Stone & Lime Co., Reg'd.....	c-o Mr. H. E. Roy, Joliette.....	St-Marc-des-Carières
Pères Trappistes de Mistassini (Les Révérends).....	Mistassini.....	Mistassini
St. Michel Lime Company.....	1043 St. James Street, Montreal.....	St-Michel-de-Laval
Shawinigan Chemicals, Limited.....	Room 611, 107 Craig St. West, Montreal.....	Shawinigan Falls
Standard Lime Company.....	Joliette.....	St-Paul de Joliette, St-Marc-des-Carières
Trottier, David.....	St-Marc-des-Carières.....	St-Marc-des-Carières
Villeneuve, Raoul.....	Saint-Jérôme, Terrebonne Co.....	St-Jérôme

LIMESTONE

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Andorno, Emmanuel.....	Cap St-Martin.....	Cap Saint-Martin
Babin, Emilien.....	St-Charles-de-Caplan.....	Joliette
Beaudry, Jos. Pitre.....	P. O. Box 209, Taché Street, Joliette.....	St-Joseph-de-Levis
Hlais (Jos.), Enrg.....	10 Mont-Marie Avenue, Levis.....	Hull
Canada Cement Company, Limited.....	P.O. Box 290, Station B, Montreal.....	Montreal
Canadian Quarries, Limited.....	4740 Iberville Street, Montreal.....	Cap Saint-Martin
Carrière Cap Saint-Martin, Enrg.....	636 Querbes Avenue, Montreal.....	Château Richer
Carrière Château, Enrg.....	Château Richer.....	Château Richer
Carrière Gravel, Ltée (La).....	Château Richer.....	Château Richer
Carrière Marcell, Ltée (La).....	St-Michel Station, Napierville Co.....	Ste-Clothilde
Carrière Montréal Est.....	c-o Mr. Cyrille Durocher, 11021 Notre-Dame Street East, Montreal.....	Montreal East

LIMESTONE—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Carrière Pointe aux Trembles.....	Calixa Lavallée Street, Montreal.....	Montreal
Carrière St-Barthélemi, Ltée.....	St-Barthélemi, Berthier Co.....	Saint-Barthélemi
Carrière Saint-Marc, Ltée.....	St-Marc-des-Carières.....	Saint-Marc-des-Carières
Carrière Saint-Maurice, Ltée.....	307 Alexandre Street, Trois-Rivières.....	Saint-Louis-de-France
Carrière Trois-Rivières, Limitée.....	St-Louis-de-France, Champlain Co.....	Saint-Louis-de-France
Charbonneau & Frère.....	St-François-de-Sales.....	Saint-François-de-Sales
Charbonneau, Gonzague.....	5013 St. Denis Street, Montreal.....	St-François-de-Sales
Charron, Arthur.....	Village Bélanger, Laval Co.....	Cap Saint-Martin
Chamberland, W.....	Ste-Anne-des-Monts, Gaspé Co.....	
Chauffage & Ventilation, Ltée.....	105 Côte de la Montagne, Quebec.....	Val Brillant
Chenel, Rev. J. E.....	Port Daniel Centre, Bonaventure Co.....	Port Daniel
Delisle, Emilien.....	Pont Rouge.....	Pont Rouge
Deschambault Quarry Corporation.....	52 St. Paul Street, Quebec.....	Saint-Marc-des-Carières
Dominion Lime, Limited.....	Lime Ridge, Wolfe Co.....	Lime Ridge
Drouin, Eva Cimon.....	Ste-Justine, Dorchester Co.....	Ste-Justine
Dufresne Construction Co., Ltd.....	1832 Boulevard Pie IX, Montreal.....	Rivière-des-Prairies
Faubert, Alphonse.....	Bellevue Station, Ville de Léry.....	Ville de Léry
Faubert, Donat.....	Ville de Léry.....	Ville de Léry
Filion, Adéiard.....	Lachâte.....	Lachâte
Fortin, Georges.....	St-Honoré, Chicoutimi Co.....	St-Honoré
Francoeur, J. B.....	Kelly, Bonaventure Co.....	Hope township
Fuger & Smith, Limited.....	Pointe Claire.....	Pointe Claire
Gagné, Eugène.....	Métabetchouan, Lac St-Jean Co.....	Métabetchouan township
Gagné, Octave.....	St-Ulric, Matane.....	St-Ulric
Gaspesian Fertilizer Co., Reg'd.....	Port Daniel Est.....	Port Daniel
Gauthier, Jos. O., & Fils.....	St-Marc-des-Carières, Portneuf Co.....	St-Marc-des-Carières
Gauthier, René.....	Village Bélanger, Laval Co.....	Village Bélanger
Guinras & Frère, Ltée.....	St-Marc-des-Carières.....	St-Marc-des-Carières
Gulbault & Frère.....	Ste-Elizabeth, Joliette Co.....	Ste-Elizabeth
Harrison, Georges.....	Poncheville, Matane Co.....	Seigniory of Matane
Kennedy Construction Co., Limited.....	310 Shaughnessy Building, 407 McGill Street, Montreal.....	Acton Vale
Laberge & Marchand.....	Chateauguay.....	Chateauguay
Lagacé Quarry, Limited.....	St-Martin, Laval Co.....	St-Martin
Lakeshore Construction Co., Ltd.....	137 Cartier Avenue, Pointe Claire.....	Pointe Claire
Landry (J. E.), Seguin (W.), & Benoit (A.).....	Richelieu, Chambly Co.....	Chambly Canton
Langlois (Adjuitor) & Bourque (Clovis).....	St-Marc-des-Carières.....	St-Marc-des-Carières
Lapointe, A. & E.....	12034 Lachapelle Street, Montreal.....	Cartierville
Lapointe, Emile.....	St-Dominique-de-Bagot.....	St-Dominique-de-Bagot
La Salle Products, Limited.....	199 Jean Talon Street West, Montreal.....	Saint-Michel
Laurentian Stone Co., Limited.....	32 Cremazie Street, Hull.....	Hull
Lavolette, D. O.....	166 Montcalm Street, Hull.....	Hull
Leclerc, Edouard.....	St-Joachim, Montmorency Co.....	St-Joschim
Leclerc, J. J.....	Drapeau, Bonaventure Co.....	Nouvelle township
Leclerc & Robitaille, Eng.....	Roberval.....	Roberval township
Leclerc, Victor.....	3465 Berri Street, Montreal.....	Cap St-Martin
Léger & Chariton.....	400 Notre-Dame Street, Lachine.....	Lachine
Leroux, L. P.....	Vaudreuil.....	Pointe Claire
Lévesque, Armand.....	Roberval.....	Roberval
Martineau Fils, Ltée.....	517 Marie-Anne Street, Montreal.....	St-Marc, Montreal
Mercure, Camille.....	9 St. Denis Street, St-Hyacinthe.....	St-Dominique-de-Bagot
Miner (R. H.) Company, Limited.....	7411 de Lanaudière Street, Montreal.....	Montreal
Montreal Construction Supply & Equipment, Limited.....	1460 Sherbrooke Street West, Montreal.....	Montreal
Montreal Quarry, Limited.....	1340 Bellechasse Street, Montreal.....	Montreal
National Quarries, Limited.....	Park Avenue & Beaubien Street, Montreal.....	St-Michel
Noel (Oscar) & Cie.....	61 Montcalm Street, Hull.....	Wrightville
Paquette (Lévis) & Cie.....	Cap St-Martin, Laval Co.....	Cap Saint-Martin
Parent, Chas.....	Cap St-Martin, Laval Co.....	Cap Saint-Martin
Pearson, Honoré.....	Port Daniel, Bonaventure Co.....	Port Daniel
Pénitencier St-Vincent-de-Paul.....	St-Vincent-de-Paul.....	St-Vincent-de-Paul
Pères Trappistes de Mistassini.....	Mistassini.....	Pelletier township
Petitjean, V. F.....	4525 Chabot Street, Montreal.....	Cap Saint-Martin
Quinlan Cut Stone, Limited.....	1165 Greene Avenue, Westmount.....	St-François-de-Sales
St. Dominique Quarry, Limited.....	2805 Lacordaire Street, Montreal.....	St-Dominique
St. Francis Rock Products & Equipment, Limited.....	8050 Bloomfield Avenue, Montreal.....	Ville St-Laurent
St. Michel Lime Company.....	8746 Boulevard Lajeunesse, Montreal.....	Ville St-Michel
St-Onge, O. F.....	St-Dominique-de-Bagot.....	St-Dominique-de-Bagot
St-Laurent Quarry, Limited.....	Village Bélanger, Laval Co.....	Village Bélanger
Shawinigan Chemicals, Limited.....	Room 611, Power Building, 107 Craig Street West, Montreal.....	St-Damien-de-Stanbridge
Standard Clay Products, Limited.....	P. O. Box 819, St. Johns.....	St. Johns
Standard Lime Company, Limited.....	Joliette.....	St-Paul-de-Joliette

LIMESTONE—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Stone & Quarry, Limited.....	1340 Bellechasse Street, Montreal.....	St-François-de-Sales
Théorêt, Magloire.....	P. O. Box 128, Nouveau Salaberry, Valleyfield.....	Nouveau Salaberry
Tremblay, Nap.....	Joffre Avenue, Hull.....	Hull
Turcotte & Asselin, Enrg.....	Château-Richer.....	Château Richer
Union Construction, Limited.....	4014 Wilson Street, Montreal.....	Caughnawaga
Union Quarries and Paving, Ltd.....	Room 113, 3 Boulevard Charest, Quebec.....	Charlesbourg
Union Rock, Limited.....	6217 de Lanaudière Street, Montreal.....	St-Michel
Verreault (Elzéar), Limitée.....	194 du Pont Street, Quebec.....	Giffard
Villeneuve, François.....	Pointe au Pic, Charlevoix, Co.....	Pointe-au-Pic
Voirie, Ministère de la.....	Cap à l'Aigle, Charlevoix Co.....	Cap à l'Aigle, St-Timothée, Baie St-Paul

MARBLE

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Canada Marble & Lime Co., Ltd.....	74 Boulevard Lévesque, L'Abord à Plouffe.....	L'Annonciation
Missisquoi Stone & Marble Co., Ltd.....	Phillipsburg, Missisquoi Co.....	Phillipsburg
White Grit Company.....	Hurdman Road, Ottawa, Ont.....	Portage du Fort

POTTERY

NAME OF OPERATOR	ADDRESS	LOCATION OF PLANT
Bégin (Olivier), Enrg.....	R. R. No. 1, St-Sauveur, Quebec Co.....	Petite Rivière
Brique Champlain, Ltée (La).....	56 de la Chapelle Street, Quebec.....	Beauport
Citadel Brick, Limited.....	14 St. Joseph Street, Quebec.....	Boischatel
Cie de Brique Panet, Ltée (La).....	L'Islet.....	L'Islet
Canada Fire Brick Company, Ltd.....	4741 St. Ambroise Street, Montreal.....	Saint-Jean
Canadian Potteries, Ltd.....	140 Longueuil Street, St-Jean.....	Westbury township
Duquette, Isidore.....	East Angus.....	Clarendon township
Hodgins, David T.....	P. O. Box 148, Shawville.....	Clarendon township
Laprairie Company, Inc. (The).....	University Tower Building, 660 St. Catherine Street West, Montreal.....	Laprairie, Delson
Montreal Terra Cotta, Limited.....	Room 923, 1010 St. Catherine Street West, Montreal.....	Lakeside
Parrot, Michel H.....	Deschaillons, Lotbinière Co.....	Deschaillons
Standard Clay Products, Limited.....	P. O. Box 819, St-Jean.....	St-Jean
Tremblay, Jules.....	Chicoutimi.....	Chicoutimi

SAND-LIME BRICK

NAME OF OPERATOR	ADDRESS	LOCATION OF PLANT
Canadian Carborundum Company.....	Shawinigan Falls.....	St-Canut
Standard Lime Company, Limited.....	Joliette.....	Montreal

SANDSTONE

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Blais (Jos.), Enrg.....	10 Mont-Marie Avenue, Levis.....	St-Louis de Pintendre, St- Nicholas
Chauffage & Ventilation, Ltée.....	105 Côte de la Montagne, Quebec.....	Leggatt's Point
Cloutier, Emile.....	L'Islet.....	
Corrigan, Jos.....	St. Louis Road, Sillery.....	Ste-Foy
Carrière de la Ville de Montmagny.....	Montmagny.....	Montmagny
Gagnon & Frère, Enrg.....	St-David, Levis Co.....	St-David
Rousseau, T. E.....	48 Second Avenue, Quebec.....	New Carlisle
Sherbrooke, City of.....	c/o Mr. Thos. Tremblay, City Engin- eer, Sherbrooke.....	Ascot township
Vézina (Joseph), Enrg.....	Bergerville.....	Ste-Foy
Warren, Robert.....	Pointe-au-Pic, Charlevoix Co.....	Pointe-au-Pic
Warren & Simard.....	Pointe-au-Pic, Charlevoix Co.....	Pointe-au-Pic

SLATE and SHALE

NAME OF OPERATOR	ADDRESS	LOCATION OF QUARRY
Brique Citadelle, Ltée (La).....	14 St. Joseph Street, Quebec.....	Lauzon
Broughton Soapstone & Quarry Co., Limited.....	Broughton Station.....	Ste-Hénédine
Davis Slate & Manufacturing Co. of Canada, Limited.....	131 Shaftesbury Avenue, Toronto, Ont.....	Seignioriy of Temiscouata

SAND and GRAVEL

NAME OF OPERATOR	ADDRESS	LOCATION OF PIT
Archambault, Léo.....	St-Liboire, Bagot Co.....	
Arseneault, Adrien.....	St-Alexis-de-Matapédia.....	
Aubert, Onésime.....	Ham Nord, Wolfe Co.....	
Auger, Edmond.....	St-Bruno, Chambly Co.....	
Baillargeon, Alphonse.....	St-Hénédine, Dorchester Co.....	
Baker, H. S.....	Rivière Beaudette, Soulanges Co.....	
Ball, Clayton.....	Abbotsford.....	
Baptist Transportation, Limited.....	Ameau Building, Trois-Rivières.....	Trois-Rivières
Barbe, Alfred.....	Ste-Rose Ouest, Laval Co.....	
Batley, A. H.....	Bury.....	
Beauchamp, Omer.....	St-Adèle, Terrebonne Co.....	
Beaudry, Jos.....	L'Assomption.....	
Beaumeil, Max.....	Morin Heights, Argenteuil Co.....	
Bédard (Paul H.), Limited.....	c-o Mr. Paul H. Soucy, 85 Cartier Avenue, Quebec.....	St-Emile
Begnoche, Adélar.....	St-Blaise, St-Jean Co.....	
Begnoche, Oscar.....	St-Blaise, St-Jean Co.....	
Béland, Joseph.....	St-Agapit Station, Lotbinière Co.....	
Bélanger, Joseph.....	Ascot Corner.....	
Bélanger, Omer.....	Mont-Laurier, Labelle Co.....	
Bélisle, Euclide.....	145 St. Paul St., Coaticook.....	Coaticook
Bélisle, Janvier.....	St-Janvier, Terrebonne Co.....	
Belleau, Jules.....	Neuville, Portneuf, Co.....	
Helley, Jos. (Didier).....	Jonquières.....	
Bennett, Gertrude M.....	P. O. Box 403, Lennoxville.....	
Benoit, A. J.....	Iberville.....	Mont St-Grégoire
Bergeron, Ursin.....	Jonquière.....	Jonquière
Bérubé, J. Alphonse.....	Les Boules, Matane Co.....	
Bigras, Omer.....	Ste-Dorothée, Laval Co.....	Ste-Rose West
Bisailion, Barthélemi.....	Ste-Christine, Bagot Co.....	
Bisailion, Gérard.....	L'Avenir, Drummond Co.....	
Blain, P.....	3765 Blvd Levesque, St-Vincent-de-Paul.....	
Blouin, Cyrille.....	Rivière aux Chiens, Montmorency Co.....	
Boileau, Eugène.....	St-Lazare, Vaudreuil Co.....	
Bolduc, Georges.....	St-Rémi-de-Tingwick.....	
Bonner Sand & Ballast, Limited (The).....	Room 201, 1434 St. Catherine St. West, Montreal.....	South Durham
Bouchard, Gédéon.....	St-Nazaire, Chicoutimi Co.....	
Boucher, Josephat.....	Rapide de l'Orignal, Labelle Co.....	
Boucher, Wilfrid.....	Fugèreville, Témiscamingue Co.....	
Boudreau, Léo.....	St-Eugène-de-Grantham, Drummond Co.....	
Boudreau, Wellie.....	Havre Aubert, Iles de la Madeleine.....	
Bourret, Arthur.....	La Patrie, Compton Co.....	
Bradley (J. P.) & Son.....	St-Andrews, Argenteuil Co.....	
Brault, F. Xavier.....	St-Dominique-de-Bagot.....	
Breen, Thomas.....	Chéminis, Ont.....	
Brisbois, Edmond.....	Ste-Adèle, Terrebonne Co.....	
Canadian Johns-Manville Company.....	Asbestos.....	
Canadian National Railways.....	c-o E. G. Newson, Engineer Maintenance of Way, Union Station, Toronto 2, Ont.....	
Canadian Pacific Railway.....	Chief Engineer's Office, Windsor Station, Montreal.....	
Carlin, John.....	R. R. No. 2, Buckingham.....	Buckingham township
Caron, Albert.....	Roberval.....	Roberval township
Chabot, Abel.....	St-Jean-Baptiste, Rouville Co.....	
Chabot, Fortunat.....	Ste-Claire, Dorchester Co.....	
Chabot, Bernard.....	St-Jean-Baptiste, Rouville Co.....	
Chaput, Ulric.....	Mascouche, l'Assomption Co.....	
Charest, Joseph.....	Chartierville, Compton Co.....	

SAND and GRAVEL—Continued

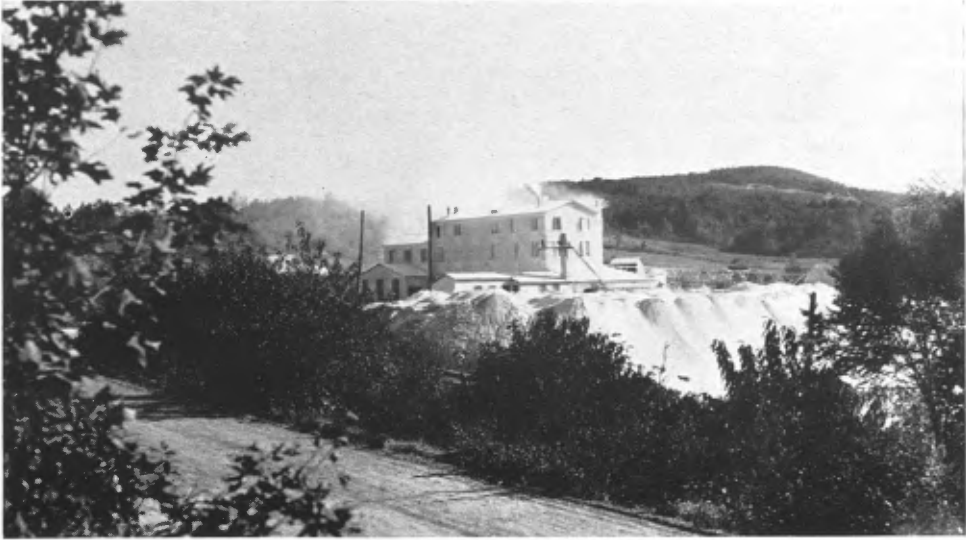
NAME OF OPERATOR	ADDRESS	LOCATION OF PIT
Chevrette, Mme Ludger	St-Gabriel-de-Brandon, Berthier Co.	
Chevrier, Raoul	St-Lazare, Vaudreuil Co.	
Coaticook, City of	P. O. Box 150, Coaticook	
Coats, Harold	Bury	
Collard, Joseph	St-Joseph-d'Alma, Lac St-Jean Co.	Taché township
Compagnie de Sable, Ltée (La)	10 Third Avenue, Quebec	St-Charles river
Consolidated Oka Sand and Gravel Company, Ltd.	243 McCord Street, Montreal	
Cossette, Raymond	Méchins, Matane Co.	Dalibaire township
Côté, Hector	Sherbrooke East	Ascot township
Côté, Philémon	St-Antoine, Lotbinière Co.	
Cusson, Josaphat	Roston Falls, Shefford Co.	Roxton township
Daigneault, Pierre	Franklin, Huntingdon Co.	Franklin township
Danis, Hormidas	St-Jérôme, Terrebonne Co.	
Deschênes, Saluste	St-Jean, Port-Joli	
Desharnais, Johnny	Warwick, Arthabaska Co.	Warwick township
Deslandes, Léonard	St-Dominique, Bagot Co.	
Deslandes, Mastal	St-Dominique-de-Bagot	St-Dominique-de-Bagot
Desmarais, Arthur	St-Liboire, Bagot Co.	
Desrochers, Emile	St-Donat, Montcalm Co.	Lussier township
Desrochers, Oscar	Warwick, Arthabaska Co.	Warwick township
Dionne, Olivier	Martinville, Compton Co.	Clifton township
Dubois, Edouard	Issoudun, Lotbinière Co.	
Dubreuil, Albert	St-Dominique-de-Bagot	
Dubuc, Oscar	Rougemont, Rouville Co.	
Dufour, Henry	Grande Baie, Chicoutimi Co.	
Dumas, Philias	14 St. Henri Street, Sherbrooke	
Dupont, Adéland	Lytton, Gatineau Co.	Lytton township
Dupont, Albert	Ripon, Papineau Co.	Ripon township
Durand, Albert	Saint-Jérôme, Terrebonne Co.	
Dutrizac, Noel	Plage Laval, Laval Co.	Sainte-Dorothée
Duval, Phydime	St-Perpétue, L'Islet Co.	Garneau township
Elliott, Jack	Escuminac, Bonaventure Co.	
Elvidge, Walter	Henrysburg, Saint-Jean Co.	
Fabi & Fils	33 Brewster Street, Sherbrooke	Lennoxville
Fay, Wellie	St-Séverin, Champlain Co.	
Fitzgerald, Fred	R. R. No. 5, Lachute	Chatham township
Forand, Alphonse	Kateville, Stanstead Co.	
Fortin, Thomas	St-Damase, L'Islet Co.	
Fournier, Mrs. Jos.	Taschereau (Abitibi)	Privat township
Funcheon, Percy J.	Lachûte	
Gagnon, François	Grande Baie, Chicoutimi Co.	
Gatien, Patrice	St-Dominique-de-Bagot	
Gaudreau, Alfred	R. R. No. 3, Ayer's Cliff, Stanstead Co.	
Gauthier, Albert	Katevale	
Gauthier & Tremblay	c-o Mr. William Tremblay, Racine Street, Chicoutimi	Rivière du Moulin
Gauthier, William	Chicoutimi	Rivière du Moulin
Gilbert, F. L.	East Angus, Compton Co.	Westbury township
Goddard, Henri	Labelle, Labelle Co.	Joly township
Goodfellow, W. F.	R. R. No. 3, Sherbrooke	Orford township
Gosselin, Hamilton	St-Nazaire, Bagot Co.	Grantham township
Gosselin, Estate	Chicoutimi	Chicoutimi
Goudreau, Alfred	Ayer's Cliff, R. R. No. 3, Stanstead Co.	
Goudreau, Joseph	Grondines	
Gourde, Nap.	Neubois, Lotbinière Co.	
Goyer, Edouard	St-Bruno, Chambly Co.	
Granger, Idège	St-Marie Salomé, Montcalm Co.	St-Sulpice
Grenon, François	Henryville, Iberville Co.	
Griffin, Dennis	St-Rose-du-Degele	
Grondin, Téléphore	Almaville-en-Haut, Laviolette Co.	
Haines, James	Oak Bay Mills, Bonaventure Co.	
Hallé, H. L.	St-Romain, Frontenac Co.	
Hamel, Mizael	St-Bonaventure, Yamaska Co.	Upton township
Hamilton, Archie	Morin Heights, Argenteuil Co.	
Henderson, Estate Mrs. J.	c-o Dorothy Henderson, Maniwaki	Kensington township
Hopper, George	Lennoxville	
Hopper, J. A.	Lennoxville	Ascot township
Houde, Noé	St-Apollinaire, Lotbinière Co.	
Houde, Réal	St-Apollinaire, Lotbinière Co.	
Houle, Adrien	Rivière Beaudette	
Joncas, Aurèle	Amqui, Matapédia Co.	Lepage township
Kelly, Hugh J.	Fir Grove, Dorchester Co.	
Labelle, Léandre	Rivière Beaudette, Soulanges Co.	
Labonté, Lionel	Greenlay	
Labonté, Trefflé	L'Avenir, Drummond Co.	

SAND and GRAVEL—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF PIT
Labrecque, Philippe	St-Charles-de-Bellechasse	
Lacasse, Josaphat	Brownsburg	
Lachance, Philémon	East Broughton, Beauce Co.	
Lafontaine, Eugène	Messines, Gatineau Co.	Bouchette township
Lafortune, Emilien	25 Place Bourget, Joliette	
Laframboise, Paul	Bourlamaque (Abitibi)	
Laliberté, Joseph	Ste-Claire, Dorchester Co.	
Langlois, Louis	La Patrie, Compton Co.	
Larente, Fred	Buckingham	Buckingham township
Latulippe, Philippe & Amédée	238 de la Ronde Street, Quebec	St-Charles river
Lauson, Armand	R. R. No. 1, Terrebonne	
Lavoie, Arthur	Ste-Rose-du-Dégel	
LeBaron, Estate H. C.	North Hatley	Hatley township
LeBeau, Mrs. Antoine	222 Lebeau Street, Saint-Jérôme, Terrebonne Co.	Terrebonne
Lebel, Jos.	St-Honoré, Témiscouata Co.	
Leclerc, Côme	Leclercville, Lotbinière Co.	
Lefebvre, Octave	St-Wenceslas, Nicolet Co.	
Lefebvre, Oscar	Fugèreville, Témiscamingue Co.	Laverlochère
Lehouillier, Alphonse	Ste-Marguerite, Dorchester Co.	
Lemay, René	Saint-Jérôme, Terrebonne Co.	Saint-Jérôme
Lessard, Emile	Broughton Station, Beauce Co.	
Lethiecq, David	Bécancourt	
Lévesque, Triflé & Gonzague	Kénogami	Jonquièrre township
L'Heureux, Jules	Fontainebleau, Wolfe Co.	Weedon township
Loranger, Omer	Almaville-en-Haut, Laviolette Co.	
Lussier, Henri	Ste-Hélène, Bagot Co.	
McGowan, F. J.	Georgeville, Stanstead Co.	
Maher, Thomas	Frampton, Dorchester Co.	Frampton township
Mahoney, Mike	88 Bank Street, Ottawa, Ont.	Buckingham township
Mallory, James G.	Lennoxville	
Marceau, Wilfrid	Coleraine Station	
Marchand, Euclide	Almaville, Champlain Co.	
Marois, Lucien	St-Agapit Station, Lotbinière Co.	
Matte, P. F.	Donnacona	
Michaud, Wilfrid	Ste-Ursule, Maskinongé Co.	
Moe, Keith	R. R. No. 3, Sherbrooke	Orford township
Moisan, David	Champigny, Quebec Co.	
Moncion, Emile	Masson, Hull Co.	Templeton township
Moody, J. Harry	St-Louis Avenue, Terrebonne	Terrebonne parish
Moreau, Oscar	Tingwick, Arthabaska Co.	
Moreau, Rodolphe	Pointe Gatineau	
Morin, Henri	Rivière du Sud, Montmagny Co.	
Morin, Nap. Thomas	R. R. No. 5, Lachute	
Moulton, C. W.	Hatley, Stanstead Co.	
National Sand and Material Co., Ltd.	75 Richmond Street, Montreal	
Newton, Wellington	Buckingham	Buckingham township
Nolin, Eugène	Victoriaville	
Norbonne, Aldéric	St-Faustin, Terrebonne Co.	Wolfe township
Ontario Paper Company, Limited	Baie Comeau	Ragueneau township
Ouellette, Alphonse	Hébertville	
Ouellette, Damase	Ste-Foye Parish	
Paquet, Elphège	R. R. No. 1, Bromptonville	Windsor township
Paquet, Stanislas	R. R. No. 2, Sacré-Cœur-de-Marie, Mégantic Co.	Thetford township
Paquin, Adélar	Ste-Thérèse, Terrebonne Co.	
Paquin, Adjutor	Belcourt, Abitibi Co.	Senneterre township
Paré, Thomas	St-Jules, Beauce Co.	
Pariseau, E.	Coaticook	Coaticook
Pelletier, Edmond	Beaumont, Bellechasse Co.	
Péloquin, Walter	L'Avenir, Drummond Co.	
Pepin, Joseph	Warwick	
Perron, Euclide	Chicoutimi	Chicoutimi township
Phaneuf, Jos.	Weedon	Weedon township
Picard, Edmond	La Patrie, Dorchester Co.	Langevin township
Pidgeon, John D.	St-Ferdinand-de-Mégantic	
Pinard, Donat	St-Rémi-de-Tingwick	
Pinette, Philias	New Ireland, Mégantic Co.	Ireland township
Proulx, William	R. R. No. 1, Danville	Kingsey township
Quebec Central Railway Co.	89 Wellington Street, Sherbrooke	St-Camille
Quebec, City of	c-o Mr. Arthur Bourdeau, Department of Public Works, City Hall, Quebec	St-Michel-de-Beauport Brompton township
Quinn & Co., Reg'd	Windsor	Macnider township
Ratté, Albert	Les Boules, Matane Co.	
Reed, John A.	East Clifton, Compton Co.	
Roberge, Gustave	St-Stanislas, Champlain Co.	

SAND and GRAVEL—Continued

NAME OF OPERATOR	ADDRESS	LOCATION OF PIT
Robert, Pierre	Royal Avenue, Beauport	Beauport
Robitaille, Charles	Buckingham	
Rochette, Mrs. Odina	St-Augustin, Portneuf Co.	
Roulier, Arsène	L'Acadie	
Roy, Arthur	Village St-Romuald, Lévis Co.	
Ste-Agathe-des-Monts, City of	Ste-Agathe-des-Monts, Terrebonne Co.	Beresford township
St. Francis River Dredging Company	St-François-du-Lac, Yamaska Co.	
St-Gelais, Bélonie	St-Adelme, Matane Co.	St-Denis township
St-Germain, Mrs. L.	St-Edwidge, Compton Co.	
St-Pierre, Félicien	Notre-Dame-du-Bon-Conseil, Drummond Co.	
Samson, Mrs. Irénée	Pintendre, Lévis Co.	
Sauvageau, Donat	St-Casimir, Portneuf Co.	
Séigny, Arthur	D'Israéli, Wolfe Co.	
Sherbrooke, City of	c-o Mr. Thos. Tremblay, City Engineer, Sherbrooke	Orford township
Schinek, Dalvida	Ormstown, Chateaugay Co.	St-Malachie parish
Simard, Louis	St-Nazaire, Chicoutimi Co.	
Simard, Oscar	Hébertville	Mesy township
Smith, Ruben	Greenley	
Standard Lime Company, Limited	Joliette	Notre-Dame de Lourdes, L'Epiphanie
Standard Sand & Gravel, Limited	St-Félix-de-Valois	St-Félix-de-Valois
Sweet, C. E.	West Brôme, Brôme Co.	Brôme township
Tétreault, Emile	Rang Chartier, Mont St-Grégoire	Monnoir Seignioriy
Théorêt, Achille	St-Polycarpe, Soulanges Co.	St-Télesphore
Therreault, L. Georges	339 Notre-Dame Street, Cap-de-la-Madeleine	
Thibault, Donat	Howick, Chateaugay Co.	
Thibert, Trefflé	Ste-Philomène, Chateaugay Co.	
Thouin, J.	Mascouche	
Todd, Wm.	R. R. No. 4, Lachute	
Touchette, Arthur	Ste-Thérèse, Terrebonne Co.	Tremblay township
Tremblay, Henri	St-Fulgence, Chicoutimi Co.	
Tremblay, Johnny	Grande-Baie, Chicoutimi Co.	Almaville
Tremblay, Joseph	St-Marc-de-Shawinigan-Falls	
Tremblay, Nil	Rivière du Moulin, Chicoutimi Co.	
Trépanier, Wilson	Lac à la Tortue, Champlain Co.	
Turgeon, Edouard	St-Isidore, Dorchester Co.	
Turgeon, Sylvio	L'Assomption	
Turmel, Arthur	Ste-Germaine, Dorchester Co.	
Valois, Jos.	Causapsal	
Venne, Oscar	Lachenaie	Warwick township
Verville, Edouard	Warwick	Magog township
Vien, Siméon	Magog	
Watchorn, Edward	Morin Heights, Argenteuil Co.	
Young, C. A.	Stanbridge East	



A.—The mill of the Canadian Kaolin Silica Products, Limited, St-Rémi-d'Amherst, Papineau County. Mine in the background, 1937



B.—Canada China Clay Company. St-Rémi-d'Amherst, Papineau County. Mill under construction, headframe of the shaft and Power House, 1937.

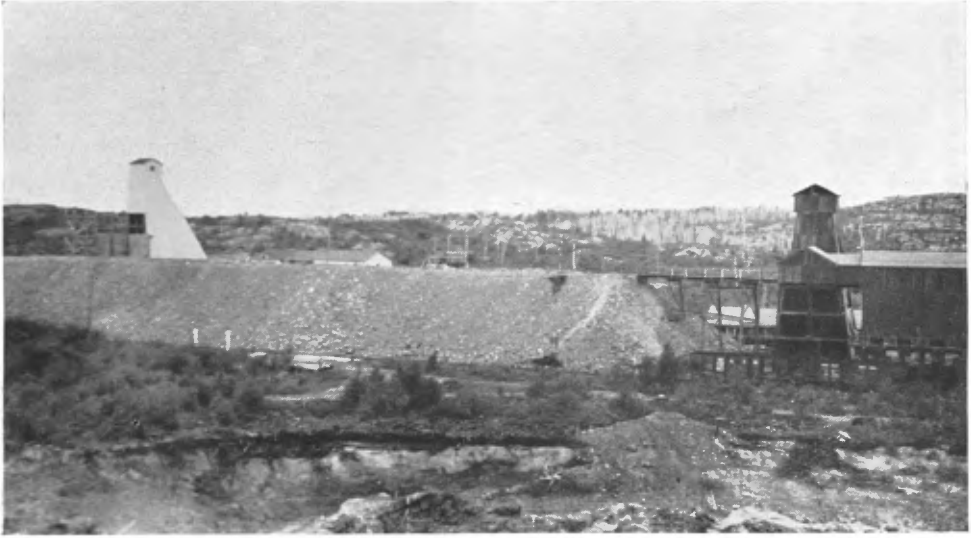
PLATE II



A.—Canadian Refractories Limited, Kilmar, Argenteuil County.
Headframe of the shaft.



B.—The mill of the Canadian Carborundum Company, St-Canut, Deux-Montagnes.



A.—Waite mine, Duprat Township, September 1938.



B.—Powell-Rouyn Gold Mines, Rouyn Township. Headframe of the shaft, July 1938.

PLATE IV



A.—Mill of the Francoeur Gold Mines in Beauchastel Township, August 1938.



B.—Power House and 25-ton mill of the Lake Rose Mines, Currie Township, August 1938.

ALPHABETICAL INDEX

	PAGE		PAGE
Abbeville Gold Mines.....	54	Beauchastel tp.—	
Accidents, in mines and q'ries.....	105	Operations in.....	51
Prevention of.....	108	Beaucourt Gold Mines.....	93
Actinolite, Canadian prod'n.....	33	Beaufor Mining Corp.—	
Adeline Lake Gold Mines.....	53	Operations in 1937.....	91
Africa, Union of South—		Beauplace claim.....	95
Asbestos production.....	38	Beaver asbestos mine—	
Aldermac Copper Corp.....	51	Chromite produced at.....	26
Alluvial gold.....	24	Operations in 1937.....	35
Amm Gold Mines.....	69	Bell Asbestos Mines—	
Amosite—		Operations in 1937.....	36
S. African prod'n of.....	38	Belleterre Mines.....	95
Amulet mine—		Bennett-Martin asbestos mine—	
<i>See under Waite-Amulet</i>		Operations in 1937.....	35
Anthophyllite—		Bidquebec Gold Mines.....	88
S. African prod'n of.....	33	Blackburn mica mine.....	42
Apatite—		Phosphate produced at.....	44
<i>See Phosphate.</i>		Blouin Lake Gold Mines.....	88
Arncoeur Gold Mines.....	51	Blue asbestos—	
Arntfield Gold Mines—		S. African prod'n of.....	38
Operations in 1937.....	51	Bon Ami, Ltd.....	39
Arrowhead Gold Mines.....	59	Bourlamaque tp.—	
Arsenical concentrate, Beattie.....	9, 66	Operations in.....	88
Asbestos—		Bourret, Paul E.—	
Average prices.....	28, 29	Rep'ts, Building materials.....	46
Exports, Canadian.....	29	Rep'ts, Non-metallic minerals.....	27
“ All countries.....	34	Bouscadillac Gold Mines.....	67
Imports, Germany.....	30	Bousquet tp.—	
“ United Kingdom.....	31	Operations in.....	67
“ United States.....	30	Brick—	
“ All countries.....	32	List of operators.....	124
Operating companies, Que.....	34, 110	Production, 1937.....	46
Operations, Quebec.....	27, 34	Brick, sand-lime—	
“ Other countries.....	37	List of operators.....	128
Production, Quebec.....	7, 10, 27	British Canadian asbestos mine.....	35
“ World.....	33	Broughton Soapstone & Q'ry Co.....	45
Asbestos, blue—		Brown Bousquet Mines.....	68
S. African prod'n of.....	38	Brown Cadillac Gold Mines.....	68
Asbestos Corporation, Ltd.—		Brownlee Mines (1936), Ltd.....	54
Chromite produced by.....	27	Bruell Gold Mines (1936), Ltd.....	95
Operations in 1937.....	34	Building contracts, Que., 1937.....	46
Ascot Holdings, Ltd.....	74	Building materials industry—	
Asphalt filler, prod'n in 1937.....	48	Employees and wages.....	7, 102
Assay laboratories.....	13	List of operators.....	124
Astoria Rouyn Mines.....	54	Operations in 1937.....	10, 46
Avocalon Mining Syndicate.....	94	Production tables.....	5, 7
Bagamac Mines.....	54	Building stone, prod'n—	
Baie St-Paul Titanic Iron Ore.....	27	Granite.....	47
Base-metal prices.....	8	Limestone.....	48
Bayside Malartic Mines.....	75	Marble.....	49
Bazinnet mica mine.....	42	Sandstone.....	50
Beattie Gold Mines—		Bursaries, for mining students.....	16
Arsenic recovered by.....	9, 66	Bussières Mining Co.....	94
Dividends paid by.....	9	Cache d'Or Gold Mines.....	88
Operations in 1937.....	63	Cadillac tp.—	
Ore reserves.....	64	Operations in.....	69
		Cadillac village.....	15

PAGE	PAGE		
Calumet Mines.....	25	Cournor Mining Co.....	94
Cameron feldspar mine.....	39	Courville tp.—	
Canada Cement Co.—		Operations in.....	98
Operations in 1937.....	46	Crushed stone production—	
Canada China Clay Co.....	40, 45	Granite.....	47
Canada Garnet Co.....	40	Limestone.....	48
Canada Marble and Lime Co.....	49	Marble.....	49
Canadian Copper Refiners—		Sandstone.....	50
Se and Te prod'n by.....	26, 27	Cummings-Trudel Holdings.....	75
Canadian Flint and Spar Co.—		Curbstone production—	
Operations in 1937.....	39, 45	Granite.....	47
Canadian Johns-Manville Co.—		Limestone.....	48
Operations in 1937.....	36	Currie tp.—	
Canadian Malartic Gold Mines—		Operations in.....	98
Dividends paid by.....	9	Cyr, L. R.—	
Operations in 1937.....	9, 75	Soapstone produced by.....	45
Ore reserves.....	78		
Canadian National R'y—		Dalquier tp.—	
Senneterre-Rouyn line.....	6	Operations in.....	97
Canadian Refractories, Ltd.....	41	Dasserat tp.—	
Canadlaca (Que.) Gold Mines.....	69	Operations in.....	51
Cascades mica mine.....	42	De Roumefort, Vicomte Roger—	
Cassels Duval Mines.....	68	Well drilled by.....	43
Celta Quebec Exploration, Ltd.....	75	Deane-Cadillac Mining Corp.....	75
Cement—		Del Rio Mining Co.....	67
List of operators.....	125	Dempsey Cadillac Gold Mines.....	75
Operations in 1937.....	46	Derry feldspar mine.....	39
Central Cadillac Gold Mines.....	69	Descar Corporation.....	67
Central Chibougamau Gold Mines.....	100	Desmeloizes tp.—	
Central Duvernay Gold Mines.....	97	Operations in.....	96
Centreoccur Gold Mines.....	94	Destor tp.—	
Chemical and research labs.....	13	Operations in.....	67
China-clay—		Development licenses issued.....	10
List of operators.....	120	Dividends paid by m'ng co's.....	9
Operations in 1937.....	40	Dolomite, magnesitic—	
Chromite—		List of operators.....	121
List of operators.....	110	Operations in 1937.....	41
Operations in 1937.....	26	Doreva (Quebec), Ltd.....	68
Chrysotile—		Dorval-Siscoe Mines.....	81
See under Asbestos.		Draughting division—	
Claims recorded, number of.....	6, 10	Work by, 1936-37.....	13
Classes for prospectors.....	17	Dubuisson tp.—	
Claverny Gold Mines.....	97	Operations in.....	81
Clay and shale products—		Dufresnoy tp.—	
Operations in 1937.....	46	Operations in.....	60
Clérey tp.—		Dumico Gold Corp.....	67
Operations in.....	62	Duparquet Mining Co.....	67
Clerno Mines, Ltd.....	54	Dubarquet tp.—	
Colonial Gold Mines.....	97	Operations in.....	63
Company incorporations, 1936.....	19	Duprat tp.—	
Consolidated Chibougamau Gold- fields.....	101	Operations in.....	60
Consolidated Copper & Sulphur Co.....	23	Duquesne Mines.....	67
Consolidated M. & S. Co. of Can.—		Duvernay tp.—	
Claims of, in Vauquelin tp.....	95	Operations in.....	97
Copper—			
List of operators.....	110	East Malartic Mines—	
Market price of.....	8, 23	Operations in 1937.....	78
Operations in 1937.....	23	East Templeton—	
Production.....	7, 8, 23	Sandstone produced at.....	45
		Electric Reduction Co.....	45

	PAGE		PAGE
Embergold Mines.....	25	Halliwell Gold Mines.....	52
Employees in mines and q'ries—		Harricanaw Amalg'd Gold Mines.....	82
Number of.....	7, 102	Harvie, Robert—	
Wages earned by.....	7, 102	Alluvial gold oper'n's by.....	25
Eustis mine—		Hayes Cadillac Mines.....	69
Operations in 1937.....	23	Heva Cadillac Gold Mines.....	98
Evans feldspar mine.....	39	Horne mine—	
Exhibitions—		See under Noranda Mines.	
Bur. of Mines particip'n in.....	19	Horse-shoe mica mine.....	42
Fatal accidents, 1937.....	106	Hosking Mining Co.....	94
Feldspar—		Hydrated lime, prod'n.....	41, 49
List of operators.....	111	Ilmenite—	
Operations in 1937.....	39	See Titaniferous iron ore.	
Field work, geological, 1936-37.....	12	Incorporations, company, 1936.....	19
Flagstone, production.....	48	Industrial sand—	
Fleming Mines.....	94	Operations in 1937.....	44
Fontana Gold Mines.....	97	International Magnesite Co.....	41
Fortin, Charles—		Iron ore, titaniferous—	
Soapstone produced by.....	45	See Titaniferous iron ore.	
Fournière tp.—		Iron oxide and ochre—	
Operations in.....	75	List of operators.....	122
Francœur Gold Mines—		Operations in 1937.....	43
Operations in 1937.....	52	Iron Oxide Products, Ltd.....	43
Freegold Mines.....	97	Isle Verte peat bog.....	44
Galatea Gold Mines.....	67	Jacola Mines, Ltd.—	
Gale Gold Mines.....	81	Operations in 1937.....	82
Property purchased for Mine		Joannès Davidson Mines.....	60
School.....	82	Joannès tp.—	
Garnet—		Operations in.....	59
List of operators.....	112	Johnson's Company—	
Operations in 1937.....	40	Operations in 1937.....	36
Gas and oil—		Kanasuta Gold Mines.....	67
List of operators.....	112	Kanbec Gold Mines.....	67
Operations in 1937.....	43	Kaolin—	
Geological field work, 1936-37.....	12	List of operators.....	120
Germany, asbestos imports.....	30	Operations in 1937.....	40
Girard, Henri—		Kewagama Gold Mines.....	69
Rep't, Peat.....	44	Keyroc (Que.) Gold Mining Co.....	55
Rep't, Employment, wages, and		Kiena Gold Mines.....	83
accidents.....	102	King asbestos mine—	
Gold—		Operations in 1937.....	34
List of operators.....	112	La Reine Gold Mines.....	96
Operations in 1937.....	24	La Reine tp.—	
Price of.....	8, 24	Operations in.....	96
Production.....	5, 7, 8, 24	Labelle Mining, Inc.....	40
Gold, alluvial, oper'n's.....	24	Laboratories, Bur. of Mines.....	13
Granada Gold Mines.....	55	Lake Rose Mines.....	98
Granite—		Lamaque Mining Co.—	
List of operators.....	125	Operations in 1937.....	9, 88
Operations in 1937.....	46	Ore reserves.....	82
Granville asbestos prospect.....	37	Landrienne tp.—	
Gravel and sand—		Operations in.....	98
List of operators.....	129	Landry Mines, Ltd.—	
Operations in 1937.....	49	Operations in 1937.....	24
Greene Stabell Mines.....	82	Lapa Cadillac Gold Mines.....	70
Guillet tp.—			
Operations in.....	95		

PAGE	PAGE
Launay tp.—	
Operations in.....	97
Laurel mica mine.....	42
Lavalie Mines (Que.), Ltd.....	89
Lavigne, Lucien—	
Rep't, Asbestos industry.....	27
Lead—	
List of operators.....	124
Operations in 1937.....	25
Price of.....	8, 25
Production.....	7, 25
Lecture courses for prospectors.....	17
Legislation, mining, 1936-37.....	14
LeRoy Gold Mines.....	62
Levy tp.—	
Operations in.....	98
Lime—	
List of operators.....	126
Lime, building—	
Operations in 1937.....	48
Lime, industrial—	
Operations in 1937.....	40
Limestone—	
List of operators.....	126
Limestone, building—	
Operations in 1937.....	48
Limestone, industrial—	
Operations in 1937.....	40
List of mine and q'ry operators.....	110
Louvicourt tp.—	
Operations in.....	93
Louvre Gold Mines.....	94
Magnetitic-dolomite—	
List of operators.....	121
Operations in 1937.....	41
Malartic Goldfields.....	78
Malartic Lakeshore Mines.....	79
Malartic tp.—	
Operations in.....	74
Malartic village.....	15
Mallet test-hole—	
Log of.....	44
Manitou Mines (Que.), Ltd.....	89
Maniwaki Mines.....	95
Map-making division—	
Work by, 1936-37.....	13
Maple Leaf asbestos mine.....	35
Marble—	
List of operators.....	128
Operations in 1937.....	49
Marl—	
Operations in 1937.....	40
Mary Jane Copper-Gold Mines.....	67
McDonough Syndicate claims.....	95
McIntyre Porcupine Mines—	
Property in Guillet tp.....	95
McKenzie tp.—	
Operations in.....	100
McRae Gold Mines.....	81
McWatters Gold Mines—	
Dividends paid by.....	9
Operations in 1937.....	55
Melocheville—	
Sandstone produced at.....	45
Metal-mining industry—	
Employment and wages.....	7, 102
List of operators.....	110
Operations in 1937.....	8, 23
Production tables.....	5, 7, 8
Metals, market prices of.....	8
Mica—	
List of operators.....	121
Market prices.....	43
Operations in 1937.....	42
Mine d'Or Champlain (La).....	52
Mine roads.....	7, 15
Mine School, plans for.....	16
Gale property purchased for.....	82
Mineral production, tables.....	5, 6, 7
Mineral water—	
List of operators.....	121
Minéraux et Petrole de Gaspé Co—	
Well drilled by.....	44
Miners' certificates, No. issued.....	6, 10
Mines Development Corp.....	98
Mines Operating Corp.—	
Work by, an Pan Canad'n prop....	73
Mining licenses issued.....	10
Mining villages.....	14
Molybdenite—	
List of operators.....	122
Monarch Mines, Ltd.....	51
Monument stone, prod'n—	
Granite.....	47
Limestone.....	48
Moosha Gold Mines.....	68
Muscovite.....	42
National Granite, Ltd.....	47
National Malartic Mining Co.....	79
New Ribago Mines.....	53
New York feldspar mine.....	39
Newroy Gold Mines.....	93
Niagara Gold Mines.....	53
Nicolet Asbestos Mines—	
Operations in 1937.....	37
Non-metallics—	
Employees and wages.....	7, 102
Operations in 1937.....	9, 27
Production tables.....	5, 7
Noranda Mines, Ltd.—	
Dividends paid by.....	9
Operations in 1937.....	55
Ore reserves.....	56
Work by, on New Ribago.....	53
Norgold Mines, Ltd.....	68
Normetal Mining Corp.—	
Operations in 1937.....	96
Nubell Gold Mines.....	94

PAGE	PAGE		
Numaque Mining Co.....	89	Quebec Manitou Mines.....	9, 89
Obalski Mining Corp.....	100	Quebec United Mines.....	24
Obalski tp.—		Questor Gold Mines.....	59
Operations in.....	100	Quicklime, production.....	41, 49
O'Brien Gold Mines—		Rainville mica mine.....	42
Operations in 1937.....	70	Rand Malartic Mines.....	79
Oehre and iron oxide—		Red Gold Mining Co.....	59
List of operators.....	122	Redfern, Fred.—	
Operations in 1937.....	43	Alluvial gold oper'ns by.....	25
Oil and gas—		Revenue rec'd by B. of M.....	10
List of operators.....	112	Rhodesia, Southern—	
Operations in 1937.....	43	Asbestos production.....	38
O'Leary-Malartic Mines.....	53	Ribago Copper Corp.....	53
Opemiska Copper Mines—		Richard mica mine.....	42
Operations in 1937.....	98	Rivière-Ouelle peat bog.....	44
Operators, mine and q'ry—		Roads, mine.....	7, 15
List of.....	110	Rocdor Mines, Ltd.....	83
Orland Gold Mines.....	53	Rochette Gold Mines Co.....	97
Pan Canadian Gold Mines.....	73	Rouyn Reward Gold Mines.....	59
Pandora Cadillac Gold Mines.....	72	Rouyn tp.—	
Partanen Malartic Gold Mines.....	75	Operations in.....	54
Pascal's tp.—		St-Canut—	
Operations in.....	91	Sandstone produced at.....	45
Paving blocks, prod'n.....	47	St-Lawrence Alloys Co.....	45
Payore Holdings, Ltd.....	90	St-Lawrence Mica Co.....	42
Peat—		St-Pierre Cadillac Gold Mines.....	73
List of operators.....	122	St-Rémi—	
Operations in 1937.....	44	Quartz produced at.....	45
Pelletier Lake Gold Mines.....	58	Sand, industrial—	
Perkins Mining Co.....	39	List of operators.....	123
Perron Gold Mines—		Operations in 1937.....	44
Operations in 1937.....	92	Sand and gravel—	
Pharo, L. C.—		List of operators.....	129
Soapstone produced by.....	45	Operations in 1937.....	49
Phlogopite—		Sand-lime brick—	
See under Mica.		List of operators.....	128
Phosphate—		Sandstone—	
List of operators.....	122	List of operators.....	123, 128
Operations in 1937.....	44	Operations in 1937.....	50
Pied-des Monts mica prop.....	42	Scholarships, for mining students.....	16
Pontiac Rouyn Mines.....	58	School, Mine.....	16, 82
Pottery—		Seguin Rouyn Gold Mines.....	59
List of operators.....	128	Selenium—	
Powell Rouyn Gold Mines.....	58	Price of.....	26
Publications, Bur. of Mines.....	17	Production.....	7, 8, 25
Change in mode of.....	18	Uses.....	26
Pyrite—		Senator Rouyn Mines.....	59
List of operators.....	123	Sennevar Mines, Ltd.....	81
Sulphur ore.....	51	Senore Gold Mines.....	93
Quarries—		Sewer pipe, prod'n.....	47
List of operators.....	124	Shale—	
Quartz and industrial sand—		List of operators.....	129
List of operators.....	123	Operations in 1937.....	46, 50
Operations in 1937.....	44	Shawkey Gold Mining Co.—	
Quebec Asbestos Corp.—		Operations in 1937.....	83
Operations in 1937.....	37	Shawmaque Gold Mines.....	84
		Sherwin Williams Co.....	43

PAGE	PAGE
Sigma Mines, Ltd.—	Titaniferous iron-ore—
Dividends paid by..... 9	List of operators..... 124
Operations in 1937..... 9, 90	Operations in 1937..... 27
Ore reserves..... 90	Tile, production..... 47
Silica (rock and sand)—	Union of S. Africa—
List of operators..... 123	Asbestos production..... 38
Operations in 1937..... 44	United Kingdom—
Silver—	Asbestos imports..... 31
List of operators..... 123	United States—
Market price of..... 8, 25	Asbestos imports..... 30
Operations in 1937..... 25	" production..... 37
Production..... 7, 8, 25	Val d'Or, incorporation of..... 15
Silver Granite Co..... 47	Val d'Or Min'l Holdings, Ltd..... 91
Simard, Eugène—	Valco Cadillac Mines..... 74
Muscovite produced by..... 42	Valenti mica property..... 42
Siscoe Extension Gold, Ltd..... 81	Varsan tp.—
Siscoe Gold Mines—	Operations in..... 81
Dividends paid by..... 9	Vauquelin tp.—
Operations in 1937..... 84	Operations in..... 94
Ore reserves..... 84	Vavasour mica mine..... 42
Sladen Malartic Mines—	Ventures, Ltd.—
Operations in 1937..... 79	Pelletier Lake property of..... 58
Slate—	Villages, mining..... 14
List of operators..... 129	Vimy Ridge asbestos mine—
Soapstone—	Operations in 1937..... 36
List of operators..... 124	Wages paid, in 1937..... 7, 102
Operations in 1937..... 45	Waite-Amulet Mines—
South Africa, Union of—	Operations in 1937..... 60
Asbestos production..... 38	Ore reserves..... 51, 62
South Malartic Gold Mines..... 81	Wallace Sandstone Q'ries, Ltd..... 49
Southern Rhodesia—	Wallingford feldspar mine..... 39
Asbestos production..... 38	Wallingford mica mine..... 42
Spargmos..... 44	Waterville peat bog..... 44
Stabell Lake Gold Mines..... 82	West Duverny Gold Mines..... 98
Stadacona Rouyn Mines..... 9, 59	West Siscoe Gold Mines..... 81
Stadacona village..... 15	Western Quebec—
Statutory work on claims..... 11	Rep't, R. H. Taschereau..... 51
Suffield copper mine..... 24	Metal prod'n, 1927-37..... 8
Sullivan Cons. Gold Mines—	Westwood Cadillac Mines..... 69
Dividends paid by..... 9	White Grit Company..... 49
Operations in 1937..... 85	Wisik Gold Mines..... 87
Sulphur from pyrite..... 51	Wolverine (Que.) Mines..... 91
Taschereau, R. H.—	Wood Cadillac Mines..... 74
Rep't, Western Quebec..... 51	Workmen in m'ng industry—
Tellurium—	Number of..... 7, 102
Market price..... 27	Wages earned by..... 7, 102
Production..... 7, 8, 27	Ypres Cadillac Mines..... 74
Testaguzza, Angelo—	Zinc—
Asbestos produced by..... 35	List of operators..... 124
Tétrault mine..... 25, 26	Market price..... 8, 26
Thompson Bousquet Gold Mines..... 69	Operations in 1937..... 26
Thompson-Cadillac M'ng Corp.—	Production..... 7, 8, 26
Operations in 1937..... 73	
Tiblemont Island M'ng Co..... 94	
Tiblemont tp.—	
Operations in..... 94	

