

GM 67014

THE MINING INDUSTRY OF THE PROVINCE OF QUEBEC IN 1959

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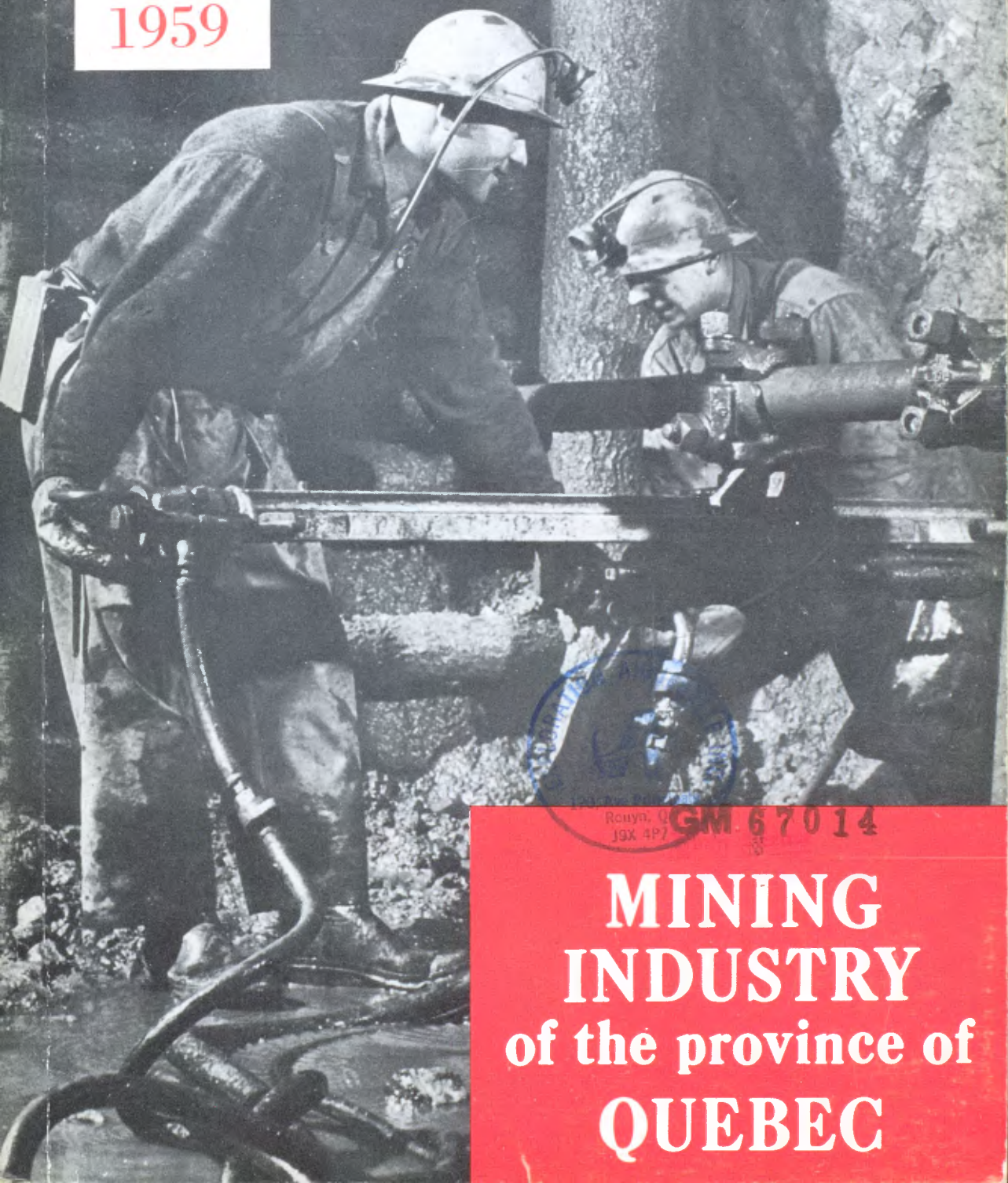
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GM 67014

**MINING
INDUSTRY**
of the province of
QUEBEC

PROVINCE OF QUEBEC, CANADA

DEPARTMENT OF MINES

Honourable PAUL W. EARL, Minister

P.-E. AUGER, Deputy Minister

THE MINING INDUSTRY

OF THE

PROVINCE OF QUEBEC

IN

1959



QUEBEC

—
1961

GM 67014

To the Honourable Paul W. Earl,
Minister of Mines,
Quebec, Que.

Sir:

I beg to submit herewith the report entitled "The Mining Industry of the Province of Quebec in 1959". This report contains a detailed account of mining operations and statistical data for the year 1959.

This report has been prepared by the technical staff of the Department.

The term "production", as used throughout this report, is synonymous with "quantity sold", "shipped" or "used", and does not necessarily represent "annual output".

Unless otherwise noted, the ton specified in the text and tables of this report is that of 2,000 pounds. Values are given in Canadian funds.

As it would be impractical to mention in this report all those who have contributed to the mineral production of the Province, a list of the "Principal Operators and Owners of Mines and Quarries in the Province of Quebec" is published separately and brought up to date when warranted by changes of names and addresses.

In addition to this annual report on the mining industry, the Department issues a "General Report of the Minister of Mines" which deals mostly with administrative matters and covers the fiscal year ending on March 31st.

In order to acquaint the public, as soon as possible, with the state of the mining industry, the Department publishes at the beginning of each year an interim report summarizing the progress made by the industry during the year just ended. It also publishes "Geological Reports" with maps, to make public the results of the field work done by geologists of the Department.

Finally, the publication of "Preliminary Reports" often precedes that of the "Geological Reports". Prepared at the end of the field season, these "Preliminary Reports" are issued to render available to the public, within the shortest time possible, the results obtained by geological parties in the field.

Respectfully submitted,

PAUL-E. AUGER,
Deputy Minister.

Department of Mines,
Quebec
November 1960

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THE MINING INDUSTRY

OF THE

PROVINCE OF QUEBEC

IN 1959

General Review

In 1959, the value of the mineral production of the Province of Quebec reached the sum of \$441,299,661, the highest of its recorded history. The figure reflects the phenomenal industrial expansion of the Province, of Canada and of the Western World in the last fifteen years. Between 1945 and 1959, the value of the metallic substances produced in Quebec has increased fivefold.

During this period, the mining industry of the Province has been growing constantly, even though the value of its production dipped down in 1953, 1957 and 1958. Although similar fluctuations may occur again, the scope of exploration, development and pre-production works undertaken or carried on during 1959 indicate that the value of this mineral production might exceed the half-billion dollar mark in the not too distant future.

Of the thirty substances or products listed in the table of the mineral production of the Province, nineteen recorded increases in 1959. Copper, iron ore, asbestos, titanium oxide, and building limestone are the substances that have gained the most in value.

Compared with the values obtained in 1958, this increase in the value of the mineral substances is 31 per cent for the metallics, 15 per cent for the industrial minerals, and 5 per cent for the building materials. As a whole, the sum of \$441,299,661 received by the Quebec producers for the year under review is 20 per cent greater than the cumulative total of \$366,001,902 registered in 1958.

Table 1. - Annual Value of the Mineral Production of
the Province of Quebec since 1898

Year	Value	Year	Value	Year	Value
1898	\$ 1,673,337	1919	\$ 20,813,670	1940	\$ 86,418,853
1899	2,083,272	1920	28,392,939	1941	99,700,027
1900	2,546,076	1921	15,522,988	1942	104,404,146
1901	2,987,731	1922	18,335,153	1943	101,840,299
1902	2,985,463	1923	21,326,314	1944	90,198,739
1903	2,772,762	1924	18,952,896	1945	91,570,982
1904	3,023,568	1925	23,824,912	1946	92,213,656
1905	3,750,300	1926	25,740,002	1947	116,042,000
1906	5,019,932	1927	29,124,110	1948	152,285,045
1907	5,391,368	1928	37,325,237	1949	165,168,603
1908	5,458,598	1929	46,454,820	1950	220,665,103
1909	5,552,062	1930	41,158,740	1951	255,931,822
1910	7,323,281	1931	36,051,366	1952	270,739,552
1911	8,679,786	1932	25,683,066	1953	252,354,181
1912	11,187,110	1933	28,164,540	1954	278,932,718 (a)
1913	13,119,811	1934	31,310,752	1955	357,562,029 (a)
1914	11,732,783	1935	39,141,734	1956	423,003,917 (a)
1915	11,465,873	1936	49,755,985	1957	406,488,734 (a)
1916	13,287,024	1937	65,203,976	1958	366,001,902 (a)
1917	16,189,179	1938	68,877,345	1959	441,299,661
1918	18,707,762	1939	77,312,141		

(a) This figure differs from the one published in previous reports. It includes the value of the iron ore believed to have been extracted in the Province of Quebec only.

Table 2. - Mineral Production of the Province of Quebec during 1959

Substance	1959		1958		
	Quantity	Value	Quantity	Value	
METALLICS					
Bismuth	pounds	151,576	\$ 264,228	240,177	\$ 436,420
Copper	pounds	269,823,777	79,894,820	262,890,590	66,826,788
Gold	ounces	997,094	(a)33,472,446	1,044,283	(a)35,484,736
Iron	-----	-----	7,187,434	-----	5,120,620
Iron ore (b)	tons	11,515,169	92,497,012	6,060,325	46,859,490
Lead	pounds	5,819,148	617,412	6,299,475	715,620
Magnesium	pounds	4,059,508	977,123	4,504,343	1,317,070
Molybdenum	pounds	748,566	940,596	888,264	1,152,838
Selenium	pounds	194,233	1,359,631	179,397	1,345,478
Silver	ounces	4,109,772	3,607,558	3,906,815	3,391,506
Tellurium	pounds	1,662	3,573	29,457	50,077
Titaniferous iron ore	tons	36,210	214,367	234,496	1,608,324
Zinc	pounds	94,115,963	11,519,794	113,845,036	12,386,340
Sub-totals	-----	-----	\$232,555,994	-----	\$176,695,307
NON-METALLICS					
I. - Industrial Minerals					
Asbestos	tons	992,196	\$ 95,226,769	873,604	\$ 82,028,700
Feldspar	tons	17,953	301,372	20,387	359,966
Industrial lime	tons	361,854	4,040,274	376,330	3,388,843
Industrial limestone and marble	tons	534,743	1,606,342	458,944	1,404,635
Lithium	pounds	2,756,280	1,422,153	3,853,322	2,047,880
Magnesitic dolomite and brucite	-----	-----	3,050,779	-----	2,529,161
Marl	tons	130,375	195,563	144,434	216,651
Mica	pounds	778,076	62,045	1,044,382	85,045
Mineral water	gallons	366,088	201,033	314,294	170,622
Ochre and iron oxide	tons	1,235	108,286	1,632	113,390
Peat (moss and humus)	tons	50,578	1,282,081	43,669	1,056,811
Quartz and industrial sand	tons	301,706	1,533,206	268,676	1,412,802
Soapstone and talc	tons	15,937	185,951	19,226	194,074
Sulphur	tons	328,252	1,927,109	387,373	2,780,223
Titanium dioxide and other titanium products	-----	-----	8,507,149	-----	6,583,921
Sub-totals	-----	-----	\$119,650,112	-----	\$104,372,724
II. - Building Materials					
Building lime	tons	38,246	\$ 486,615	43,005	\$ 574,264
Building limestone	tons	17,479,834	20,660,191	12,948,048	15,526,302
Building marble	tons	23,560	167,789	13,707	115,519
Cement	tons	1,975,452	29,520,710	1,903,635	28,686,095
Clay products {Brick	M	185,175	8,135,595	197,835	8,634,102
{Other products ..	-----	-----	2,238,567	-----	2,039,813
Granite	tons	1,419,317	5,056,980	2,159,236	6,628,518
Sand and gravel	tons	42,449,734	21,269,248	40,507,787	20,570,574
Sand-lime products {Brick	M	19,570	489,281	11,739	295,656
{Blocks	No.	160,213	30,664	180,219	33,512
Sandstone	tons	783,635	980,324	943,741	1,767,494
Slate and shale	tons	56,346	57,591	61,404	62,022
Sub-totals	-----	-----	\$ 89,093,555	-----	\$ 84,933,871
TOTALS ...	-----	-----	\$441,299,661	-----	\$366,001,902

(a) Value in Canadian funds. The standard value at the rate of \$20.671834 per ounce troy is \$20,611,762 for 1959 and \$21,587,245 for 1958.

(b) In view of the uncertainty concerning the boundary between Quebec and Newfoundland, it is possible that this does not represent the whole of the production from the Province of Quebec.

Table 3. - Mineral Production of the Province of Quebec, 1925-1959 (a)

Year	Metals		Industrial Minerals		Building Materials		Total
	Value	%	Value	%	Value	%	
1925	\$ 1,034,188	5	\$ 10,915,663	46	\$11,875,061	49	\$ 23,824,912
1926	1,897,528	8	10,837,745	42	13,004,929	50	25,740,202
1927	2,412,268	8	11,328,885	39	15,382,957	53	29,124,110
1928	8,127,152	22	12,058,974	32	17,139,161	46	37,325,287
1929	13,671,009	29	14,249,646	31	18,534,165	40	46,454,820
1930	13,926,682	35	9,322,151	22	17,909,907	43	41,158,740
1931	12,367,932	34	5,516,899	15	18,166,535	51	36,051,366
1932	13,914,089	54	3,671,634	14	8,097,343	32	25,683,066
1933	16,360,011	58	6,043,308	22	5,761,221	20	28,164,540
1934	19,258,094	61	6,579,453	21	5,473,205	18	31,310,752
1935	23,804,792	61	8,824,178	22	6,512,764	17	39,141,734
1936	30,643,787	62	12,388,178	25	6,724,020	13	49,755,985
1937	38,615,175	59	17,232,860	27	9,355,941	14	65,203,976
1938	43,199,795	63	14,931,649	22	10,745,901	15	68,877,345
1939	47,650,509	61	18,360,017	24	11,301,615	15	77,312,141
1940	54,235,364	63	19,229,099	22	12,954,390	15	86,418,853
1941	59,126,794	59	26,562,446	27	14,010,787	14	99,700,027
1942	61,083,964	59	28,625,041	27	14,695,141	14	104,404,146
1943	59,727,333	59	29,637,056	29	12,475,910	12	101,840,299
1944	51,520,713	57	26,763,353	30	11,914,673	13	90,198,739
1945	48,082,817	52	29,045,463	32	14,442,702	16	91,570,982
1946	40,602,170	44	31,573,378	34	20,038,108	22	92,213,656
1947	50,159,626	43	39,792,717	34	26,089,657	23	116,042,000
1948	66,103,854	44	50,749,672	33	35,431,519	23	152,285,045
1949	82,728,089	50	47,173,969	29	35,266,545	21	165,168,603
1950	108,897,715	49	73,128,980	33	38,638,408	18	220,665,103
1951	120,257,513	47	89,010,161	35	46,664,148	18	255,931,822
1952	120,283,133	44	97,233,834	36	53,222,585	20	270,739,552
1953	103,278,622	41	96,392,456	38	52,683,103	21	252,354,181
1954	128,582,455*	46	94,092,032	34	56,475,399	20	278,932,718*
1955	184,680,850*	52	105,890,962	29	66,990,217	19	357,562,029*
1956	237,763,816*	56	114,939,075	27	70,301,026	17	423,003,917*
1957	200,853,044*	49	120,606,214	30	85,029,476	21	406,488,734*
1958	176,695,307*	48	104,372,724	29	84,933,871	23	366,001,902*
1959	232,555,994	53	119,650,112	27	89,093,555	20	441,299,661

(a) Mineral production figures for the years 1910 to 1924 will be found in "The Mining Industry of the Province of Quebec in 1956"

This figure differs from the one published in previous reports. It includes the value of the iron ore believed to have been extracted in the Province of Quebec only.

PROSPECTING AND STAKING OF MINING CLAIMS

If the number of miner's certificates and of claims recorded, in 1959, was lower than the equivalent figures for 1958, the total of development licenses issued and renewed in 1959 surpasses that of the preceding year.

The Quebec Mining Act requires the holder of a mining claim or a development license to carry out exploratory work in order to maintain his mining rights. Table 5 shows the activity of the prospectors in this field of mining. Almost 90 per cent of the statutory work performed was done in the Abitibi-East, Abitibi-West and Saguenay electoral districts. In these areas, more than 225 mining properties were investigated through diamond drilling programmes aggregating more than 500,000 linear feet of drilling.

Table 4. - Mining Titles Issued, or Renewed,
from 1950 to 1959

Year	Miner's Certificates Issued	Claims Recorded	Development Licenses Issued	Development. Licenses Renewed	Mining Concessions Granted
1950	6,409	19,954	890	4,426	9
1951	7,435	21,094	1,494	4,413	7
1952	7,337	22,649	1,484	5,147	8
1953	8,866	22,352	1,232	5,367	11
1954	11,571	30,745	2,036	5,339	2
1955	17,781	49,000	2,872	5,890	11
1956	16,746	55,523	3,869	6,552	8
1957	14,770	49,084	2,939	6,868	6
1958	16,225	52,550	3,560	6,222	11
1959	11,361	42,777	3,539	6,349	9

Table 5. - Exploratory Work on Claims and Lands under License,
Reported for the Years 1950 to 1959

Year	Number of Working Days	Number of Feet of Drilling
1950	498,460	317,558
1951	956,451	705,570
1952	871,307	590,788
1953	672,900	394,194
1954	664,447	295,221
1955	1,107,712	417,144
1956	2,338,452	1,321,429
1957	2,298,128	1,511,580
1958	1,335,888	624,104
1959	1,599,072	741,907

METALLIC SUBSTANCES IN 1959

General Review

With the exception of 1956, when the average price, in Canada, of some of the metals produced in the Province of Quebec reached an all-time high, the year 1959 was the most remarkable for the operators of metalliferous mines. The value of the metals produced is \$232,555,994; this sum is slightly more than the combined value of the total mineral production of 1950 (\$220,665,103).

It must be pointed out that, during the year 1950, there was no iron in production in Quebec, and that this substance accounts for nearly 40 per cent of the total value of the metallic substances in 1959.

Copper holds second place from both the standpoint of production and development. A glance at Table No. 7 shows the progress made in the field of production. As a matter of fact, the 2,200-ton-per-day increase in milling capacity of the base-metal ore-dressing

plants, is, except for 50 tons per day, directed toward the treatment of copper ores.

Hampered by the fixed price of gold, gold mine operators face a never-ending struggle to remain in production.

If the price of zinc remains stable or increases a little, the Province of Quebec could become again an important zinc producer through the mining of the vast deposits of zinc ore discovered in the Lake Mattagami area.

Table 6.- Gold Ore-dressing Plants*

Plant	Township	Maximum Daily Capacity (Tons)
Barnat Mines Limited	Fournière	600
Belleterre Quebec Mines Limited (a) ..	Guillet	350
Bevcon Mines Limited	Louvicourt	800
Canadian Malartic Gold Mines Limited .	Fournière	1,300
East Malartic Mines Limited	Fournière	1,500
Lamaque Gold Mines Limited	Bourlamaque	2,000
Malartic Gold Fields Limited	Fournière	1,800
Sigma Mines Limited	Bourlamaque	1,100
Sullivan Consolidated Mines Limited ..	Dubuisson	500
Total capacity (January 1959)		9,950
Total capacity (December 1959)		9,600

* These plants also produce silver.

(a) Closed in March 1959.

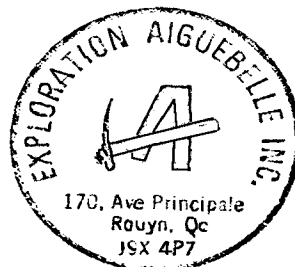


Table 7. - Base-metal Ore-dressing Plants

Plant	Township	Daily Capacity (Tons)	Metals Produced*										
			Cu	Fe	Pb	Zn	Mo	Bi	Li	Py	Au	Ag	
Anacon Lead Mines Limited	La Dauversière	500	x									x	x
Campbell Chibougamau Mines Limited (a)	Obalski	1,700 (2,000)	x									x	x
Copper Rand Chibougamau Mines Limited (a)	McKenzie	(1,500)	x									x	x
East Sullivan Mines Limited	Bourlamaque	2,500	x			x					x	x	x
Gaspé Copper Mines Ltd...	Holland	6,500	x						x			x	x
Hilton Mines	Bristol	3,000		x									
Manitou Barvue Mines Limited	Bourlamaque	1,300	x		x	x						x	x
Merrill Island Mining Corporation	Obalski	500	x									x	x
Molybdenite Corporation of Canada Ltd. (a)	Lacorne	600 (650)						x	x				
New Calumet Mines Ltd. ..	Grand-Calumet	750			x	x						x	x
Noranda Mines Limited ...	Rouyn	4,000	x								x	x	x
Normetal Mining Corporation Limited	Desmeulizes	1,000	x			x					x	x	x
Opemiska Copper Mines (Quebec) Ltd. (a)	Lévy	1,200 (2,000)	x									x	x
Quebec Lithium Corporation (b)	Lacorne	1,800								x			
Quemont Mining Corporation Limited	Rouyn	2,300	x			x					x	x	x
Waite-Amulet Mines Ltd...	Dufresnoy	2,000	x			x					x	x	x
Weedon Mining Corporation Limited (c)	Weedon	450	x			x					x	x	x
Total capacity (January 1959)		30,100											
Total capacity (December 1959)		32,300											

(a) Figures in brackets indicate capacity at December 31st, 1959.

(b) Closed temporarily in November 1959.

(c) Closed indefinitely in November 1959.

* Symbols used mean: Cu, copper; Fe, iron; Pb, lead; Zn, zinc; Mo, molybdenum; Bi, bismuth; Li, lithium; Pi, pyrite; Au, gold; Ag, silver.

Table 8. - Capital Expenditures of the Principal Mine Operators
in the Province of Quebec in 1959

(a) Total cost of all work performed by operators of non-producing mining properties.

(b) Capital expenditures of operators of producing mines.

Substances	Non-producing Mines (a)	Producing Mines (b)	Total Capital Expenditures
Asbestos	\$ 331,276	\$ 7,123,276	\$ 7,454,552
Columbium	301,429	- - - -	301,429
Copper	13,856,910	5,371,059	19,227,969
Feldspar and quartz ...	11,682	63,767	75,449
Iron	33,175,905	5,116,036	38,291,941
Titaniferous iron	68,194	463,498	531,692
Lithium	1,700	756,067	757,767
Magnesite and brucite .	- - - -	349,228	349,228
Molybdenite	194,897	125,927	320,824
Nickel	123,753	- - - -	123,753
Gold	1,469,348	2,207,422	3,676,770
Petroleum	397,094	- - - -	397,094
Peat	- - - -	67,677	67,677
Zinc and lead	59,581	240,287	299,868
Others	90,003	15,103	105,106
Total 1959 ...	\$ 50,081,772	\$ 21,899,347	\$ 71,981,119
Total 1958 ...	\$ 25,443,631	\$ 36,255,597	\$ 61,699,228
Total 1957 ...	\$ 65,152,480	\$ 37,779,380	\$102,931,860
Total 1956 ...	\$ 36,806,688	\$ 22,558,379	\$ 59,365,067
Total 1955 ...	\$ 23,102,904	\$ 38,147,556	\$ 61,250,460
Total 1954 ...	\$ 31,734,836	\$ 37,908,892	\$ 69,643,728
Total 1953	\$ 24,532,595	\$ 23,668,780	\$ 48,201,375
Total 1952 ...	\$ 20,982,184	\$ 27,665,732	\$ 48,647,916
Total 1951 ...	\$ 12,263,402	\$ 19,708,780	\$ 31,972,182

Table 9. - Dividends Paid by Companies Operating Metal Mines
in the Province of Quebec, from 1930 to 1959 Inclusive

Company	Authorized Capital (shares)	Date of first Dividend	Dividends in 1959		Total Dividends (to end of 1959)
			Total	Rate per share	
Anacon Lead Mines Limited	6,500,000	Jan.29th,1952	\$	\$...	\$ 1,050,000.00
Beattie Gold Mines Limited	5,000,000	June 1st,1936	.....	...	1,438,481.20
Beattie Gold Mines (Quebec) Ltd.	5,000,000	Aug.15th,1939	.....	...	2,996,541.44
Belleterre Quebec Mines Limited	1,500,000	Sep.15th,1945	(a)3,450,000.00	(a)2.30	6,375,000.00
Canadian Malartic Gold Mines Limited	4,000,000	Sep. 8th,1937	.....	...	3,120,683.55
East Malartic Mines Limited	4,000,000	June 1st,1940	.....	...	3,440,000.00
East Sullivan Mines Limited	4,500,000	May 25th,1950	.....	...	18,641,750.00
Elder Mines Limited	3,000,000	Jun.15th,1951	.....	...	219,524.40
Francoeur Mines Limited	6,000,000	Dec.20th,1940	.....	...	208,833.31
Golden Manitou Mines Limited ...	3,500,000	Oct. 1st,1948	.....	...	2,550,005.95
Hollinger North Shore Explo- ration Company Limited	3,000,000	Dec.28th,1959	2,426,375.00	1.00	2,426,375.00
Lake Dufault Mines Limited	5,000,000	Jan.20th,1942	.....	...	1,310,556.00
Lamaque Gold Mines Limited	3,000,000	Jan. 2nd,1939	600,000.00	0.20	18,315,000.00
McWatters Gold Mines Limited ...	5,000,000	Dec.18th,1935	.....	...	653,577.10
Malartic Gold Fields Limited ...	4,000,000	Aug. 1st,1941	.....	...	2,000,000.00
New Calumet Mines Limited	5,000,000	Jan.14th,1949	92,473.12	.02	3,259,888.97
New Senator-Rouyn Limited	5,000,000	Feb.20th,1943	.....	...	102,249.99
Noranda Mines Limited (b)	6,000,000	Jan. 2nd,1930	8,959,088.00	2.00	225,239,942.13
Normetal Mining Corporation Limited	4,000,000	Jun.24th,1946	1,127,103.60	0.30	20,024,873.96
O'Brien Gold Mines Limited	4,000,000	Feb. 1st,1939	.....	...	2,925,000.00
Perron Gold Mines Limited	5,000,000	Dec.21st,1938	.....	...	2,820,000.00
Powell Rouyn Gold Mines Limited	3,000,000	Oct.16th,1939	.....	...	425,000.00
Quemont Mining Corporation Limited	2,500,000	Dec.28th,1951	1,891,951.20	0.90	27,117,967.20
Sigma Mines Limited	3,000,000	Sep. 1st,1937	.....	...	30,000.00
Sigma Mines (Quebec) Limited ...	1,000,000	Jul.27th,1940	200,000.00	0.20	9,400,000.00
Siscoe Mines Limited (c)	5,000,000	Mar.31st,1932	.....	...	8,650,408.86
Stadacona Mines (1944) Limited .	5,000,000	Feb.16th,1948	.....	...	1,075,293.48
Sullivan Consolidated Mines Limited (b)	4,000,000	Jun.15th,1937	.....	...	9,600,000.00
Waite-Amulet Mines Limited	3,500,000	Jul.15th,1940	2,640,000.00	0.80	63,195,000.00
Total			\$ 21,386,990.92		\$ 438,611,952.54

(a) Distribution of assets.

(b) These companies received the following amounts in dividends and interests on investment:
Noranda Mines Limited, \$4,327,210 in 1959 and \$71,297,867 from 1946 to 1959 inclusive;
Sullivan Consolidated Mines Limited, \$11,992 in 1959 and \$6,918,321 from 1950 to 1959
inclusive.

(c) Siscoe Mine closed in 1949. From the end of 1951 dividends are no longer considered as
derived from direct mining operations.

Table 10. - Average Price of Some Metals
in Canada from 1954 to 1959

	1954	1955	1956	1957	1958	1959
Gold, dollars per ounce troy	34.07	34.52	34.45	33.55	33.98	33.57
Silver, cents per ounce troy	83.26	88.18	89.68	87.37	86.81	87.78
Copper, cents per pound	29.16	36.88	41.41	28.95	25.42	29.61
Lead, cents per pound	13.33	14.38	15.51	13.96	11.36	10.61
Zinc, cents per pound	11.98	13.65	14.84	12.09	10.88	12.24
Selenium, dollars per pound	5.00	7.50	13.50	11.00	7.50	7.00
Tellurium, dollars per pound	1.75	1.75	1.75	1.75	1.70	2.15

BISMUTH

There are two producers of bismuth in the Province of Quebec: Molybdenite Corporation of Canada Limited and Gaspé Copper Mines Limited. Both obtain bismuth as a by-product in the treatment of their main ore. The first extracts it by leaching its molybdenite concentrates; the second, by treating the dust contained in the smoke of its smelter.

Bismuth is marketed as ingots of fairly high purity. Calculated as pure metal, the combined production of these two companies, in 1958, amounted to 151,576 pounds valued at \$264,228, a decrease of 36.9 per cent in quantity and of 39.4 per cent in value, compared with the 1958 figures.

About 40 per cent of the bismuth used in industry enters into the manufacture of low-melting-point alloys, and of alloys where dimensional changes must be closely controlled. Another 30 per cent is utilized in the manufacture of indigestion remedies, cosmetics, and porcelain pigment. The remainder is used in bearing alloys, and in special alloys with iron, steel and aluminum, as well as for research purposes.

Table 11. - Production of Bismuth in the Province of Quebec
from 1952 to 1959

Year	Quantity (Pounds)	Value	Year	Quantity (Pounds)	Value
1952	20,127	\$ 27,171	1956	122,128	\$230,213
1953	46,068	49,136	1957	160,093	267,908
1954	33,324	65,143	1958	240,177	436,420
1955	105,129	210,636	1959	151,576	264,228

COPPER

The average price of copper, in 1959, was 29.61 per pound, 4.19 cents higher than in 1958. Deliveries of 269,823,777 pounds of copper by Quebec producers constitute an all-time record. The average price rise resulted in an increase of 19.5 per cent in the value of the 1959 production over that of 1958, although the quantity produced was only 2.6 per cent larger. The value received in 1959, \$79,894,820, was surpassed only in 1956, when the average price of copper was 41.41 cents per pounds.

During the year, five companies carried out underground development and exploration programmes; more than forty others conducted geophysical and diamond drilling surveys. Finally, two companies came into production: Copper Rand Chibougamau Mines Limited, at the end of December, and the Kokko Creek mine of Campbell Chibougamau Mines Limited.

A summary of the work done by each of the producers listed below appears in the chapter entitled: "Development and Mining Operations in the Province of Quebec in 1959".

<u>Company</u>	<u>Township</u>
<u>Anacon Lead Mines Limited</u>	Rohault
<u>Campbell Chibougamau Mines Limited</u>	Obalski
<u>Copper Rand Chibougamau Mines Limited</u>	McKenzie
<u>East Sullivan Consolidated Mines Limited</u>	Bourlamaque
<u>Gaspé Copper Mines Limited</u>	Holland
<u>Manitou Barvue Mines Limited</u>	Bourlamaque
<u>Merrill Island Mining Corporation Limited</u>	Obalski
<u>Noranda Mines Limited</u>	Rouyn
<u>Normetal Mining Corporation Limited</u>	Desmeloizes
<u>Opemiska Copper Mines (Quebec) Limited</u>	Lévy
<u>Quemont Mining Corporation Limited</u>	Rouyn
<u>Waite-Amulet Mines Limited</u>	Dufresnoy
<u>Weedon Mining Corporation Limited</u>	Weedon

Table 12. - Production of Copper in the Province of Quebec
from 1950 to 1959

Year	Quantity (Pounds)	Value	Year	Quantity (Pounds)	Value
1950	145,781,371	\$34,141,997	1955	202,041,072	\$ 74,502,645
1951	137,731,906	38,151,738	1956	244,599,468	101,288,640
1952	137,691,702	39,297,212	1957	224,818,449	65,084,491
1953	109,839,871	32,886,057	1958	262,890,590	66,826,788
1954	167,860,775	48,948,202	1959	269,823,777	79,894,820

GOLD

In 1959, the gold-quartz mines and the base-metal mines, where gold is a by-product, delivered a total of 997,094 ounces troy of gold valued at \$33,472,446. The year's production was 47,189 ounces troy below the level of 1958 and its value was \$2,012,290 less.

During the year in review, Belleterre Quebec Mines Limited closed its mine and mill and Anacon Lead Mines Limited interrupted its production schedule for more than five months while deepening its mine shaft. However, in the development fields, three old properties reopened: Norlartic Akasaba (formerly Obaska Lake Mines) and Marban (the old Marbenor). Extensive development work was done at the Norbeau mine, in the Chibougamau area; this property had been dormant since 1937. Finally, a spectacular gold discovery on the claims of Opemisca Explorers Limited sparked a staking rush in the Lake Opawica area.

Canada ranks third amongst the gold producing nations of the world, coming after the Union of South Africa and the U.S.S.R. The Province of Quebec accounted for nearly 23 per cent of the 4,357,007 ounces troy of gold produced in Canada in 1959.

Table 13. - Gold Production of Mines of the Province of Quebec
in 1959

Property	Year of first production	Ore Raised (Tons)	Ore Treated (Tons)	Gold (fine) Shipped (Ounces)	See Foot-note
<u>Gold Mines</u>					
Barnat Mines	1938	225,677	224,472	38,244	(b)
Belleterre	1936	14,071	14,289	4,982	(b)
Bevcon	1947	241,772	243,788	29,420	(b)
Canadian Malartic	1935	467,413	467,413	41,173	(b)
East Malartic	1938	544,137	544,137	111,130	(b)
Elder	1946	147,134	143,632	19,779	(c)
Eldrich	1956	122,705	120,517	16,032	(c)
Lamaque	1935	758,470	758,470	122,934	(b)
Malartic Gold Fields ..	1939	578,483	578,483	95,813	(b)
Norlartic	1959	41,578	66,735	7,588	(b)
Sigma	1937	410,112	410,112	71,194	(b)
Sullivan Consolidated .	1934	208,667	178,942	41,048	(b)
Other mines				237	
Sub-total ..		3,760,219	3,750,990	599,574	
<u>Base Metal Mines (1)</u>					
Amulet Dufault	1941	158,770	158,770	3,623	(c)
Anacon Lead	1956	100,801	98,108	16,883	(a)(b)(c)
Campbell Chibougamau ..	1955	695,287	695,287	33,421	(c)
East Sullivan	1949	957,137	957,137	4,112	(c)
Gaspé Copper	1955	2,467,386	2,438,089	4,344	(c)
Manitou Barvue	1942	468,225	468,225	10,741	(b)(c)
Merrill Island	1958	139,982	150,044	1,109	(c)
New Calumet	1943	102,894	103,075	1,106	(c)
Noranda	1927	1,547,890	1,544,173	180,526	(c)
Normetal	1937	376,360	376,360	6,628	(c)
Opemiska	1954	449,794	443,444	12,687	(c)
Quemont	1949	849,857	850,099	118,609	(b)(c)
Waite-Amulet (Waite ...	1930	120,460	120,083	2,822	(c)
(Amulet ..	1928	32,552	32,552	434	(c)
West MacDonald	1955	13,760	13,760	111	(c)
Other mines		220,627	133,687	364	
Sub-total ..		8,701,782	8,582,893	397,520	
GRAND TOTAL ..		12,462,001	12,333,883	997,094	

(a) Amalgamation; (b) Cyanidation; (c) Smelter.

(1) Ores of these mines are complex and base metals and silver also are produced.

Table 14. - Production of Gold in the Province of Quebec, 1950 to 1959

Year	Gold-bearing Quartz Mines			Complex-ore Mines*		Total Gold Shipped	
	Ore Treated (Tons)	Gold Shipped		Gold Shipped		Quantity (Ounces)	Value
		Quantity (Ounces)	Value	Quantity (Ounces)	Value		
1950	4,626,884	745,368	\$ 28,361,252	352,714	\$ 13,420,768	1,098,082	\$ 41,782,020
1951	4,471,095	724,008	26,679,695	343,627	12,662,655	1,067,635	39,342,350
1952	4,724,662	770,397	26,401,505	342,638	11,742,204	1,113,035	38,143,709
1953	4,806,723	766,454	26,381,347	257,820	8,874,164	1,024,274	35,255,511
1954	4,926,359	790,520	26,933,016	307,315	10,470,222	1,097,835	37,403,238
1955	4,803,810	770,604	26,601,250	385,814	13,318,299	1,156,418	39,919,549
1956	3,931,831	628,699	21,658,681	408,361	14,068,036	1,037,060	35,726,717
1957	3,703,231	613,080	20,568,834	397,192	13,325,792	1,010,272	33,894,626
1958	3,872,805	625,258	21,246,267	419,025	14,238,469	1,044,283	35,484,736
1959	3,750,990	599,574	20,127,170	397,520	13,345,276	997,094	33,472,446

* Complex-ore mines also producing base metals.

IRON AND IRON ORE

Quebec Iron and Titanium Corporation is the sole producer of iron in Quebec. The company obtains the metal as a by-product in the treatment of ilmenite at its Sorel smelter.

This plant, closed in October 1958, was reopened in March 1959 and operated at full capacity for the remainder of the year. Improvements in ore-dressing techniques, in smelter operations and in metallurgical formulae have made it possible for the company to offer to the Canadian and the United States market a variety of cast irons that have been well received by the trade. This explains the increase in the sales of metal, which passed from \$5,120,620 in 1958 to \$7,187,434 in 1959; during both years, production was limited to nine months.

Iron Ore

Iron ore shipments made by the two Quebec producers totalled 11,515,169 tons worth \$92,497,012 during the year reviewed.

Hilton Mines, in Bristol township, operated its mine and concentrator at full capacity in 1959. Using a low-grade iron ore, the company delivered to its clients a concentrate, in pellet form, grading 67 per cent iron.

The other producer, Iron Ore Company of Canada, also operated at full capacity; this company's mines are located around Schefferville in the territory of New Quebec. Unlike Hilton Mines, Iron Ore Company of Canada extracts and markets a direct shipping ore.

In addition to its production record, the iron ore industry was in the limelight for the scope of the development and pre-production work it carried out during the year.

Quebec Cartier Mining Company comes first in respect to development and pre-production work. With January 1961 as its target date to start producing iron ore concentrates at the rate of 8,000,000 tons per year, this company has been making great efforts towards the completion of the seven phases of its gigantic project. Each of these phases is a major undertaking in itself. They are:

1. Construction of the largest concentrator in the world with a capacity of 8,000,000 tons of iron ore concentrates per year;

2. The development of three open-pit mines, in the Lake Jeannine deposit, which will be called upon to supply 20,000,000 tons of ore per year to the concentrator;

3. The building of a 193-mile railroad linking Port-Cartier and Gagnon;

4. The construction of a 60,000 horse-power hydroelectric plant on the Hart-Jaune river;

5. The carving out, in the rock, of a sea port that will be equipped with the most modern loading facilities;

6. Grouped here are two urban projects: the construction and establishment of two modern communities, Port-Cartier on the Saint Lawrence and Gagnon some 200 miles to the north. Located near Barbel lake, the latter is eight miles from the concentrator.

Albanel Minerals Limited reports having outlined 333 million tons of iron ore grading 30 per cent iron. These reserves would be located in townships 1530, 1531 and 1631, in the Albanel and Mistassini Lakes area.

During the year, Quebec South Shore Steel Corporation acquired the assets of Hull Mines Limited. The latter had developed a magnetite deposit in Hull township. The first company reports having signed a contract with Koppers Company of Pittsburgh covering the preparation of plans and estimates, and the construction of a steel plant near Varennes, in the Greater Montreal district. Using the Strategic-Udy process, the company plans to transform iron ore directly into cast iron and crude steel.

Table 15. - Production of Iron Ore in the Province of Quebec
from 1954 to 1959*

Year	Quantity (Tons)	Value
1954	650,415	\$ 3,818,309
1955	4,103,173	27,164,396
1956	7,956,549	58,373,270
1957	8,872,948	65,805,057
1958	6,060,325	46,859,490
1959	11,515,169	92,497,012

* In view of the uncertainty concerning the boundary between Quebec and Newfoundland, it is possible that these figures do not represent all the production of the Province of Quebec.

LEAD

In 1959, lead production in Quebec amounted to 5,819,148 pounds, in concentrates, valued at \$617,412. These figures are, respectively, 7.6 and 13.7 per cent below those of 1958.

Storage batteries continue to absorb the largest amount of lead on the North American continent. Next in importance come lead tetraethyl, lead oxides used in paints, welding, and the manufacture of electric cables.

Research aimed at increasing the usage of lead is continuing. Worth mentioning is the use of lead to impart an artificial nacreous finish to plastic floor coverings, wall papers and car enamels. The use of lead and of its compounds in acoustical tiles and in air-conditioning units is gaining in popularity. These new uses could indicate a better future for lead and its producers.

As lead is mostly a by-product of the extraction of zinc in the mines of the Province, producers of lead concentrates are listed under the heading of "Zinc".

Table 16. - Production of Lead in the Province of Quebec
from 1950 to 1959

Year	Quantity (Pounds)	Value	Year	Quantity (Pounds)	Value
1950	15,352,770	\$ 2,218,475	1955	11,216,005	\$ 1,612,862
1951	15,512,623	2,854,323	1956	5,745,615	891,145
1952	21,039,859	3,406,353	1957	5,417,795	756,324
1953	18,473,850	2,387,930	1958	6,299,475	715,620
1954	15,635,942	2,084,271	1959	5,819,148	617,412

MAGNESIUM

In 1959, 4,059,508 pounds of magnesium, worth \$977,123, was produced in the Province of Quebec. These sums are, respectively, 9.8 and 25.8 per cent smaller than the production figures for 1958.

All this production comes from the Arvida refinery of Aluminum Company of Canada, where the brucite concentrates produced at the company's Wakefield plant are transformed into magnesium.

Owing to their extreme lightness, magnesium and its alloys are in great demand where weight is a factor. The aircraft industry has always been an important user of the metal. The accelerated space research programme undertaken by the United States is a factor influencing the demand for magnesium.

But it is its civilian uses that will ensure a better future for magnesium. It is used in increasing amount as a structural material in luggage, portable tools, material handling equipment, cameras, ladders and office machinery.

MOLYBDENUM

In 1959, Molybdenite Corporation of Canada Limited, the sole producer of molybdenum in Canada, marketed 748,566 pounds of metal valued at \$940,596. These figures represent the quantity and value of the pure metal contained in the molybdenite concentrates, the molybdic oxide and the lubricant-grade molybdenite produced by the company at its mine and mill in Lacorne township, Abitibi-East electoral district.

Production figures for 1959 are 15.7 per cent lower in quantity and 18.4 per cent lower in value than those of 1958.

Most of the molybdenum produced in the world is used in the manufacture of high-speed steels, wear-resistant steels and ferromolybdenum. The remainder is employed in specialized fields, such as in high-temperature alloys and in products made with pure molybdenum. Finally, high purity molybdenite is used as an additive in certain types of lubricants.

SELENIUM AND TELLURIUM

Selenium and tellurium are found in minute quantities in the complex copper-gold ores of the mines of Western Quebec. They are recovered as by-products in the electrolytic refining of copper anodes at the Montreal-East refinery of Canadian Copper Refiners Limited.

In 1959, the quantity of selenium sold was 194,233 pounds, which exceeded by 14,836 pounds that of 1958.

However, the unit price of selenium declined from \$7.50 to \$7.00 per pound. Thus, despite the eight per cent increase in the amount of metal sold, the value received was only 1 per cent above that of the preceding year: i.e., \$1,359,631, compared with \$1,345,478.

Sales of tellurium, in 1959, amounted to 1,662 pounds worth \$3,573, compared with 29,457 pounds valued at \$50,077, in 1958.

The main usage of selenium is as a semi-conductor in dry plate current rectifiers. In 1959, there was an increase in the use of selenium, in the steel, the rubber and the colouring-pigments industries.

Table 17. - Production of Selenium in the Province of Quebec
from 1950 to 1959

Year	Quantity (Pounds)	Value	Year	Quantity (Pounds)	Value
1950	46,245	\$ 111,913	1955	236,767	\$ 1,775,753
1951	165,575	536,463	1956	117,555	1,586,993
1952	78,830	256,198	1957	168,290	1,851,190
1953	113,533	476,839	1958	179,397	1,345,478
1954	135,051	675,255	1959	194,233	1,359,631

SILVER

In 1959, production of silver in the Province of Quebec rose to 4,109,772 ounces troy valued at \$3,607,558, thus exceeding that of 1958 by 5.2 per cent in quantity and 6.3 per cent in value.

There are no silver mines in the Province. The metal is a by-product of both the gold-quartz and the base-metal mines. It is recovered during gold-refining operations.

Most of the silver produced is minted. The manufacture of luxury articles, jewellery and silverware absorbs the largest proportion of the remainder. As silver salts, this metal is indispensable in photography. Finally, silver is used in low-resistance conductors in the electrical industry, in the manufacture of industrial and scientific apparatus, in dental work and in special types of welding.

Table 18. - Production of Silver in the Province of Quebec
from 1950 to 1959

Year	Quantity (Troy ounces)	Value	Year	Quantity (Troy ounces)	Value
1950	4,343,731	\$ 3,510,603	1955	4,786,889	\$ 4,221,079
1951	4,154,498	3,928,078	1956	4,063,504	3,644,150
1952	4,536,190	3,788,626	1957	3,646,168	3,185,657
1953	4,571,756	3,840,732	1958	3,906,815	3,391,506
1954	4,908,203	4,086,423	1959	4,109,772	3,607,558

TITANIFEROUS IRON

The titaniferous iron, or ilmenite, mined in the Province of Quebec is put to three types of uses: as a source of titanium oxide, as a source of metallic iron, and as heavy aggregates in certain types of concrete.

The first two substances obtained from titaniferous iron are reviewed under the heading "Iron" and "Mineral Pigments (Titanium Oxide)".

Two companies have shipped or used ilmenite as a construction material: Quebec Iron and Titanium Corporation, with mine at Lake Tio, north of Havre Saint-Pierre on the north shore of the St. Lawrence, and Continental Iron and Titanium Mining Limited, with mine and plant at Saint-Urbain, near Baie Saint-Paul.

Production of titaniferous iron, in 1959, was seven times less than that of 1958: 36,210 tons, compared with 234,496 tons.

Table 19. - Production of Titaniferous Iron in the Province of Quebec from 1950 to 1959

Year	Quantity (Tons)	Value	Year	Quantity (Tons)	Value
1950	1,253	\$ 7,706	1955	1,464	\$ 10,634
1951	1,674	9,790	1956	2,310	16,561
1952	51	459	1957	26,570	264,904
1953	9,294	80,085	1958	234,496	1,608,324
1954	1,541	9,462	1959	36,210	214,367

ZINC

In 1959, eight companies mined complex ores containing zinc sulphide. One of them, West MacDonald Mines Limited, suspended operations at the end of January 1959.

The mining operations of the following producers are summarized in the chapter entitled: "Development and Mining Operations in the Province of Quebec in 1959".

<u>Company</u>	<u>Township</u>
<u>East Sullivan Mines Limited</u>	Bourlamaque
<u>Manitou-Barvue Mines Limited</u>	Bourlamaque
<u>New Calumet Mines Limited</u>	Grand-Calumet
<u>Normetal Mining Corporation Limited</u>	Desmeloizes
<u>Queмонт Mining Corporation Limited</u>	Rouyn
<u>Waite-Amulet Mines Limited</u>	Dufresnoy
<u>Weedon Mining Corporation Limited</u>	Weedon
<u>West MacDonald Mines Limited</u>	Dufresnoy

These companies, which also turn out lead concentrates, delivered, in 1959, 94,115,963 pounds of zinc worth \$11,519,794. In 1958, their deliveries amounted to 113,845,036 pounds valued at \$12,386,340.

Galvanizing, die-casting and zinc alloys, such as brass and bronze, absorb 90 per cent of the zinc produced. The rubber and paint industries use most of the remainder as zinc oxide.

Table 20. - Production of Zinc in the Province of Quebec
from 1950 to 1959

Year	Quantity (Pounds)	Value	Year	Quantity (Pounds)	Value
1950	171,638,318	\$ 26,861,397	1955	202,862,034	\$ 27,690,668
1951	172,725,823	34,372,439	1956	171,945,511	25,516,714
1952	189,797,061	33,138,567	1957	148,589,484	17,964,469
1953	200,859,247	24,022,766	1958	113,845,036	12,386,340
1954	214,002,774	25,637,532	1959	94,115,963	11,519,794

NON-METALLIC MINERALS

1 - Industrial Minerals

General Review

In 1958, only three of the substances classed as industrial minerals recorded gains, compared with the preceding year. In contrast, in 1959, eight substances brought increased revenues to their producers.

In addition to being a world leader in asbestos production, the Province of Quebec ranks first in Canada for the quantity and the value of the industrial minerals it produces.

ASBESTOS

Table 22, showing estimates of world production of asbestos, by country, was extracted from Mineral Trade Notes, Volume 51, No. 2, August 1960, a review published by the Bureau of Mines of the United States Department of Interior.

The increase in asbestos fibre production in the Province of Quebec was paralleled by a similar increase in most of the other producing countries. Our mine operators succeeded in maintaining their position in the world markets, supplying 43.7 per cent of all the fibres produced.

Inasmuch as most countries report their output and not only their sales, and that the production of the U.S.S.R. is only an estimate, the above mentioned percentage of the tonnage of fibres supplied by Quebec is also only an estimate.

The most noteworthy happening of the year 1959 in the asbestos industry of the Province was the decision of Canadian Johns-Manville Company Limited to return to open-pit mining as the main method of operating its Jeffrey mine. Economic and technical reasons are behind the company's decision.

In Chapter entitled "Development and Mining Operations in the Province of Quebec in 1959" will be found a summary of the operations of the following companies:

<u>Asbestos Corporation Limited</u>	Thetford Mines
<u>Bell Asbestos Mines Limited</u>	Thetford Mines
<u>Canadian Johns-Manville Company Limited</u>	Asbestos
<u>Carey Canadian Mines Limited</u>	East Broughton
<u>Flintkote Mines Limited</u>	Thetford Mines
<u>Johnson's Asbestos Company</u>	Black Lake
<u>Johnson's Company Limited</u>	Thetford Mines
<u>Lake Asbestos of Quebec Limited</u>	Black Lake
<u>National Asbestos Mines Limited</u>	Thetford Mines
<u>Nicolet Asbestos Mines Limited</u>	Norbestos

Table 21. - Comparative Statement of Asbestos Production in the Province of Quebec, in Canada and in the World

Year	Production (Tons)			Percentage of	
	Quebec	Canada	World	Canada	World
1955	1,022,065	1,063,802	1,950,000	96.1	52.4
1956	967,145	1,014,249	1,980,000	95.3	48.8
1957	993,424	1,046,086	2,070,000	94.9	48.1
1958	873,604	925,331	2,020,000	94.4	43.5
1959	992,196	1,050,429	2,270,000	94.4	43.7

Table 22. - World Production of Asbestos, by Country, from 1955 to 1959

(In short tons) (a) (b)

(Compiled by Helen L. Hunt and Berenice B. Mitchell)

Country (a)	1955	1956	1957	1958	1959
North America:					
Canada (sales) (c)	1,063,802	1,014,249	1,046,086	925,331	1,050,429
United States (sales or used by producers)	44,568	41,312	43,653	43,979	45,325
Total	1,108,370	1,055,561	1,089,739	969,310	1,095,754
South America:					
Argentina	1,380	238	319	285	(d) 275
Bolivia (exports)	-	62	121	-	168
Brazil	3,124	3,739	2,654	3,816	(d) 3,300
Chile	-	-	-	-	-
Venezuela	1,757	5,041	8,390	9,152	5,095
Total	6,261	9,080	11,484	13,253	(d) 8,800
Europe:					
Bulgaria (c)	1,323	1,100	1,100	(d) 1,100	(d) 1,100
Finland	18,674	8,282	10,031	7,977	9,420
France	14,459	9,370	15,731	20,503	28,455
Greece	3	6	9	-	-
Italy	35,385	39,446	37,797	39,627	49,594
Portugal	56	35	64	98	(d) 110
Spain	-	-	-	-	-
U.S.S.R. (d)	450,000	500,000	500,000	550,000	600,000
Yugoslavia	4,305	4,165	5,025	5,960	4,748
Total	525,000	560,000	570,000	625,000	690,000
Asia:					
China (d)	23,000	26,000	33,000	66,000	88,000
Cyprus	15,306	15,375	15,028	16,494	(f) 15,943
India	1,564	1,378	1,910	1,190	1,464
Iran (g)	110	(d) 165	(d) 165	(d) 165	(d) 165
Japan	6,932	9,914	13,192	11,179	13,669
Korea (Republic of)	66	54	96	22	88
Taiwan (Formosa)	403	118	268	47	150
Turkey	259	634	99	839	(d) 40
Total	48,000	54,000	64,000	96,000	120,000
Africa:					
Bechuanaland	1,426	1,356	1,582	1,734	1,410
Eritrea	-	-	55	28	(d) 30
Egypt	-	-	22	485	(d) 400
Kenia	152	170	109	120	45
Morocco, South Zone	631	379	132	-	-
Mozambique	301	202	152	284	74
Rhodesia and Nyassaland Federation of:					
Southern Rhodesia	105,261	118,973	132,124	127,115	119,699
Swaziland	32,613	29,875	30,727	25,261	24,807
Uganda	2	2	-	5,600	6,418
Union of South Africa	119,699	136,520	157,474	175,844	182,405
Total	260,085	287,477	322,377	336,271	335,288
Oceania:					
Australia	5,993	9,709	14,670	15,570	(d) 20,000
New Zealand	172	368	230	454	(d) 450
Total	6,165	10,077	14,900	16,024	20,450
Total world estimate (a) (b)	1,950,000	1,980,000	2,070,000	2,060,000	2,270,000

(a) In addition to the countries listed, Czechoslovakia, North Korea and Rumania are also asbestos producers; their production being negligible, no estimate is included in total.

(b) This table incorporates a number of revisions of data published in previous asbestos chapters. Data do not add up to totals shown, owing to rounding where estimated figures are included in the detail.

(c) Exclusive of sand, gravel and stone production.

(d) Estimate.

(e) Includes asbestos flour.

(f) Exports

(g) Year ended March 20th of year following that stated.

Table 23. - Production of Asbestos in the Province of Quebec in 1958 and 1959

Grade	1958 Shipments			1959 Shipments		
	Tons (2000 lb.)	Value without containers		Tons (2000 lb.)	Value without containers	
		Total	Per Ton		Total	Per Ton
<u>Crude Asbestos</u>						
Groups Nos. 1 and 2 (Crudes No. 1, No. 2 and others)	574	\$ 553,566	\$ 964.40	355	\$ 367,229	\$1,034,45
<u>Milled Asbestos</u>						
Group No. 3 (Spinning)	20,067	8,407,251	418.96	22,984	9,510,604	413.80
" " 4 (Shingle)	173,277	31,784,845	183.43	193,819	35,198,554	181.61
" " 5 (Paper)	97,520	12,302,867	126.16	129,060	16,508,410	127.91
" " 6 (Waste, stucco or plaster)	138,748	10,992,101	79.22	166,346	13,534,015	81.36
" " 7 (Refuse or shorts) ..	427,666	17,673,258	41.32	465,052	19,811,492	42.60
" " 8 (Sand)	15,752	314,812	19.99	14,580	296,465	20.33
Total	873,604	\$ 82,028,700	\$ 93.90	992,196	\$ 95,226,769	\$ 95.98
Group No. 9 (By-products: Gravel and stone) .	18,450	\$ 22,894	\$ 1.24	29,532	\$ 28,403	\$.96
Total	892,054	\$ 82,051,594		1,021,728	\$ 95,255,172	
Rock mined	21,574,610			22,565,234		
Rock milled	12,358,444			13,203,406		

Table 24. - Data on Quebec Asbestos Mining Industry for Years 1950 to 1959*

Year	Fibre Shipped	Total Value	Average Value (Per Ton)	Fibre Produced (Tons)	Asbestos Content Per Ton of Rock Mined (Pounds)	Average Value Content of Rock Mined (Per Ton)	Rock Mined (Tons)
1950	864,825	\$ 64,361,529	\$ 74.42	860,158	159.46	\$ 5.93	\$ 10,788,442
1951	946,610	77,627,863	82.01	965,081	160.49	6.58	12,026,989
1952	906,223	85,248,098	94.07	914,730	147.52	6.94	12,401,278
1953	884,595	81,000,775	91.57	893,265	135.78	6.22	13,157,297
1954	894,128	79,906,506	89.37	906,779	128.34	5.74	14,126,904
1955	1,022,065	88,607,804	89.88	1,022,343	121.59	5.46	16,815,642
1956	967,145	90,531,456	96.92	995,535	95.22	4.48	20,905,988
1957	993,424	93,616,875	93.28	989,089	93.58	4.42	21,138,451
1958	873,604	82,028,700	93.89	920,708	85.35	3.80	21,574,610
1959	992,196	95,226,769	95.98	1,015,336	89.99	4.22	22,565,234

* Figures for preceding years will be found in earlier reports entitled Mining Industry in the Province of Quebec.

Table 25. - Annual Shipments of Asbestos According to Grades, from 1950 to 1959*
(Tons of 2,000 lbs.)

Year	Crudes	Fibre	Shorts	Total Asbestos Shipped	Sand, Gravel and Waste Rock
1950	903	295,280	568,642	864,825	48,007
1951	711	306,733	639,166	946,610	33,762
1952	721	328,578	576,924	906,223	35,317
1953	776	299,716	584,103	884,595	21,118
1954	655	296,735	596,738	894,128	26,429
1955	572	353,510	667,983	1,022,065	28,582
1956	644	345,951	620,550	967,145	45,428
1957	604	351,373	641,447	993,424	13,652
1958	574	290,864	582,166	873,604	18,450
1959	355	345,863	645,978	992,196	29,532

* Figures for preceding years will be found in earlier reports entitled Mining Industry in the Province of Quebec.

Table 25A. - Milling Capacity of Asbestos Mines, in Tons per 24 Hours

Mines	Townships	Capacity
Asbestos Corporation Limited:		
King-Beaver Mine	Thetford	6,000
British Canadian Mine	Thetford	5,500
Normandie	Ireland	4,500
Bell Asbestos Mines Limited	Thetford	2,000
Canadian Johns-Manville Company Limited	Shipton	20,000
Carey Canadian Mines Limited	Broughton	2,000
Flintkote Mines Limited	Thetford	2,000
Johnson's Asbestos Company	Coleraine	4,000
Johnson's Company Limited	Thetford	2,400
Lake Asbestos of Quebec Limited	Ireland	4,500
National Asbestos Mines Limited	Thetford	3,000
Nicolet Asbestos Mines Limited	Tingwick	2,400
Total		58,300

FELDSPAR

In 1959, the quantity of feldspar produced in the Province of Quebec was 12 per cent lower than that attained in 1958: that is, 17,953 tons compared with 20,383. The value of the production decreased by 16 per cent, from \$359,966 in 1958 to \$301,372 in 1959.

The Buckingham region produces most of the feldspar used or sold within the Province and elsewhere. There are ten producers in that area; the largest one is International Minerals and Chemical Corporation (Canada) Limited. Another important producer is Spar-Mica Corporation, with mine and plant located at Baie Johan-Beetz, east of Havre Saint-Pierre, on the north shore of the St. Lawrence. Operations of these companies are reviewed in the chapter entitled: "Development and Mining Operations in the Province of Quebec in 1959".

LIME, LIMESTONE, MARBLE AND MARL

(Industrial)

The combined value of the lime, limestone, marble and marl sold in 1959, exceeded by 16.4 per cent that of 1958. The total was \$5,842,189 in 1959, compared with that of \$5,010,129 in 1958.

Industrial Lime

In 1959, producers of industrial lime in the Province have sold, either as quicklime or hydrated lime, a total of 361,854 tons of material valued at \$4,040,274. Although the quantity produced is 3.8 per cent lower than that of 1958, the value received in 1959 was 19.2 per cent greater than that obtained in 1958, which had amounted to \$3,388,843.

Industrial lime is manufactured by two classes of producers: those who make it directly and those who obtain it as a by-product in the treatment of other materials. There are six producers in the first group and three of them account for nearly 99 per cent of the total production. They are: A. Bousquet of Saint-Dominique-de-Bagot, Dominion Lime of Lime Ridge, and Gypsum Lime and Alabastine Canada Limited (formerly Standard Lime Company Limited), with lime-kilns located at Joliette and Saint-Marc-des-Carrières. Finally, a sugar beet refinery produces lime for its own use. The quarry and lime-kiln of this operator are located at Saint-Hilaire-Est.

Table 26. - Distribution of the Production of Lime
in 1958 and 1959
(In tons)

Classification	1959		1958	
	Quicklime	Hydrated Lime	Quicklime	Hydrated Lime
Industrial Lime				
Sugar refineries	-	4,558	-	4,904
Tanneries	117	860	118	2,686
Pulp and paper mills	92,767	10,188	89,590	7,260
Agriculture	121	7,879	-	4,518
Iron and steel furnaces ..	2,935	472	1,271	775
Non-ferrous smelters	2,308	110,626	8,352	113,718
Uranium plants	9,608	999	7,845	7,485
Cyanide and flotation mills	3,463	9,762	4,556	587
Glass works	4,103	-	3,878	-
Carbide and other industrial uses	96,316	4,772	103,435	15,352
Total	211,738	150,116	219,045	157,285
Building Lime				
Building trade	16,100	20,482	19,301	23,327
Dealers and unspecified uses	1,503	161	53	324
Total	17,603	20,643	19,354	23,651
Grand Total	229,341	170,759	238,399	180,936

In the second group, Aluminum Company of Canada obtains lime as a by-product in the treatment of brucite (an ore of magnesium) in its Wakefield plant. Shawinigan Chemicals Limited produces it in the manufacture of calcium carbide.

Industrial lime is used as a chemical agent in the fabrication of paper and glass, in cyanide and flotation mills, in tanneries, in the manufacture of chemicals, in water purifying plants and in the steel industry.

Table 27. - Quantity and Value of Limestone
and Marble Products Sold in 1958 and 1959

Classification	1959		1958	
	Quantity (Tons)	Value	Quantity (Tons)	Value
Building Limestone				
Building stone, rough .	5,406	58,327	5,006	\$ 52,790
Building stone, dressed	15,663	996,402	14,953	1,059,455
Asphalt filler	46,633	179,973	28,803	127,114
Flagstone	-	-	422	3,093
Rubble and rip-rap	405,549	354,566	650,986	515,219
Crushed stone	17,006,583	19,070,923	12,247,878	13,768,631
Total	17,479,834	\$20,660,191	12,948,048	\$15,526,302
Industrial Limestone				
Flux	4,139	5,539	4,980	11,278
Pulp and paper mills ..	148,243	466,705	121,944	375,329
Agricultural limestone	360,500	963,752	303,704	815,522
Poultry grit	729	2,392	160	1,125
Other industrial uses .	21,132	167,954	28,156	201,381
Total	534,743	\$ 1,606,342	458,944	\$ 1,404,635
Grand Total ...	18,014,577	\$22,266,533	13,406,992	\$16,930,937

Limestone and Industrial Marble

The quantity of limestone and industrial marble sold in 1959 rose to 534,743 tons with a value of \$1,606,342. These totals are, respectively, 16.5 and 14.3 per cent higher than those representing the 458,944 tons and their attendant value of \$1,404,635, which are the figures for 1958. Of the total of 534,743 tons, 16 operators sold 500,421 tons of limestone, and 4 operators sold 34,322 tons of marble.

The quarries of Saint-Marc-des-Carrières have supplied the largest portion of the limestone. The remainder came from quarries located in the Joliette, Lime Ridge, Gaspé and Saint-Hyacinthe areas. All the industrial marble was extracted from quarries situated in the electoral districts of Missisquoi and Shefford.

High-calcium limestone is used, in lumps, for the preparation of solution-making reactives in paper mills, and as flux in the metallurgical industry. Crushed limestone and marble are used in

agriculture for the improvement of soils, as an ingredient in glass and brick manufacturing and in asbestos roofing shingles. They are also used as whitening substitute and poultry grit.

Marl

For the first time since 1954, production of marl declined. Deliveries of 130,375 tons of marl, valued at \$195,563 in 1959, represent a decrease of 9.7 per cent in quantity and value, compared with the figures of 1958.

Marl is used solely as a soil conditioner and is extracted from deposits located on the south shore of the St. Lawrence and in the Gaspé Peninsula.

Table 28. - Production of Marl in the Province of Quebec
1954 to 1959

Year	Quantity (tons)	Value
1954	38,700	\$ 58,050
1955	49,550	74,325
1956	70,581	105,872
1957	127,143	190,714
1958	144,434	216,651
1959	130,375	195,563

LITHIUM OXIDE

In 1959, Quebec Lithium Corporation sold 2,756,280 pounds of lithium oxide valued at \$1,422,153. These figures are lower, by 28.4 per cent in quantity and 30.5 per cent in value, than those of 1958: 3,853,322 pounds worth \$2,047,880.

Production of lithium oxide concentrates was suspended in November 1959, following the refusal by Lithium Corporation of America to accept further deliveries of concentrates from the Quebec Lithium Corporation plant.

The latter had, at the end of the year, enough concentrates on hand to supply its refinery for some time to come. These will be

used as raw material in the refinery completed at the end of 1958. The company plans to produce lithium salts, beginning with lithium carbonate.

MAGNESIITIC DOLOMITE AND BRUCITE

In 1959, the combined value of the production of these substances reached a record high of \$3,050,779, which represents a gain of 20.6 per cent over the 1958 total.

Magnesitic Dolomite

This substance is mined at Kilmer, electoral district of Argenteuil, by Canadian Refractories Limited. In fact, it is the only operation of its kind in Canada.

After extraction, crushing, screening and concentration, the dolomite is calcined in a rotary kiln. The clinker, known as dead-burned magnesia is either sold as it is or shipped to the company's manufacturing plant at Marelan, Argenteuil electoral district. It constitutes the main ingredient in the basic refractory bricks, cement and plastics sold by the company throughout the world.

Brucite

Aluminum Company of Canada is the sole producer of brucite in Canada. The mineral occurs as nodes in a deposit of crystalline limestone that the company mines at Wakefield in Gatineau electoral district.

Once processed, the brucite is shipped either to Kilmar to be used in the manufacture of refractory products, or to Arvida where it becomes the raw material from which the company extracts metallic magnesium.

MICA

The production of mica in the Province, in 1959, amounted to 778,076 pounds worth \$62,045. Compared with the 1958 totals, which were 1,044,382 pounds and \$85,045, those of the year reviewed declined by 25 and 27 per cent respectively.

Mica was produced by Blackburn Brothers and seven other operators. In addition to mining and processing its own mica, Blackburn Brothers has purchased, for subsequent sale, the output of nearly all the other producers.

The electrical, rubber and print industries absorb most of the mica produced.

The excess of the Quebec production over the Canadian consumption was sold to the United States and Japan.

Table 29. - Distribution of the Production of Mica
in 1959 and 1958

Classification	1959 Quantity (Pounds)	1958 Quantity (Pounds)
Rough, mine-run	8,641	4,608
Mica for mechanical splitting	23,250	54,717
Ground mica	591,356	944,530
Scrap	139,131	18,544
Trimmed mica	15,698	21,983
Total	778,076	1,044,382

MINERAL PIGMENTS

Iron Oxide and Titanium Oxide

Iron Oxide and Ochre

The sole producer of iron oxide in the Province of Quebec during 1959 was Sherwin-Williams Company of Canada Limited. From its calcination and grinding plant at Red Mill, near Trois-Rivières, the company shipped 1,235 tons of iron oxide.

This substance is used as pigment in paints, linoleum, paper, rubber, cement mortar and bricks.

Titanium Oxide

At the end of March 1959, Quebec Iron and Titanium Corporation, the sole Canadian producer, reopened its Sorel smelter that had been closed since October 1958. During the remainder of the year, the demand for titanium oxide slag was such that the company placed in operation three additional furnaces, the construction of which had been completed in 1958, thus bringing to eight the number of operating furnaces. One of the main reasons for the success registered in 1959 was the sales of titaniferous slag on the markets of continental Europe and of Great Britain. It is worthy of note that those markets hitherto had been supplied by Norway, Africa and India. The company foresees an increase in its European sales in 1960.

PEAT

Peat is one of the industrial minerals that recorded a gain in production in 1959.

During the year, 15 peat bogs, operated by 13 companies or individuals, delivered 50,578 tons of peat worth \$1,282,081.

The exodus of an urban population towards the suburbs has resulted in more gardens, lawns and flowers and this is probably one of the main factors of the growth of the peat industry. Most of the peat sold is used as a soil conditioner.

Table 30. - Production of Peat in the Province of Quebec
from 1950 to 1959

Year	Quantity (Tons)	Value	Year	Quantity (Tons)	Value
1950	17,873	\$ 360,459	1955	32,383	\$ 638,696
1951	21,657	436,833	1956	40,269	951,644
1952	19,609	405,582	1957	48,704	1,140,476
1953	22,021	587,671	1958	43,669	1,056,811
1954	27,784	730,250	1959	50,578	1,282,081

PETROLEUM AND NATURAL GAS

During 1959, there was activity in the search for petroleum and natural gas in two districts of the Province: the Gaspé area and the St. Lawrence Lowlands area.

Gaspé Area1. - Associated Developments Limited

Associated Developments No. 1 Baillargeon Well is located in block 54, Baillargeon township, Gaspé-South electoral district. The cable tool drill had reached a depth of 449 feet at the year's end. A small oil show was met at 185 feet and a gas show was encountered from 420 to 430 feet. Fresh water came in at 28 feet; salt water, at 185 feet and 320 feet. The geological log is as follows:

- 0 - 60 feet - Overburden
- 60 - 449 feet - York River (mostly sandstone; some siltstone)

St. Lawrence Lowlands Area1. - Caprive Oil and Gas Company Limited

Caprive No. 1 Trois-Rivières Well is located in lot 178, parish of Trois-Rivières, Sainte-Marguerite seigniory, Trois-Rivières electoral district. It was drilled by cable tool to a depth of 300 feet. Fresh water was met at 130 feet. A small show of gas was encountered at about 189 feet. The 10 3/4-inch casing, set at 250 feet, was left in the hole. The geological log is as follows:

- 0 - 300 feet - Overburden

Caprive No. 2 Trois-Rivières Well is located in the same lot as Caprive No. 1, 85 feet north of the latter. It has drilled by rotary to a depth of 1,440 feet. Water was encountered at an unknown depth. Gas shows were met at 350 and 1,198 feet. The drilling operations were suspended on July 12. The 7-inch casing, cemented at 344 feet, was left in the hole and a valve was installed at the wellhead. The geological log is as follows:

0 -	350 feet	-	Overburden
350 -	500 "	-	Lower Lorraine
500 -	820 "	-	Utica
820 -	950 "	-	Upper Trenton
950 -	1,000 "	-	Middle Trenton
1,000 -	1,200 "	-	Lower Trenton (Deschambault)
1,200 -	1,250 "	-	Black River
1,250 -	1,330 "	-	No record
1,330 -	1,360 "	-	Chazy limestone
1,360 -	1,440 "	-	Chazy sandstone

2. - Kirouac (Roger) et DeIacobis (Italo)

Kirouac-DeIacobis Atlas No. 1 St. Barnabé Well is located in lot 325, range I, St-Barnabé parish, St. Maurice electoral district. This test hole was drilled to a depth of 88 feet. At the end of the drilling operations, the hole was filled with clay, The log is as follows:

0 -	88 feet	-	Overburden (blue clay)
at 88 feet		-	Overburden (sand, gravel and boulders)

3. - Laduboro Oil Limited

Laduboro No. 3 La Baie-Yamaska Well is located in lot 350, range I, Baie-du-Febvre parish, Yamaska electoral district. It was drilled by rotary to a depth of 3,020 feet. A gas show was met from 2,650 to 2,708 feet. The acidizing and waterfrac operations conducted in that well were unsuccessful. The 10 3/4-inch and 5 1/2-inch casings were left in the hole and three cement plugs were set between 3,020 and 2,800 feet, between 2,708 and 2,600 feet and from 128 feet to surface, respectively. The geological log follows:

0 -	50 feet	-	Overburden
50 -	300 "	-	Upper Lorraine
300 -	1,130 "	-	Middle Lorraine
1,130 -	2,040 "	-	Lower Lorraine
2,040 -	2,500 "	-	Utica
2,500 -	2,720 "	-	Upper Trenton
2,720 -	2,810 "	-	Middle Trenton
2,800 -	3,000 "	-	Lower Trenton
3,000 -	3,020 -	-	Black River

Laduboro No. 4 La Baie-Yamaska Well is located in lot I-West, range of Corporation de la Commune, Baie-du-Febvre parish, Yamaska electoral district. It was drilled by rotary to a depth of 3,528 feet. A gas show was met at about 2,500 feet. The 10 3/4-inch casing, cemented at 305 feet, was left in the hole. The well was plugged with cement, gravel and wood. The geological log follows:

0	-	150 feet	-	Overburden
150	-	330	"	Upper Lorraine
330	-	1,200	"	Middle Lorraine
1,200	-	1,950	"	Lower Lorraine
1,950	-	2,400	"	Utica
2,400	-	2,575	"	Upper Trenton
2,575	-	2,700	"	Middle Trenton
2,700	-	2,900	"	Lower Trenton
2,900	-	2,920	"	Black River
2,920	-	3,528	"	Chazy

4. - Seaway Gas and Oil Limited

Seaway Almega No. 9 St. Maurice Well is located in lot 209, range Saint-Jean Coté Sud-Est, St. Maurice parish, Champlain electoral district. It was drilled by cable tool to a depth of 1,006 feet. Fresh water was encountered at 541 feet. The well was plugged with cement and gravel from bottom to top. The geological log follows:

0	-	280 feet	-	Overburden
280	-	535	"	Utica
535	-	710	"	Upper Trenton
710	-	820	"	Middle Trenton
820	-	910	"	Lower Trenton
910	-	990	"	Black River
990	-	1,006	"	Chazy

Imperial Lowlands Seaway No. 1 Champlain Well is located in lot 370, range I, La Visitation de Champlain parish, Champlain electoral district. It was drilled by cable tool to a depth of 3,024 feet. Fresh water was met at 255 and 295 feet; salt water, at 2,663 and from 2,677 to 2,682 feet. Gas shows were encountered at 305, 504, 1,257 and 2,667 feet. The well was plugged with cement. The geological log is as follows:

0	-	200 feet	-	Overburden
200	-	530	"	Middle Lorraine
530	-	1,470	"	Lower Lorraine

1,470 - 1,750 feet	-	Utica
1,750 - 1,900	"	Upper Trenton
1,900 - 2,040	"	Middle Trenton
2,040 - 2,170	"	Lower Trenton
2,170 - 2,190	"	Lowest Trenton
2,190 - 2,240	"	Black River
2,240 - 2,540	"	Chazy limestone
2,540 - 3,024	"	Chazy sandstone

Summary

In Gaspé, only one company was active in 1959. This company started drilling its Associated Developments No. 1 Baillargeon well on November 19, and the depth reached at the year's end was 449 feet.

In the St. Lawrence Lowlands, four companies drilled seven wells for a total footage of 12,406 feet.

In all, five companies drilled eight wells for a total footage of 12,855 feet.

PYRITE AND SULPHUR

The sulphur production of the Province of Quebec is calculated on the amount of that substance contained in the pyrite produced by some base-metal mines. These mines have delivered, in 1959, the equivalent of 328,252 tons of sulphur valued at \$1,927,109. The 1958 production of 387,373 tons worth \$2,780,223 was 15.2 per cent higher in quantity and 30.7 per cent higher in value than that of the year in review.

Pyrite, from which sulphur is extracted, is produced by East Sullivan, East Waite, Manitou Barvue, Noranda, Normetal, Quemont, Waite-Amulet, Weedon, and West MacDonald.

The sulphur contained in the pyrite is used to manufacture sulfuric and sulphurous acids. The latter is used in the manufacture of paper pulp.

Among the largest consumers of pyrite in the Province are Nichols Chemical Company in Valleyfield, St. Lawrence Paper Mills in Trois-Rivières, and Consolidated Paper Corporation in Grand Mère.

QUARTZ, SILICA AND INDUSTRIAL SAND

The quantity and the value of the combined production of quartz, silica and industrial sand were greater in 1959 than they were in 1958. A total of 301,706 tons of material brought \$1,533,206, whereas in 1958, sales amounted to 268,676 tons worth \$1,412,802.

Quartz and Quartzite

In addition to feldspar, some of the quarries in the Buckingham area also produced quartz. In 1959, the only producer of quartz in the area was International Minerals and Chemical Corporation (Canada) Limited. Most of its production was used as flux by Electric Reduction Company of Canada.

Dominion Silica Corporation extracted quartzite from a deposit located near Saint-Donat, on lots 22 and 23, range II, Lussier township, Montcalm electoral district. The quarry output is shipped to Lachine, where the company's treatment plant produces silica used in the glass industry, the manufacture of silicon carbides and other industrial applications.

Sandstone

Another source of silica is high silica sandstone. Six operators have extracted and sold 164,793 tons of sandstone, 56 per cent of the quartz and silica produced in 1959.

Canadian Silica Corporation shipped silica products from its Saint-Canut plant, Deux-Montagnes electoral district. The company operates a deposit located on lots 126, 127 and 129, Concession de la Rivière-du-Nord, Saint-Canut parish.

Electro Metallurgical Company operated its sandstone quarry in Melocheville, Beauharnois electoral district.

A. Sicotte et Fils, contractor for Electric Reduction Company of Canada, extracted sandstone from a quarry located on lots 439 and 440, range VI, parish of Saint-Chrysostôme, Beauharnois electoral district. This sandstone is utilized by Electric Reduction for the treatment of ore in its Varennes plant.

E. Montpetit et Fils extracted sandstone from its quarry located on lots 302 and 305, parish of Saint-Clément, Beauharnois electoral district.

Industrial Sand

Two operators have shipped industrial sand. Gypsum Lime and Alabastine Canada Limited (formerly Standard Lime Company Limited) extracted sand from its sand pit at Sainte-Emilie, Joliette electoral district, and Ed. Gohier et Frères, from its sand pit, on lot 37, parish of Saint-Hilaire, Rouville electoral district.

SOAPSTONE AND TALC

There are only two companies producing these substances: Baker Talc Limited, in Potton township, and Broughton Soapstone and Quarry Limited, in Leeds township.

The 1959 combined production of these companies was slightly below the level reached in 1958: that is, 15,937 tons valued at \$185,951, compared with 19,226 tons worth \$194,074. This represents a decrease of 12 per cent in quantity but of only 4 per cent in value.

II. - BUILDING MATERIALS

The total value of the building materials sold, in 1959, rose to \$89,093,555, a five per cent increase over the value obtained in 1958.

Despite marked gains in the value of construction contracts awarded for industrial and engineering construction, the total awarded in the Province decreased to a sum that is \$130,000,000 below the 1958 level. The amount of \$913,558,400 awarded in contracts in 1959 represents 28.3 per cent of the total for Canada, which total is \$3,219,073,300.

Table 31. - Building Contracts Let in the Province of Quebec
from 1953 to 1959*

Year	Value in Dollars					Per Cent of Nation
	Residential	Business	Industrial	Engineering	Total	
1953	191,547,000	157,998,500	60,332,900	129,940,200	539,818,600	26.7
1954	263,306,500	179,860,800	36,571,800	58,340,100	538,079,200	25.0
1955	376,789,800	208,332,400	70,703,700	123,018,000	778,843,900	24.4
1956	256,101,500	201,989,800	121,728,600	408,318,900	988,138,800	28.8
1957	218,948,500	200,330,600	85,367,200	199,078,500	703,724,800	23.6
1958	412,210,900	364,550,400	88,214,400	177,879,200	1,042,854,900	29.0
1959	273,870,500	305,281,900	113,324,300	219,081,700	913,558,400	28.3

* From statistics compiled by MacLean Building Guide.

Table 32. - Distribution of Value of Production of
Building Materials during 1959 and 1958

Substances	1959	1958
Sand-lime brick and clay products	\$ 10,894,107	\$ 11,003,083
Cement and lime	30,007,325	29,260,359
Rock products	26,922,875	24,099,855
Sand and gravel	21,269,248	20,570,574
Totals	\$ 89,093,555	\$ 84,933,871

CEMENT

There was a little more cement produced in the Province of Quebec in 1959 than in 1958: 1,975,452 tons worth \$29,520,710, compared with 1,903,635 tons valued at \$28,686,095. The 1959 figures exceed those of 1958 by 3.7 per cent in quantity and 2.5 per cent in value. Based on these figures, the average price of cement was \$14.94 per ton in 1959, whereas it had been \$15.07 per ton in 1958.

The cement plants of the Province of Quebec are those of Canada Cement Company at Montreal-East and Hull, that of Ciment Québec Inc. at Saint-Basile-de-Portneuf, and that of St. Lawrence Cement Company at Villeneuve, a suburb of Quebec. To these will be added the

plant of Miron et Frères at Ville Saint-Michel, near Montreal. This plant should be in operation in the spring of 1960.

The raw material needed to manufacture cement is derived from three sources: from the manufacturers' quarries, from quarries or mines in Quebec, and from plants outside of the Province. The following list gives the tonnage and origin of these materials:

Limestone	2,951,518 tons:	from Quebec
Gypsum	82,915 tons:	from the Maritimes
Silica	57,031 tons:	from Quebec and Ontario
Iron oxide	7,679 tons:	from Quebec base-metal mines
Other materials.	42,472 tons:	from foreign sources

Table 33. - Production of Cement in the Province of Quebec
from 1954 to 1959

Year	Quantity (Tons)	Value	Average Price Per Ton
1954	1,319,740	\$ 19,108,680	\$ 14.46
1955	1,662,085	24,132,519	14.51
1956	1,797,128	25,696,957	14.29
1957	2,051,201	30,267,092	14.75
1958	1,903,635	28,686,095	15.07
1959	1,975,452	29,520,710	14.94

CLAY AND SHALE PRODUCTS AND SAND-LIME BRICKS

In 1959, sales of bricks and ceramic products amounted to \$10,374,162. This sum is only 2.8 per cent less than the total for 1958: \$10,673,915.

There were eleven companies that produced clay products during the year under review. Four manufactured bricks only, four made bricks and pottery, two delivered pottery only, and one made light construction aggregates using clay as raw material.

In 1959, the average unit prices for bricks and building tiles were slightly above those of 1958, whereas the price of drainage tile dropped lower than that of the previous year.

	<u>1959</u>	<u>1958</u>
Bricks, per thousand	\$43.93	\$43.64
Building tiles and blocks, per ton	\$20.91	\$20.73
Drainage tiles, per thousand	\$82.89	\$87.94

Sand-lime Brick

In 1959, Gypsum Lime and Alabastine Canada Limited, the sole producer of this type of material, delivered, from its Montreal plant, 19,570 thousand bricks and 160,213 blocks having a combined value of \$519,945. This exceeds by 57.9 per cent the \$329,168 received in 1958.

Table 34. - Clay and Shale Products in 1958 and 1959

Classification	1959		1958	
	Quantity (Tons)	Value	Quantity (Tons)	Value
Brick:				
Common brick, soft mud process M	2,500	\$ 50,000	1,725	\$ 36,875
Face brick, stiff mud process M	64,377	3,136,169	81,741	4,080,983
Common brick, stiff mud process M	28,220	831,958	34,315	1,029,573
Face brick, dry press M	35,876	2,141,797	25,560	1,511,263
Common brick, dry press M	54,202	1,975,671	54,494	1,975,408
Total	185,175	\$ 8,135,595	197,835	\$ 8,634,102
Other Products:				
Structural tile and chimney blocks .. tons	81,922	\$ 1,712,999	72,124	\$ 1,495,131
Drain tile No.	2,371,467	196,584	2,898,174	254,887
Sewer pipe and flue lining		321,146		289,795
Other		7,838		
Total		\$ 2,238,567		\$ 2,039,813
Grand Total		\$10,374,162		\$10,673,915

Table 35. - Quantity and Value of Clay and Shale Products
from 1954 to 1959

Year	Brick		Other Products Value	Total Value
	Quantity (M)	Value		
1954	162,038	\$ 6,227,660	\$ 1,826,526	\$ 8,054,186
1955	165,810	6,465,911	1,983,656	8,448,567
1956	175,893	7,270,450	2,143,464	9,413,914
1957	163,378	6,885,096	2,012,508	8,897,604
1958	197,835	8,634,102	2,039,813	10,673,915
1959	185,175	8,135,595	2,238,567	10,374,162

CRUSHED STONE

There were 65 commercial and 12 non-commercial establishments that produced crushed stone in 1959. The combined production of these plants producing crushed limestone, crushed marble, crushed granite and crushed sandstone amounted to 18,777,084 tons worth \$21,575,277. The unit price of the crushed stone went from \$1.20 per ton in 1958 to \$1.15 per ton in 1959.

GRANITE

In 1959, 51 companies operated 56 granite quarries, of which six were non-commercial operations.

The 739,919 tons difference between the production of 1959 and that of 1958 was caused by a greatly reduced demand for rubble and crushed granite. Deliveries of building and monumental stone were 11 per cent below those of 1958.

For commercial purposes, the granites of Quebec are classed into five different groups:

- 1) Black granite, from Lake St-Jean;
- 2) Grey granite, from the Eastern Townships;
- 3) Pink granite, from Guenette;
- 4) Red granite, from Grenville and Lake St-Jean;
- 5) White granite with large black grains, from
Rivière-à-Pierre.

Table 36. - Production of Crushed Stone in the Province of Quebec
1958 and 1959

Classification	1959			1958		
	Quantity (Tons)	Value	Average Per Ton	Quantity (Tons)	Value	Average Per Ton
LIMESTONE						
Commercial quarries:						
Montreal and Jesus Islands	11,754,532	\$ 13,349,157	\$ 1.14	8,381,100	\$ 9,467,023	\$ 1.13
City of Quebec District	1,014,656	966,349	0.95	858,587	902,686	1.05
Other parts of the Province	4,209,471	4,719,606	1.12	2,992,831	3,375,889	1.13
Total	16,978,659	\$ 19,035,112	\$ 1.12	12,232,518	\$ 13,745,598	\$ 1.12
Non-commercial quarries (a)	27,924	35,811	1.28	15,360	23,033	1.50
Total	17,006,583	\$ 19,070,923	\$ 1.12	12,247,878	\$ 13,768,631	\$ 1.12
GRANITE						
Commercial quarries	301,729	\$ 450,368	\$ 1.49	224,764	\$ 306,449	\$ 1.36
Non-commercial quarries (a)	714,900	1,117,303	1.56	1,318,271	1,897,873	1.44
Total	1,016,629	\$ 1,567,671	\$ 1.54	1,543,035	\$ 2,204,322	\$ 1.43
SANDSTONE						
Commercial quarries	220,289	\$ 385,830	\$ 1.75	896,014	\$ 1,699,805	\$ 1.90
Non-commercial quarries (a)	533,583	550,853	1.03	1,685	5,730	3.40
Total	753,872	\$ 936,683	\$ 1.24	897,699	\$ 1,705,535	\$ 1.90
TOTAL	18,777,084	\$ 21,575,277	\$ 1.15	14,688,612	\$ 17,678,488	\$ 1.20

Mining Industry

(a) Municipal- and government-owned quarries, and contractors who, themselves, use the whole of their output.

Table 37. - Quantity and Value of Granite
in 1958 and 1959

Classification	1959		1958	
	Quantity (Tons)	Value	Quantity (Tons)	Value
Building stone, rough	10,679	\$ 247,008	8,604	\$ 172,203
Building stone, dressed ...	18,435	2,061,380	25,321	2,825,898
Monumental and ornamental stone, rough	6,699	169,114	5,459	160,917
Monumental and ornamental stone, dressed	5,390	641,315	7,187	861,166
Curbstone	505	17,366	60	2,542
Paving blocks	181	1,934	1	14
Rubble and rip-rap	360,799	351,192	569,569	401,456
Crushed stone	1,016,629	1,567,671	1,543,035	2,204,322
Total	1,419,317	\$5,056,980	2,159,236	\$6,628,518

LIME AND LIMESTONE

(Building)

The total tonnage of limestone quarried in the Province of Quebec, for building and industrial purposes, has increased again. In 1959, a total of 21,633,109 tons was extracted, 4,558,710 tons more than in 1958.

Stone quarried for building purposes only amounted to 20,614,624 tons. This production was supplied by 59 operators, three of which were in the non-commercial class.

Building Lime

Eight producers have shipped 38,246 tons of lime valued at \$486,615. These totals are, respectively, 11 and 15 per cent lower than their 1958 equivalents.

Cut Stone

Ten operators have quarried and shipped cut stone only, whereas 16 have also delivered crushed stone. Their crushing plants are usually supplied with the scrap from their stone dressing plant or the rejects from the quarries.

Crushed Stone

There were 49 producers of crushed stone and their production totalled 17,006,583 tons worth \$19,070,923. The quarries in the Greater Montreal area supplied 11,754,532 tons or 69 per cent of the total, those on the Quebec area, six per cent or 1,014,656 tons and the remaining 25 per cent or 4,209,471 tons came from quarries elsewhere in the Province.

Table 38. - Distribution of Limestone in 1958 and 1959

Classification	Quantity (Tons) 1959	Quantity (Tons) 1958
Building industry	17,479,834	12,948,048
Manufacture of cement	2,951,518	2,980,118
Manufacture of building lime (a) ..	59,712	66,970
Manufacture of industrial lime (a)	583,742	606,612
Limestone for industrial uses	534,743	458,944
Marble (building)	23,560	13,707
Total	21,633,109	17,074,399

(a) To obtain the tonnage of limestone used in the manufacture of quicklime and hydrated lime, it is necessary to divide the tonnage of quicklime and of hydrated lime by the factors 0.56 and 0.73, respectively.

Table 39. - Total Production of Limestone from 1954 to 1959

Year	Quantity (Tons)	Year	Quantity (Tons)
1954	10,204,971	1957	16,188,163
1955	12,193,585	1958	17,074,399
1956	13,910,428	1959	21,633,109

MARBLE
(Building)

In 1959, the production of the seven quarries reporting sales of marble reached 23,560 tons valued at \$167,789. These totals are, respectively, 72 and 45 per cent above the 1958 production figures.

Of the seven quarries in operation, five supplied crushed marble only; one, crushed and building marble and ornamental marble; and one had no output of crushed product. Most of the crushed marble is used in the manufacture of terrazzo.

Table 40. - Marble Products Sold in 1958 and 1959

Classification	1959 (Tons)	1958 (Tons)
Building and ornamental stone, rough	256	16
Building and ornamental stone, dressed ..	525	300
Crushed marble	22,779	13,319
Rubble	-	72
Total	23,560	13,707

SAND AND GRAVEL

The production of sand and gravel, in 1959, exceeded by 4.8 per cent in quantity and 3.4 per cent in value, the production of 1958. Sand and gravel pit operators have either sold or used 42,449,734 tons of these products and have received \$21,269,248.

Most of the sand and gravel is used by the Quebec Department of Roads in road building and maintenance; next important users are concrete manufacturers, municipalities and railroads.

Table 41. - Quantity of Sand and Gravel Sold
in 1958 and 1959

(In tons)

Classification	1959	1958
Washed and screened sand and gravel ..	2,693,090	2,065,808
Ballast	1,543,738	1,068,923
Sand and gravel for building, concrete and roads	26,844,047	27,072,795
Sand and gravel for mine back filling	573,275	418,840
Crushed gravel	(a) 10,751,793	(b) 9,848,426
Other sands	43,791	32,995
Total	42,449,734	40,507,787

(a) 590,666 tons was used as ballast.

(b) 272,291 tons was used as ballast.

SANDSTONE, SLATE AND SHALE

There were no shipments of cut sandstone by any of the 14 operators of sandstone quarries. Of the ten quarries reporting sales of crushed stone, three were non-commercial operations.

From 943,741 tons, valued at \$1,767,494, that were produced in 1958, the sandstone production of the Province declined to 783,635 tons worth \$980,324, a decrease of 45 and 17 per cent in the quantity and the value respectively.

Slate and Shale

These materials are mostly used as backfill material. There was, in 1959, a decrease of 8 per cent in quantity and of 7 per cent in value, compared with the totals of 1958. Totals registered were 56,346 tons worth \$57,591, compared with 61,404 tons valued at \$62,022.

Table 42. - Quantity and Value of Sandstone Sold
in 1958 and 1959

Classification	1959		1958	
	Quantity (Tons)	Value	Quantity (Tons)	Value
Building stone, rough	-	\$ -	451	\$ 1,446
Rubble and rip-rap	29,763	43,641	45,591	60,513
Crushed stone	753,872	936,683	897,699	1,705,535
Total	783,635	\$980,324	943,741	\$1,767,494

EXPLORATION IN THE
PROVINCE OF QUEBEC
IN 1959

The territorial expansion of the mining industry has led to the partition of the Province into six distinct mining districts. From north to south these are:

- 1 - The New Quebec district;
- 2 - The Chibougamau district;
- 3 - The Val d'Or district;
- 4 - The Rouyn-Noranda district;
- 5 - The Montreal - Quebec district, comprising that part of the Province south of the first four but north of the St. Lawrence River;
- 6 - The district south of the St. Lawrence.

New Quebec District

By Order in Council No. 789, dated July 27th, 1955, the territory of New Quebec was withdrawn from staking of mining claims. Consequently, while in the rest of the Province, the right to perform exploration work in a certain area is obtained through the staking of mining claims and the recognition of the validity of such staking by the Department of Mines, those who want to do similar work in the territory of New Quebec must obtain a special exploration license from the Department of Mines. The granting of such licenses is governed by the prescriptions of Section 228, Chapter 196, of the Quebec Mining Act. The companies receiving these licenses, which cover many square miles, must spend, in exploration work, a minimum sum of money as stipulated in the license grant.

In 1959, holders of special exploration licenses spent more than \$1,000,000 in exploration programmes. The work performed consisted of geophysical and geological surveys, rock stripping, trenching, sampling and more than 35,000 feet of diamond drilling.

Great Whale Iron Mines Limited has been engaged in exploring magnetite deposits, located in Great Whale River area, 45 miles east of the shore of Hudson bay. At least three deposits were partly studied. The company's engineers estimate that the "A" deposit could contain 600 million tons of ore, the "D", 150 million, and the "E", 60 million. Concentration tests conducted on ore sampled from the "D" and "E" deposits and averaging 37 per cent iron revealed that this ore is relatively easy to concentrate. By grinding at 80 per cent minus 150 mesh, a 65- to 68-per-cent iron ore concentrate could be produced.

About 30 miles south of Deception bay, on Hudson strait, Murray Mining Corporation Limited reported the discovery of several asbestos-bearing zones. One of them, the Ayone, was followed on surface over a length of 2,400 feet and a width of approximately 250 feet. It was tested with 18 diamond-drill holes averaging 250 feet in depth and spread over a length of 1,400 feet.

The other companies have done preliminary works or continued their studies of ore occurrences previously discovered.

Chibougamau District

An average of one deposit of minable proportions has been discovered in this district each year since the Quebec Department of Mines completed a road to the area in 1950. Five producing mines and four other mines, presently under development with plans for production within the next year or so, have resulted from the exploration carried out during the past nine years. The mine discovery during 1959 was made by Portage Island (Chibougamau) Mines Limited, which outlined, by drilling, an indicated ore zone along the northern extension of the Henderson offset (Campbell Chibougamau) structure in Roy township.

In general, mining exploration and development in the Chibougamau district during 1959 attained a fairly high level of activity. The amount of work carried out reached notable proportions during the greater part of the year, but a slackening in exploration was registered during the latter part of 1959. During the first part of the period under review, the Portage Island drilling and the staking rush and preliminary exploration in the Lac Frotet - Troilus Lake area drew much

attention. However, by the spring of the year, the multi-million-dollar mine development programmes were definitely the most important concern in the district.

A survey of the exploration diamond drilling performed for the year under review shows that 32 mining companies carried out 45 separate drill programmes, for a total footage of approximately 151,000 feet.

During 1959, more than 9,400 claims were recorded in this district, compared with 2,514 claims in 1958, 4,577 claims in 1957, and over 16,000 claims in 1956.

(1) The Northern Area - Evans Lake, Lac Frotet,
Mistassini and Albanel Lakes

The Deranco Syndicate carried out preliminary explorations, including 5,000 feet of drilling, in an area just south of Evans Lake, situated at the western end of this northern belt. Farther east, in township 1218, Roche Mines Limited discovered a mineralized showing and performed 1,500 feet of diamond drilling. A spodumene prospect was discovered in the south central part of township 1219 by the McLeod Syndicate.

The staking rush in the Lac Frotet - Troilus Lake area which began in November and December of 1958 continued during the first months of 1959. Between 3,000 and 4,000 claims were staked in this area. Geophysical surveys were carried out over some twenty-five properties and, in the summer of the year reviewed, an amount of prospecting was also carried out in the area. The following eight properties were diamond drilled: Canadian Northwest Mines and Oils Limited drilled some 6,000 feet and Bibis Yukon Mines Limited drilled 3,000 feet in the southwest corner of township 1224. In both cases, the results indicated a pyrite-pyrrhotite zone with some associated graphite in fine- to medium-grained sedimentary rocks. The Prudential Mining Company of Canada Limited, township 1223, drilled 1,500 feet in a graphitic pyrite and pyrrhotite zone. Also in township 1223, Broadback Mines Limited drilled 4,000 feet along a shear in serpentine which contained minor pyrrhotite. Jacobus Mining Corporation Limited tested a sphalerite-graphite showing in township 1223 with 2,000 feet of drilling. Dauphin Iron Mines Limited performed 4,700 feet of drilling in township 1323, American Mines and Minerals Limited drilled 1,000 feet in township 1223, and Fundy Bay Copper Mines Limited drilled 1,500 feet in township 1123.

A narrow gold-bearing quartz vein was found by the Gabbro Syndicate in the southeast corner of township 1322. This preliminary and geophysically-inspired exploration in the Frotet area yielded nothing of economic importance.

Albanel Minerals Limited (townships 1530, 1531, 1631) carried out an extensive work programme on its iron holding during the year 1959. The Sandspit iron zone was systematically drilled and an airstrip was constructed near the eastern boundary of township 1530. A 300-ton bulk sample was cut from the iron formations and 150 tons is to be flown out of the area, using the new airstrip, for use in additional testing. Indicated ore reserves total 333 million tons of 30 per cent iron. It is reported that production plans are being considered.

(2) The Central Chibougamau Area

A moderate amount of exploration was done in the central Chibougamau - Doré Lakes area. Chib-Kayrand Copper Mines Limited, Obalski township, carried out 6,000 feet of underground drilling over 3 holes from a location at depth in the Campbell Chibougamau mine. In Roy township, Grandroy Mines Limited drilled 1,000 feet following another geophysical survey. Taché Lake Mines Limited re-studied its Antoinette Lake property in McKenzie township and drilled 582 feet jointly with Chibougamau Mining and Smelting Company Incorporated. Also in McKenzie township, Copper Rand Chibougamau Mines Limited tested its North Siderite zone with 2 holes for a total of 800 feet of drilling. Chibougamau Mining and Smelting Company Incorporated drilled 1,096 feet in Roy township, southeast of the Henderson mine; in addition, it drilled 800 feet in Obalski township at the south end of Doré Lake and 2,067 feet in Scott township. It also tested a gold showing in Lemoine township with 207 feet of pack-sack drilling. Trepan Mining Corporation Limited drilled approximately 1,000 feet in magnetite gabbro in Lemoine township. Chib-Kayrand Copper Mines Limited drilled 2,011 feet at the southeast end of Chibougamau lake in Obalski township. Phelps Dodge Corporation of Canada Limited drilled 1,200 feet in Barlow township and another 1,200 feet in Scott township, following a number of geophysical surveys.

Norbeau Mines (Quebec) Limited, which has been idle since 1937, when Noranda Mines Limited formed the company to take over a gold property in the central part of McKenzie township that contained some 250,000 tons of ore assaying 0.35 ounce of gold per ton, has recently started another programme of exploration. Noranda Mines Limited sold its controlling interest in this mine to Little Long Lac Gold Mines Ltd.

and the latter company has undertaken additional drilling and the driving of an adit into the gold-bearing vein. To date, 2,700 feet of drilling has been completed and it is reported that tenders for a shaft have been called.

The Mining Corporation of Canada Limited prospected areas in Julien and Rageot townships; 864 feet was drilled in Julien and 2,200 feet, in Rageot.

In the Opemiska mine area, Lévy township, Chiboug Copper Corporation Limited drilled more than 3,500 feet and the drilling is continuing. Magnum Copper Limited drilled 2,800 feet in Opémisca township. The Mining Corporation of Canada Limited drilled 1,500 feet in Dolomieu township, 400 feet in Daubrée township, and 500 feet in Brongniart township.

In the southern Chibougamau sector, Anacon Lead Mines Limited carried out 1,500 feet of winter drilling from Norhart lake, adjacent to the mine shaft. Rohault Mines Limited, in Rohault township, is presently drilling its property adjacent to the Anacon mine. To date, a total of 6,500 feet has been drilled. Narrow intersections assaying up to 1 ounce in gold per ton are reported in both these drill programmes. The Mining Corporation of Canada Limited drilled 2,000 feet near Irene lake, Rasles township, and 1,000 feet in Gamache township.

Bibis Yukon Mines Limited tested a copper-zinc prospect in Kreighoff township with 2,225 feet of diamond drilling. The Mining Corporation of Canada Limited tested a geophysical anomaly in Branssat township with 450 feet of drilling. Ventures Limited continued to survey its holdings in Kreighoff, Gand, and La Roncière townships, but no drilling was performed during the year under review.

(3) The Bachelor - Opawica Area

The discovery of a spectacular gold showing by Opemisca Explorers Limited, in Lespérance township, sparked a minor staking rush around Opawica lake. Approximately 800 claims were staked in this area. This same company continued its surface exploration programme and is now reported to have started some diamond drilling. Quebec Smelting and Refining Limited drilled 3,000 feet on its property in Lespérance township, not far distant from the Opemisca Explorers property. Interesting tenors of gold were reported. Steerola Explorations Limited tested a gold prospect in Guercheville township with 1,500 feet of

drilling and Lyndhurst Mining Company Limited drilled 2,000 feet on its Guercheville property.

McIntyre Porcupine Mines Limited tested some geophysical anomalies around Bachelor lake; a total of 1,500 feet was drilled in Benoit township and 750 feet, in Melligan township.

Nightlen Mines Limited and Aumacho River Mines Limited carried out some exploration in Urban and Carpiquet townships. Nightlen Mines Limited is reported to have done some drilling recently.

Val d'Or District

The Val d'Or district, which includes the Mattagami Lake area, was the most active exploration area in Canada in 1959. At least 95 properties were diamond drilled and over 160 were subjected to one or more geophysical surveys. Only 65 companies reported drilling in 1958. This increase was against the general trend of exploration activity in Canada. In the past few years many companies carried out extensive geophysical programmes and many anomalies were uncovered that required drilling. The increase in drilling for the year under review was a direct result of this past geophysical activity, with, of course, the good results obtained in the Mattagami Lake area.

Four new copper and copper-zinc discoveries were made during the year. These are Radiore Uranium Mines Limited in Isle-Dieu township, Daniel Mining Company Limited in Daniel township, Newmont Mining Corporation of Canada Limited and Lynx Yellowknife Gold Mines Limited, in Galinée township. Diamond drilling is continuing at Radiore Uranium Mines and on the property of Newmont Mining Corporation. Lynx Yellowknife has announced that more geophysical work and diamond drilling will be done in 1960. It is still too early to say how economically important these discoveries will be.

Discoveries made in the past three years on which exploration diamond drilling is still in progress and on which ore estimates have been revised upwards are New Hosco Mines Limited in Daniel township, and Orchan Mines Limited and Mattagami Lake Mines Limited in Galinée township. Work was suspended during the year reviewed on the property of Garon Lake Mines Limited in Isle-Dieu township, after it was estimated that the mineralized zone contained at least 300,000 tons of ore grading 2.1 per cent copper. This is a reserve for the future.

Exploration work should continue at a high pace in the Mattagami Lake area in 1960 because of the large amount of geophysical work carried out and the active interest shown by the major exploration companies.

The high-light of the exploration project in the south part of the district was the renewed activity of two old properties on which underground work and ore reserves had been developed by former owners. Norlartic Mines Limited, in Vassan township, was reopened and ore is being sent to the Malartic Gold Fields mill for treatment. Akasaba Gold Mines Limited, the old Obaska Lake Mines Limited, in Louvencourt township, was also reopened and is being readied for shipments of ore to the Bevcon mill. In Dubuisson township, the same group that reactivated the above two companies has acquired the property of the old Marbenor Malartic Mines. The new company, Marban Gold Mines Limited, is sinking a shaft to develop the ore indicated by drilling.

An option was secured on the old Smith Tiblemont property in Tiblemont township by Genrico Nickel Mines Limited during the year reviewed. This company has completed 40 diamond-drill holes for a total of 16,000 feet. Work is continuing. The original gold-bearing vein, which had been opened up underground for a distance of 35 feet, was found by the new drilling to be at least 420 feet long. The company engineer has calculated that it contains 250 tons grading 0.215 ounce of gold per vertical foot. Other parallel gold-bearing structures are also present and they will require more work.

Chesbar Chibougamau Mines Limited, in Bossé township, has completed 64 diamond-drill holes for a total of 38,007 feet. The company engineer has estimated that there are approximately 50 million tons of iron ore averaging 27.5 per cent iron. Of this amount, 14 million tons averaging 29.84 per cent iron could be available from an open pit. The magnetite in this type of iron formation is usually very fine grained. In this case, the sedimentary iron formation was invaded by granite which recrystallized the magnetite. It will require a minimum amount of crushing to make an acceptable concentrate. The Canadian National Railways branch line to Chibougamau passes within two miles of the property. Because of the coarseness of the magnetite, its lack of impurities and the nearness of transportation, it is believed that this deposit can be economically exploited. More drilling and stripping of the open pit area will be done in 1960. A road has recently been completed to the property.

Falconbridge Nickel Mines Limited has acquired the Marchant Mining Company Limited property in LaMotte township, where a modest tonnage of medium-grade nickel ore was outlined. A new drilling programme has commenced.

Rouyn-Noranda District

In spite of the relative quiet trading in mining shares, exploration activities in the Rouyn-Noranda district were fairly substantial in 1959. This exploration was mostly centered in the territory surrounding the twin cities of Rouyn and Noranda and in the area of Turgeon and Harricana rivers. Surface diamond-drill footage done in 1959 has been estimated at 245,000 feet, compared with 180,000 feet for 1958. At least 135 properties were investigated, sixty of which were tested by diamond drilling. In the area of Turgeon and Harricana rivers, only 75 properties were studied, and diamond drilling was performed on 21 of them. Owing to a lack of outcrops in this area, exploration, as a rule, began with aerial geophysical surveys followed by ground surveys.

Rouyn-Noranda Area

Consolidated Vauze Mines Limited continued its exploration of the deposit it discovered in 1958 in Dufresnoy township. Ore reserves have been estimated by the company at 80,000 tons grading 6.5 per cent copper, 4.5 per cent zinc and between \$2 to \$3 in gold and silver per ton. An altered zone in the rhyolite was discovered at a short distance to the north. It is chimney-shaped and a very good copper content has been obtained in certain sections. No estimates of reserves have been established for this zone yet, owing to the limited amount of drilling. It is believed that this promising zone will be studied more adequately by going underground. A road to the shaft site has been completed and preparations for sinking are underway. Mining of the ore outlined will cover exploration costs.

Waite Lake Mines Limited, a new company formed by Macdonald Mines Limited in Duprat township, is testing the probable extension of the mineralized zone found by Consolidated Vauze.

Ansil Mines Limited has put down more than 14,000 feet of diamond drilling to test a property adjoining Waite Lake Mines Limited on the west. The last three holes went through rather narrow, altered copper-bearing zones at a depth of more than 1,000 feet. A geophysical survey of the diamond-drill holes is in progress.

Lake Dufault Mines Limited has undertaken an extensive diamond drilling campaign totaling 28,517 feet on the Dufresnoy and Norbec ground. Two drills are still at work. There has been no interesting economic discovery reported as yet.

West of Noranda, R.M. Nickel Mines Limited, controlled by Quebec Ascot Copper Corporation Limited, did some closely-spaced diamond drilling to outline already-indicated copper-nickel zones. More than 100 holes have been drilled. Small good-grade orebodies have been found, but their sizes preclude their mining at this time.

In the same township, Wm. Leys Mining Corporation Limited tested a property a little farther north. A small zone in the diabase, with copper-nickel mineralization, and a gold-bearing zone along the Golconda fault have been examined.

West Wasa Mines Limited attempted to locate a deposit by drilling near the old shaft of the former Aldermac Corporation property.

G.S. Eplett Mining and Development Company Limited explored a gold-quartz vein indicated by previous drilling in the township of Beauchastel.

In Dasserat township, Pitchvein Mines Limited did some exploration diamond drilling in two gold-bearing zones, one of which showed visible gold, on the shore of Dasserat lake. Another zone, farther south, in which tetrahedrite had been reported, was tested with two drill holes, but results were inconclusive.

In Rouyn, Tribag Mining Company Limited, formerly Bagamac Mines Limited, did some drilling without success.

New West Amulet Mines Limited has undertaken a drilling programme, which will last two years, to test its property West of Waite-Amulet Mines Limited. Vertical holes, on 800-foot centres, are testing the favourable andesite-rhyolite contact. So far, the copper content found has been low.

Farther north, in Hébécourt township, Nealon Mines Limited did 3,000 feet of drilling in a chalcopyrite-bearing zone and in two quartz zones with a chalcopyrite content, but results were discouraging.

Just recently, Southwest Potash Corporation acquired a property in Montbrâÿ township, in which an interesting copper find was made.

Témiscamingue Area

An interesting copper-nickel mineralized zone in amphibolite has been explored in Brodeur township by Kerr Addison Gold Mines Limited. Vertical holes closely drilled have indicated an average of 0.45 per cent copper and 1.16 per cent nickel over a length of 200 feet and a width of about 15 feet. The company abandoned the ground in June.

Montclair Mining Corporation Limited continued its work in Laverlochère township on the ground formerly held by Les Mines d'Or Bellehumeur. In 1958, an inclined adit was driven under a quartz vein containing visible gold, and some 3,500 feet of diamond drilling was completed. In 1959, more than 5,000 feet of drilling was done. A 15-ton-per-day mill was purchased and installed to test the average tenor of the ore. The official authorization to operate this mill has not yet been obtained.

Normetal Area

There was little activity in this area in 1959, except the drilling done by Duvan Copper Company Limited in Desmeloizes township. Sixteen holes were drilled without any interesting results.

Turgeon and Harricana Rivers Area

This area, long-neglected because of its remoteness and the lack of exposures, was the scene of intense activity in 1959. The area was almost blanketed with aerial magnetic and electromagnetic surveys supplemented in many places by ground surveys. A few companies started diamond drilling to check the indicated anomalies. So far, the most interesting discoveries were made, in September, by Prospectors Airways Company Limited, in Joutel township, and by Rio Tinto Canadian Exploration Limited, in Poirier township. Interesting copper and zinc assays were obtained, especially on the property of Rio Tinto Canadian Exploration Limited, in Poirier township. It is still too early to assess the importance of these discoveries.

A large part of the exploration work was concentrated in the townships of Sainte-Hélène and Subercase, west of Grasset lake. In these two townships, 35 properties were examined, but very little drilling was done. Just before freeze-up, Kitchigama Syndicate began a drilling programme in the township of Subercase.

Cadillac Area

In Preissac township, Preissac Molybdenite Mines Limited, with a 1,250,000-ton deposit containing 0.53 per cent MoS₂ already outlined, drilled a 1,000-foot hole on the site of its future production shaft. At last report, preparatory sinking work had started.

South of Cadillac, Surimau Minerals Limited completed a programme of 4,144 feet of diamond drilling started in 1958 along a mineralized zone containing small quantities of copper, nickel and zinc.

Montreal - Quebec District

There was not too much activity in the district during 1959. The little there was consisted mostly of restricted exploration and development programmes undertaken by a few companies in various areas. Most of the work done was aimed at the development and expansion of the iron ore industry.

In Hull township, Hull Iron Mines Limited continued to develop its magnetite deposit. A three-compartment vertical shaft was sunk to a depth of 816 feet. Underground, six level stations were cut at 100-foot intervals, and 1,000 feet of drifts and 200 feet of raises were driven; exploration diamond drilling totaled 5,000 feet. Ore-loading facilities were set up above the 600-foot level. On surface, the company built a headframe and completed the foundations for the double drum hoist and the compressors. During the year reviewed, Quebec South Shore Steel Corporation bought all the assets of Hull Iron Mines Limited. The new company signed a contract with Koppers Company, of Pittsburg, covering the design and construction of a steel plant at Varennes. By using the Strategic-Udy reduction process, the company plans to transform iron ore directly into cast iron and semi-finished steel.

Norvex Mining Company Limited completed an aerial magnetometer survey of its property in the Seigneurie des Mille-Iles and of its immediate vicinity. In addition, 952 feet of diamond drilling was done during the year. An attempt to produce cast iron ended in failure.

Ghislau Mining Corporation did 2,328 feet of diamond drilling in six holes on its property located in Chavigny and Montauban townships. Metallurgical tests were conducted on the mill tailings of Anacon Lead Mines Limited, at Montauban-les-Mines. Ghislau Mining

made preparations for a start in production scheduled for December 1959 at the rate of 600 tons per day. According to the company, there are 500,000 tons of gold-silver ore outlined underground, and 1,000,000 tons of zinc-gold-silver ore in the tailings left by Anacon.

A zinc discovery in the water of some wells in Dundee township, Huntingdon county, resulted in the staking of some 125 claims. Prospectors Airways Company Limited, Tarbutt Mines Limited and Matachewan Consolidated Mines Limited had a large proportion of the ground in the area, but Prospectors Airways apparently was the only company to investigate its property. Its work consisted in magnetic, electromagnetic, self-potential and gravimetric surveys. Geochemical tests were also run on water from wells and on the soil immediately surrounding the wells. These investigations did not disclose any worth-while concentration of zinc.

Quebec Columbiun Limited carried out a low-altitude airborne magnetometer survey on its 3,265-acre property in the Oka district, parishes of L'Annonciation and Saint-Joseph-du-Lac. The company also drilled nine holes for a total footage of about 8,500 feet. The search for better concentration and beneficiation methods continued, and market surveys were done.

St. Lawrence River Mines Limited continued its exploration and development programme on its 364-acre property in the Oka region. Most of the work was concentrated on the most favourable ore zone. Twenty-two holes were bored for a total of 12,000 feet. Three trenches, each 180 feet long, were excavated for bulk sampling purposes. The company has recently announced the installation of a four-ton-per-day pilot plant at L'Ecole Polytechnique. Concentration tests by the Galigher Company of Salt Lake City have given a recovery of 80 per cent to yield a concentrate grading 40 per cent columbium pentoxide (Cb_2O_5).

The other companies holding ground in Oka were inactive, but maintained their claims in good standing.

New Kelore Mines Limited drilled four holes totalling 749.5 feet on the Chatelaine Molybdenite prospect. Drilling started on February 19th, 1959, and was completed by May 26th, 1959. The prospect is located on the north half of lot 6, range X, and the south half of lot 6, range XI, Eardley township, Gatineau county.

Provincial Molybdenum Corporation Limited carried out a small amount of surface trenching on its Kensington township prospect,

Gatineau county. A mill was built as part of the company's plans to produce concentrates. All work on the property was stopped at the end of the summer.

Some stripping and trenching were also done on Portneuf Mineral Corporation's property in the Seigneurie de Deschambault and by the Walsh and Chevrier Exploration group on a prospect in Aldfield township.

Three diamond-drill holes were put down for a total of 370 feet by Laurentian Titanium Mines Limited on a copper-nickel prospect in Chilton township. The results were not encouraging.

Quebec Smelting and Refining Limited formed a subsidiary company to acquire and develop the phosphate properties known as the High Rock mine and the Cap Rock mine, located in the township of Portland (West), Papineau county. No exploration or development was done in 1959, but plans were set for 1960.

Chess Mining Corporation is currently drilling on Mount Saint-Hilaire to outline an apatite deposit. Four holes have been completed so far for a total of about 1,000 feet.

Finally, most of the exploration and drilling for natural gas is conducted in the district between Montreal and Quebec; a summary of this work is given under the heading "Petroleum and Natural Gas".

District South of the St. Lawrence

The demand for asbestos on the world markets has not kept pace with the increase of productivity, so that, presently, supply is ahead of demand. This situation has caused some mines to reduce their output and even to suspend their operations for a short time. For example, the British Canadian mine of Asbestos Corporation Limited did not operate from March 28th to June 1st, 1959, whereas other properties were shut down for shorter periods.

Golden Age Mines Limited explored its asbestos property in the Beauceville area and tested some of its asbestos-bearing rock in its pilot plant. The exploration work consisted mainly in bulk sampling.

The pilot plant, with a capacity of 200 tons of ore per day, milled, at the beginning of the year, 297 feet of drill core obtained during the 1958 drilling campaign. A Calyx drill was used to bore four three-foot-diameter holes for a total footage of 380 feet. The core was two and a half feet in diameter and some sections weighed as much as five tons.

The company reports that the plant, closed at the end of October, had been operating 'full-time' since August 1st, 1959, and had treated rock extracted from an exploration pit.

Stratford-Cyprus Mines Corporation Limited was incorporated August 21st, 1959, and acquired by transfer the mining rights held by Hastings Mining and Development Company Limited and Cyprus Exploration Corporation Limited on part of the ground held by these companies in Stratford township. Cyprus Exploration, which held an option on a group of Hastings claims, found a copper and zinc deposit in 1958 while drilling an anomaly outlined by Hastings during a geophysical survey carried out in 1957. Under the terms of the option, Cyprus had to form a new company to develop the claims; Stratford-Cyprus Mines Corporation Limited is that new company.

Cyprus Exploration Corporation Limited bored some 6,680 feet of diamond drilling in 1959 on its Stratford Township property, but the results of this work are not known. However, after its working season of 1958, the company estimated the indicated tonnage of the deposit at 1,500,000 tons of ore grading 2.25 per cent copper, 3.92 per cent zinc, 1.21 ounces of silver and 0.016 ounce of gold per ton. This reserve has been calculated to a depth of 500 feet, but it may be assumed that the deposit extends to a greater depth.

The Cyprus discovery attracted many companies to the area and these, in turn, carried out some geophysical surveys and some diamond drilling. In 1959, drilling in this area reached a total of more than 9,000 feet in addition to the work performed by Cyprus.

DEVELOPMENT AND MINING OPERATIONSIN THE PROVINCE OF QUEBEC DURING 1959

This chapter contains a summary of the mining operations conducted in the Province of Quebec in 1959. Only mining and development work are reviewed, as general exploration work performed by mining companies has been treated in another chapter of this report.

METALSAKASABA GOLD MINES, LIMITEDAbitibi-East Electoral DistrictLouvicourt Township

Underground development: gold

Akasaba Gold Mines, Limited, was formed in the early part of 1959, in order to finance the re-opening and operation of the Obaska Lake Mines property in Louvicourt township.

The plant and ancillary buildings were rehabilitated, and the underground workings were dewatered in April 1959. The head-frame was increased in height to accommodate the ore bin installation. Other buildings, including a boiler room, a powder magazine and a dryhouse, were constructed.

Surface exploratory drilling, which totalled 5,703 feet, tested the possible extension of the present orebody laterally and at depth. Underground diamond drilling, totalling 7,781 feet, was a continuation of the outline work carried out in the past by Obaska Lake Mines Limited.

Two stopes have been outlined in the east-west-striking orebody. The east stope, which is now prepared for mining, is expected to yield an estimated 177,352 tons of ore grading 0.168 ounce of gold per ton.

The ore will be trucked to the mill of Bevcon Mines, Limited, for treatment.

In 1959, there were 22 men employed at this property. The mine manager is Mr. H.R. Graham.

ANACON LEAD MINES, LIMITED

(Chibougamau Operation)

Abitibi-East Electoral District

Rohault Township

Producer: gold, silver, copper

Owing to a five-month suspension of operations to permit shaft deepening, the cyanide mill and concentrating plant of Anacon Lead Mines, Limited, operated only 199 days during 1959. While the mill was in operation, an average of 493 tons of ore was treated daily. The daily rate of treatment was 27 tons higher than that of 1958.

The No. 1, or main zone, was the most important source of ore. The remainder of the mill feed came from the No. 3, No. 4, and No. 5 north zones, from the "A" south zone and from development headings on the 1,200-foot level. The shrinkage stopes from which ore was being drawn were located on the 300-, 450- and 1,050-foot elevations.

Underground development work was concentrated on the No. 5 vein north zone and on the "A" and "B" south zones on the 1,200-foot level. The No. 5 vein of the main zone was developed and prepared for mining on both the 300- and 450-foot horizons. In an attempt to reduce the water flow in the mine, a drive was advanced in the hanging-wall of a water-bearing zone under Norrie lake, at the eastern end of the 300-foot level, and grouting was carried out along the length of the zone. A new ore zone has been opened in driving west on the 450-foot elevation; 450 feet of ore zone has been established with the zone still open to the west.

Most of the raising carried out had to do with the completion of the emergency exit between the 600- and 450-foot elevations and also between the 1,200- and 900-foot levels.

Production was suspended in May 1959, in order to carry out the shaft deepening programme. By the end of September 1959, the 3-compartment vertical shaft had reached a depth of 1,840 feet with new levels established at the 1,350-, 1,500-, 1,650- and 1,800-foot elevations.

This opened 600 feet of new ground which permits exploration of the downward extension of the ore zones exposed on the 1,050- and 1,200-foot levels. Production was resumed early in October.

Exploration by diamond drilling of the east and west extensions of the main ore zone was carried out from the underground workings and from surface. The new No. 5 vein system was explored from the 1,200-foot workings. Most of the diamond drilling footage completed in conjunction with grouting was done from the northeast extremity of the 300-foot horizon.

Ore reserves, as of December 31, 1959, are reported to be 313,950 tons grading 0.220 ounce of gold per ton. Last year's estimated reserves were 353,750 tons grading 0.223 ounce of gold per ton.

The original production hoist was replaced by a larger unit in order to increase the hoisting capacity of the mining plant.

The mine manager is Mr. K.C. Wilson. In 1959, the mine employed 107 persons.

BARNAT MINES, LIMITED

Abitibi-East Electoral District

Fournière Township

Producer: gold, silver

A total of 224,472 tons of ore, grading 0.179 ounce of gold per ton, was treated during the year 1959 by Barnat Mines, Limited. The average daily treatment rate was 615 tons, compared with a daily rate of 591 tons, and an average of 0.209 ounce of gold per ton for the year 1958. The above tonnage includes ore shipments to the mill of Malartic Gold Fields, Limited. These shipments were initiated near the end of the year.

More than half of the mill feed came from the "diorite" or No. 3 zone. Active stopes of this zone are located between the 700- and 1,700-foot horizons, and above the 2,200-foot level. The remaining ore came from the development and stope preparation of the "porphyry" or No. 5 orebody, above the 700- and 900-foot levels.

This latter ore body is laid out for mining by three initial sub-level long-hole drilling stopes separated by forty-foot-wide

vertical ore pillars. Broken ore from these stopes will be fed to the 1,100-foot horizon haulage-way draw-points by means of slusher drifts and ore passes.

Underground development, exploration and additions in 1959 have been centered around getting the "porphyry" zone prepared for production. On the 1,100- and 1,250-foot levels, drifts have been extended west, respectively to the end of the "porphyry" zone and past this zone to a point close to the property boundary. In the earlier part of the year, the 700-foot horizon drift was also advanced in this same direction.

A trolley haulage system has been installed on the 1,100-foot level to handle the ore from the "porphyry" zone. Ore hoisting has been improved by the acquisition of 5 1/2-ton-capacity aluminum skips used in a cage-skip combination, and the installation of a jaw-crusher on the 1,425-foot level.

All exploratory diamond drilling was carried out underground and totalled 52,858 feet. Most of it served to explore and outline the "porphyry" zone.

In 1959, the mine manager was Mr. V.E. Nethery; 235 persons were employed.

BATEMAN BAY MINING COMPANY

Abitibi-East Electoral District

McKenzie Township

Underground development: copper

During the first two months of 1959, lateral work was carried out by Bateman Bay Mining Company on the 250-foot level to explore ore zones indicated by diamond drilling. Development work was discontinued early in March to permit the deepening of the three-compartment vertical shaft.

The shaft was deepened 250 feet; its present bottom, which is at the 525-foot elevation, was reached during April 1959. Two new level stations were established at the 375- and 500-foot mine horizons.

Upon completion of shaft deepening, lateral work was resumed on the 250-foot level and also begun on the new levels.

Underground development was concentrated on the A-3 zone, west of the shaft.

In order to explore the downward extension of the A-3 zone below the 500-foot elevation, two cross-cuts were driven south-eastwardly for approximately 200 and 240 feet from the main drift on that level, as a base for diamond drilling.

Some raising was carried out from the 250-foot and 375-foot levels. At the top of the 250-foot level raise a short sub-drift was driven.

In the early part of 1959, exploratory surface diamond drilling was carried out from the ice on Lake Chibougamau in the eastern portion of the property. The drilling area was on the east side of Gouin Peninsula where some indications of ore were obtained in drilling several years ago. Exploratory underground diamond drilling was carried out on all levels during most of the year.

During the third and fourth quarters of 1959, three bulk ore samples were sent to the mill of Merrill Island Mining Corporation, Limited, for testing purposes.

BEAUCE PLACER MINING COMPANY, LIMITED

Beauce Electoral District

Rigaud-Vaudreuil Seigniory

Development: placer gold

Beauce Placer Mining Company, Limited, carried out development work from April to October 1959, during which time it explored gold-bearing sands along the Gilbert and Famine rivers.

Most of the exploration was concentrated along the shores of Gilbert river by using a churn drill. Holes were dug, some of them 150 feet deep, at regular intervals, over a distance of 6 miles in the former river-bed. A 25-foot test shaft was also sunk but without any worth-while results.

According to information issued by the company, the drilling has proved the existence of 6,000,000 cubic yards of gold-bearing sand and a possible reserve of 16,000,000 cubic yards.

A similar type of exploration work had been initiated along the Famine river, when operations were suspended.

BELLETERRE QUEBEC MINES, LIMITEDTémiscamingue Electoral DistrictGuillet Township

Producer: gold, silver

All mining and milling operations at the property of Belleterre Quebec Mines, Limited, were discontinued near the end of March, following the exhaustion of all known ore reserves.

During the latter part of 1958, operations at this property were placed on a straight salvage basis. At the beginning of the current year the mill was treating about 350 tons of ore daily. The mill feed was derived from the final clean-up of broken ore that remained in several stopes between the 500-foot and the 2,250-foot levels.

The underground equipment was salvaged, and, upon the completion of this work, the mine workings were allowed to flood.

The mine manager was Mr. J.K. Godin. Until closing time, the mine employed 30 people.

BEVCON MINES, LIMITEDAbitibi-East Electoral DistrictLouvicourt Township

Producer: gold, silver

During 1959, the mill at Bevcon Mines, Limited, treated 667 tons of ore per day for a total of 243,788 tons averaging 0.130 ounce of gold per ton. This compares with 259,473 tons treated during the previous year when the grade was almost similar at 0.131 ounce of gold per ton.

The mill feed came from stopes in operation and from development headings between the 800- and 2,100-foot horizons. The tonnage from stoping operations accounted for about 78 per cent of the mill feed, about 11 per cent of which included ore mined above the 1,725-foot level from the adjoining Lencourt property and above the 800-foot level from the adjoining Buffadison property: Both of these blocks of ground have been purchased from their previous owners by Bevcon Mines, Limited, in order to mine the extension of its own ore-body in these contiguous properties.

Underground diamond drilling, which consisted entirely of routine work, totalled 42,315 feet. On surface, 2,355 feet of drilling was carried out southeast of the shaft.

A sampling plant, a receiving bin and a truck ramp have been added to the mill installation to accommodate shipments of ore on a custom basis from Akasaba Gold Mines, which is expected to start producing during 1960.

The mine manager is Mr. H.R. Graham. There were 201 men employed during the year under review.

CAMPBELL CHIBOUGAMAU MINES, LIMITED

Abitibi-East Electoral District

Obalski, McKenzie and Roy Townships

Producer: copper, gold, silver

During 1959, the milling plant of Campbell Chibougamau Mines, Limited, treated 695,287 tons of ore. The metals obtained from the concentrates produced amount to: 28,259,172 lbs. of copper, 34,456 ounces of gold, and 220,848 ounces of silver.

The mill feed came from the "A" and "B" zones of the main mine, the Kokko Creek mine, and the Cedar Bay mine. These places contributed respectively 24.6, 38.4, 5.6 and 31.4 per cent of the mill feed. The ore drawn from the "A" and "B" zones contained 1.97 per cent copper and 0.039 ounce of gold per ton; that from Kokko Creek 3.03 per cent copper and 0.008 ounce of gold per ton and from Cedar Bay 2.42 per cent copper and 0.131 ounce of gold per ton.

Main Mine

Although lateral work at the main mine was carried out on many levels, the major part of it was concentrated on the 1,300-, 1,450-, and 1,750-foot horizons. This work was done in conjunction with development of the main "A" zone on the lower levels and exploration drilling for the vertical and lateral extensions of known zones. The advance realized by lateral work totalled 3,105 feet.

Diamond drilling was carried out underground only, to the extent of 57,657 feet. From the 1,150-foot elevation, a deep-drilling programme, to test the downward extension of the "A" and "B" zones, involved approximately 50 per cent of the above footage;

encouraging results were obtained. A total of 5,546 feet of drilling was done by Campbell Chibougamau, from the mine's 1,750-foot horizon, for Chib-Kayron Copper Mines, Limited.

Proved ore reserves at the main mine were last reported to be 375,834 tons grading 2.42 per cent copper and 0.056 ounce of gold per ton in the "A" zone, and 712,216 tons bearing 2.25 per cent copper and 0.027 ounce of gold per ton in the "B" zone.

One ball-mill has been added to the mill circuit for a better recovery of the ore from Cedar Bay. This addition also permitted an increase of the mill capacity.

Kokko Creek Mine

During the second quarter of 1959, the crosscut that was driven on the 400-foot level from the main mine workings reached its objective on the Kokko Creek property. Development work started immediately from the crosscut's heading and before the year's end, production was being derived from shrinkage stopes established from the 400-foot elevation. The ore from the Kokko Creek property is hauled to the main mine shaft on the 400-foot level.

During the first and second quarters of the year, a mining plant was installed on surface and a service shaft was sunk to a depth, from surface, of 593 feet. Four level stations were established at depths of 70, 240, 410 and 560 feet.

A total of 4,087 feet of lateral work was carried out in conjunction with development and exploration.

Raising totalled 652 feet; it includes an ore pass and a waste pass, between the 240- and 400-foot levels, and regular inter-level raises.

A total of 14,222 feet of exploratory diamond drilling was done from the 240-, 410- and 560-foot level workings. Most of the drilling was carried out from the 410-foot horizon.

Last reported proved ore reserves at the Kokko Creek mine were 164,639 tons grading 3.81 per cent copper and 0.015 ounce of gold per ton.

Cedar Bay Mine

The main sources of ore, at this mine, were the shrinkage stopes, which provided 70 per cent of the mill feed; the cut-and-fill stopes produced 25 per cent, and the remainder of the feed came from development headings. Stope mining was carried out from the 650-foot level up.

Development and stope preparation amounted to 5,631 feet of advance. This work was done on almost all levels but more extensively on the 650- and 800-foot levels.

Ore and waste passes were driven and provided with adequate grizzlies. Raising, realized during the year, totalled 301 feet. In addition, 359 feet of ventilation raises was done as part of a new underground ventilation system.

Exploration by diamond drilling was carried out underground only and totalled 40,320 feet.

Proved ore reserves, as last reported for Cedar Bay, amounted to 810,102 tons grading 2.15 per cent copper and 0.139 ounce of gold per ton.

Henderson Mine

The Henderson zone is located under Lake Chibougamau, parallel to the east shore of Portage island. The decision to bring this mine into production was reached by Campbell Chibougamau late in 1958.

During the first and second quarter of 1959, a mine road was built across Portage island to provide access to the property. Meanwhile, a 129-foot structural steel production headframe and a complete mining plant were built on the 600-foot-long artificial peninsula, which was constructed previously from the shore of Portage island.

The sinking of the four-compartment shaft was begun in September 1959. At the year's end, it had reached a depth of 657 feet below the collar and five stations had been established, namely: the 100-, 275-, 525- and 650-foot-level shaft stations and the 650-foot-level loading station. The plans call for an objective depth of 760 feet and another shaft station at the 700-foot horizon, before driving towards the ore zone is started.

Exploration of the zone was carried out by diamond drilling from the ice of Lake Chibougamau; the footage, realized in this work during 1959, amounted to 42,623 feet.

In the company's annual report for the period ending June 30th, 1959, an indicated ore potential of approximately 7,000,000 tons, grading 2.62 per cent copper and 0.072 ounce of gold per ton is reported for the Henderson Mine section.

The mine manager is Mr. A.M. Walker; the labour force numbers 584 persons.

CANADIAN MALARTIC GOLD MINES, LIMITED

Abitibi-East Electoral District

Fournière Township

Producer: gold, silver

The mill at Canadian Malartic Gold Mines, Limited, treated 467,413 tons of ore during 1959. The average grade of the mill feed was about 0.099 ounce of gold per ton. This compares with 472,531 tons of ore, grading 0.115 ounce of gold per ton, treated during the previous year.

About 46 per cent of the mill feed was derived from the "708" orebody, the remainder coming in decreasing order of percentages from the "D", "porphyry", "main break", "E", "A" and "J" orebodies.

Lateral development, aside from routine stope preparation work, was carried out towards two main areas. On the 750-foot level, the crosscut towards the Gouldie zone, southeast of the main workings, was continued, and some drifting was extended to the west, along the north greenstone contact, to the north of the main mine workings. A crosscut was advanced on the 1,375-foot level towards this latter area in a northeast direction, towards the boundary of the Barnat Mines property.

The north greenstone contact was tested from surface, and the main areas of development were tested underground. Other promising sections were also drilled, including drilling at depth in the west porphyry from the 1,125-foot level. No conclusive results were obtained.

Ore reserves, as estimated at year end, have declined to 952,500 tons averaging 0.104 ounce of gold per ton, from 1,011,000 tons averaging 0.112 ounce of gold per ton, reported at the end of the previous year.

The general superintendent is Mr. A.R. Meyers; the mine employed 270 men.

CHIBOUGAMAU JACULET MINES LIMITED

Abitibi-East Electoral District

McKenzie Township

Producer: copper

Following the resumption of mining operations at the property of Chibougamau Jaculet Mines, Limited, early in July, the mine was readied for production at an initial rate of 200 tons daily. By year end, 8,875 tons of ore, grading 3.94 per cent copper, had been shipped to the near-by ore stockpiles and mill of Copper Rand Chibougamau Mines, Limited, for treatment.

A total of 879 feet of lateral work was carried out, during the year, in conjunction with stope preparation.

In the fourth quarter of 1959, two shrinkage stopes had been readied for production in the No. 1, or most southerly zone. One of them is located on the 450-foot level and the second is on the 600-foot elevation.

An ore pass was established between the 450- and 600-foot horizons. Inter-stope or inter-level raising was carried out from the lower production level up to the 300-foot level. In order to have a continuous emergency exit, a raise was driven from the 300-foot horizon to surface. A total of 876 feet of raising was carried out during the year.

Before production had commenced, the headframe and the shaft house were covered with fireproof siding, the surface ore bin was reconditioned, and the surface opening of the emergency exit was enclosed.

The mine manager is Mr. D.C. McDonald.

CONSOLIDATED VAUZE MINES, LIMITEDRouyn-Noranda Electoral DistrictDufresnoy Township

Underground development: copper, zinc

As a result of an extensive diamond drilling programme which was carried out at the property of Consolidated Vauze Mines, Ltd., sufficient copper- and zinc-bearing sulphides were indicated to warrant underground development.

During the latter part of the year, a decision was reached to sink a three-compartment vertical shaft to a depth of about 700 feet from surface. The shaft was collared during December, and the construction of a surface mining plant and ancillary buildings was started. The actual sinking of the shaft was scheduled to begin in late February or early March, 1960.

Diamond-drill indicated ore reserves were reported to be about 100,000 tons containing an average of 6.76 per cent copper, 4.95 per cent zinc, 2.28 ounces of silver, and 0.065 ounce of gold per ton.

The mine manager is Mr. E.P. Graham.

CONTINENTAL IRON AND TITANIUM MINING, LIMITEDCharlevoix Electoral DistrictSt. Urbain

Producer: crushed ilmenite

Continental Iron and Titanium Mining, Limited, operated the General Electric and Bignell mines, so as to fill its sales contracts.

Of the 32,019 long tons of crushed ilmenite produced at the mines, 29,270 tons was shipped: 23,000, to Italy; the rest, to the United States, with the exception of approximately 1,000 tons sold on the Canadian market.

Operations were suspended on October 7th, 1959, and will probably be resumed in April 1960.

The mine manager is Mr. M. Zwonok. During their operating period, the mines employed 29 men.

COPPER RAND CHIBOUGAMAU MINES, LIMITEDAbitibi-East Electoral DistrictMcKenzie Township

Producer: copper, gold

The property of Copper Rand Chibougamau Mines, Limited, reached the production stage during the latter part of December 1959, when some 4,793 tons of ore, grading 2.73 per cent copper, had been treated.

A concentrator, having an initial daily rated capacity of 1,500 tons, was constructed during the year. This plant has been designed for easy expansion and for treating ores on a custom basis from other mining properties with which Copper Rand is associated.

Approximately 15 cut-and-fill stopes have been prepared for mining between the 525- and 1,300-foot mine levels. Several additional ones are being prepared, as required, to maintain the production rate. Hydraulic back fill is to be used in conjunction with the cut-and-fill mining methods.

Mining is currently concentrated in the Eaton Bay and Eaton Bay South zones.

A total of 6,479 feet of lateral work was completed during the year in connection with exploration and mining development work. The major portion of this work was done on the 1,000- and 1,150-foot levels. A 781-foot-long exploration drive was advanced to the west on the 1,150-foot level, in the No. 4 shaft area, in order to test for the upward extension of the Machin No. 2 zone. This zone was previously discovered in work carried out on the 1,300-foot level.

A total of 5,510 feet of raising was carried out during the year. This work included the driving of an ore pass system at No 4 shaft between the 525-foot level and the loading pocket below the 1,300-foot level. Inter-level and inter-stope raising was established between the 1,300- and 275-foot levels.

Some 29,354 feet of diamond drilling was done underground, mostly for the purpose of testing the extension of the known Eaton Bay zone and, to a minor amount, the Machin No. 2 zone.

Surface construction included the erection of a building to house the machine and electrical shops, the warehouse, assay office,

mine dry and office for the underground staff. A 105-foot-high headframe and shaft house was erected over the No. 4 shaft opening and a skip hoist was installed for production hoisting. The old No. 2 shaft headframe was dismantled and an axial-flow ventilating fan and air heater were installed over the shaft opening.

Rock causeways were built from both sides of Eaton bay, in Lake Chibougamau, to form a mill tailings settling area.

The mine manager is Mr. D.C. McDonald. During the year, 229 men were employed.

EAST MALARTIC MINES, LIMITED

Abitibi-East Electoral District

Fournière Township

Producer: gold, silver

The mill at East Malartic Mines, Limited, during 1959, treated 544,137 tons of ore at an average daily rate of 1,491 tons. The average grade of the ore to the mill was 0.213 ounce of gold per ton. This compares with 537,602 tons treated during the previous year, when the grade was slightly lower, at 0.211 ounce of gold per ton.

Ore reserves, as estimated at year end, amounted to 1,905,438 tons, averaging 0.202 ounce of gold per ton. This compares with 1,888,240 tons averaging 0.212 ounce of gold per ton at the end of the previous year.

About 90 per cent of the mill feed was derived from stoping operations in the Main zone, above the 1,420- and 1,570-foot horizons, and between the 2,635- and 3,265-foot horizons. The remainder came mostly from the Sladen fault zone above the 2,635- and 2,785-foot levels.

Lateral work consisted mainly of exploring the 2,935-foot level eastward, advancing a heading on the 3,805-foot level, and driving towards the location of a proposed four-compartment winze on this latter level, as well as on the 3,625-foot level. This winze will be located about 1,850 feet east of No. 4 shaft.

The ventilation system was extended from the 3,265- to the 3,805-foot level, and the ore-pass system was completed between these newly opened levels, with the driving of the ore pass above the 3,445-foot level.

Underground exploratory drilling, which totalled 59,468 feet, comprised testing of the west extension of the Main ore zone, from the levels between the 2,485- and 2,785-foot horizons, of the east part of this zone from every level below the 2,935-foot horizon, and of its downward continuation to 800 feet vertically below the bottom, or 3,805-foot, level.

The general manager is Mr. V.E. Nethery and the labour force totals 461 men.

EAST SULLIVAN MINES, LIMITED

Abitibi-East Electoral District

Bourlamaque Township

Producer: gold, silver, copper, zinc

During 1959, the ore concentrating plant at East Sullivan Mines, Limited, treated an average of 2,620 tons of ore daily, for a total of 957,137 tons of ore averaging 0.752 per cent copper, 0.0037 ounce of gold and 0.166 ounce of silver per ton, plus a small zinc content. During the previous year, 896,375 tons of almost identical grade was treated.

About 48 per cent of the mill feed came from above the 1,050-foot level, mostly from the "A", "B", and "C" orebodies. The remaining ore was supplied by stopes mostly from the "K", "Q", "R", "J1" and "J2" orebodies located between the 1,050- and 2,550-foot levels.

Lateral development was directed towards the north and south areas of the mine on the 1,500- and 3,300-foot levels, towards the north and east areas on the 2,550-foot level, and towards the west on the 3,900-foot, or bottom, level. On the 3,600-foot level, the northeast drive toward the property boundary of Aumaque Gold Mines, Limited, was continued.

Ventilation raises were extended from the 2,850- down to the 3,300-foot level, and the lower levels between the 3,300- and 2,940-foot horizons were connected with ore passes.

A main ventilation fan was installed on the 450-foot level, during the latter part of the year. New machine and electrical shops were added to the surface plant.

The mine manager is Mr. H. Monette; the number of men employed during the year totalled 278.

ELDER MINES AND DEVELOPMENTS, LIMITEDRouyn-Noranda Electoral DistrictBeauchastel Township

Producer: gold

The name of this company was officially changed from Elder Mines, Limited, to Elder Mines and Developments, Limited, on August 31, 1959.

During the year 1959, the company maintained its shipments of gold-bearing silicious fluxing ore to the Noranda smelter, at an average daily rate of 393 tons containing 0.1422 ounce of gold per ton. In comparison, the average daily shipments during the previous year, 1958, were 407 tons containing 0.1517 ounce of gold per ton.

Most of the lateral work that was completed during the year was done on the 1,085-foot and 1,625-foot levels, for development and exploration of eastward extensions of the main vein. Lesser amounts of lateral work were also carried out on the 950-foot level towards the east, and on the 1,355-foot level towards the west end of the main vein.

Exploratory diamond drilling was carried out underground on all levels between the 950-foot and 1,625-foot horizons, and amounted to 5,785 feet. Most of this exploration was concentrated on the 950-foot, 1,085-foot, and 1,355-foot levels in an effort to locate east and west extensions of the main No. 1 vein, or other parallel veins in the footwall or in the hanging wall of the main one. On surface, exploratory diamond drilling completed during the year amounted to 1,870 feet. Holes were drilled to the south of the underground stoping area and also in the east and west sections of the property.

No definite estimates of ore reserves were published by this company, but they were reported to be adequate for at least another year at the current production rate.

The mine manager is Mr. A.H. Hornsberger. During the year, 86 men were employed at the mine.

ELDRICH MINES, LIMITED
Rouyn-Noranda Electoral District
Duprat Township

Producer: gold

During 1959, Eldrich Mines, Limited, shipped a slightly larger tonnage of gold-bearing silicious fluxing ore to the Noranda smelter than that during 1958, but the average grade of the ore shipped was slightly lower than that during the year 1958. For comparison, during 1959, average shipments per calendar day were 331 tons of ore containing 0.141 ounce of gold per ton, as against an average daily shipment of 321 tons of ore containing 0.153 ounce of gold per ton for the year 1958.

Most of the ore came from the stopes of the 625-foot and 375-foot levels. The remainder came from other levels established at depths of 250 feet, 500 feet, 750 feet and 875 feet.

Lateral work completed during the year amounted to a total of 2,339 feet. Most of this work was carried out on the 375-foot level. The remainder was done mainly on the 625-foot, 875-foot and 500-foot levels.

Underground exploratory diamond drilling, which amounted to a total of 14,332 linear feet, was carried out on all levels, except on the 750-foot level, between the 250-foot and the 875-foot horizons.

A minor amount of diamond drilling to locate new ore-bearing veins, or the southward extension of the main one, was also carried out from surface.

No definite estimates of ore reserves are published by the company owing to the irregular structure of the silicious ore zone.

The mine manager is Mr. W. Dent; 51 men were employed during the year.

GASPE COPPER MINES, LIMITED
Gaspé-North Electoral District
Holland Township

Producer: copper, gold, silver, bismuth, selenium

In 1959, the mill of Gaspé Copper Mines, Limited, treated a total of 2,474,000 tons of ore for a daily average of 6,780 tons. This represents an increase of eight per cent over the preceding year's figures.

The following comparative table reviews the work done in 1959 and in 1958.

<u>Broken ore</u>	<u>1959</u>	<u>1958</u>
A zone	844,425 tons	605,767 tons
B zone	541,191 "	423,201 "
C zone	1,406,631 "	1,339,532 "
D zone	-	21,505 "
Total	2,792,247 tons	2,390,005 tons
Drifts	6,772 feet	5,717 feet
Raises	2,020 "	2,199 "
Inclined roadways	2,340 "	4,392 "

There are two main ore deposits at Gaspé Copper Mines; the Needle Mountain and the Copper Mountain deposits.

Nearly all the work is done in the Needle Mountain deposit, which contains four main ore zones: the A, B, C and D, of which the first three are in operation. The A zone is located between elevations 2,600 and 2,000 feet above sea level; the B zone, between 2,000 and 1,400 feet; the C zone, between 1,400 and 1,000 feet (known depth).

In the A zone, mining is by open-pit methods. In the B and C zones, ore is extracted by the room and pillar method, using trackless diesel-powered equipment.

In the A zone, ore is broken in benches located at 2,460, 2,500, 2,540 and 2,580 feet above sea level. Of the total 844,425 tons of ore broken, only 329,803 tons was treated in the mill. The A zone supplied 13 per cent of the ore treated.

Much work has been done to give the benches a regular shape and to allow mining at depth; at mid-year, the tonnage of rock broken was raised from 80,000 to 125,000 tons per month.

The B zone has supplied 22 per cent of the ore. Operations in this zone are located on the 1,125-foot level. A certain amount of development work is done according to the progress of the mining operations.

The C zone supplied 65 per cent of the ore treated. Mining is taking place on the 1,400- and the 1,600-foot levels.

Most of the drifting was done between the 1,550- and the 1,800-foot levels. It consisted mainly of lengthening the main inclined roadway to the 1,700-foot level. Access drifts to future mining areas were also started. The inclined roadway, starting on surface, elevation 1,875 feet above sea level or the 1,125-foot mine level, to elevation 1,300 feet above sea level or the 1,700-foot mine level, is 6,000 feet long. It has a 12 per cent grade.

Excavation for a third jaw-crusher room was started on the 1,800-foot level.

With the expansion of operations a lot of work has been done to increase the capacity of the ventilation system. This consists of secondary drifts and ventilation raises.

In the Copper Mountain deposit, 1,003 feet of drifts was driven, to be used as diamond drilling bases for the exploration programme.

About 11,617 tons of ore from this deposit was tested in the mill.

The manager is Mr. W.G. Brissenden. The total number of persons employed during the year was 977.

THE HILTON MINES
Pontiac Electoral District
Bristol Township

Producer: iron ore concentrates

In 1959, The Hilton Mines had three benches in operation in the open pit, at elevations of 1,245, 1,270 and 1,300 feet.

The mill produced about 560,000 tons of concentrates, grading 66 to 67 per cent iron.

The expansion programme in progress will permit the company to raise its production objective, for 1960, to 700,000 tons of concentrates.

An annex was built at the beginning of the year to treat all the minus 1/4-inch product coming from the cone crushers, before sending it to the ore bins. This annex includes two wet magnetic separators, a classifier, and a 2,000-ton-capacity conveyor. This addition makes it possible to eliminate 60 per cent of the waste rock contained in the minus 1/4-inch product.

In addition, construction was begun on an addition to the wet concentration plant. The installation will include a ball mill and some magnetic separators.

The mine manager is Mr. H.G. Gerber. In 1959, 383 persons were employed at the mine.

IRON ORE COMPANY OF CANADA
New Quebec

Producer: iron ore

In 1959, a new record was established by the company. The 10,860,215 tons shipped represents an increase of 21 per cent over the record of 8,872,948 tons sold in 1957.

The first ore train left for Sept-Iles on May 2nd, 1959.

Five open-pit mines were in operation during the year: Gagnon A, Gagnon B, Gagnon C, Ferriman and French. The largest

production came from Gagnon A.

Near French mine, a plant was built where ammonium nitrate and fuel oil are mixed to form a blasting agent.

High-grade iron ore reserves in the area total more than 400,000,000 tons, contained in 40 known deposits, of which six only are being mined.

The general manager is Mr. C.E. McManus. In 1959, the company employed 2,042 men.

LAMAQUE MINING COMPANY, LIMITED

Abitibi-East Electoral District

Bourlamaque Township

Producer: gold, silver

Ore milled by Lamaque Mining Company, Limited, during the year at its property aggregated 758,470 tons or an average daily rate of 2,078 tons. This compares with 761,140 tons milled, and a daily rate of 2,085 tons, for 1958.

Blast-hole stoping provided approximately 39 per cent of all ore produced. There are three blast-hole stopes at various stages of preparation and production.

Transverse cut-and-fill stoping is continuing in the "B" zone, but has been completed in the "U" and "N" zones. Two such stopes have been started in the "L" zone.

Preparation for mining in the "P" zone between the 3,000- and 3,200-foot levels is well advanced.

The No. 5 shaft was re-opened in May to service underground exploration and development in the upper and western part of the mine.

A considerable amount of diamond drilling, drifting and crosscutting has been carried out in an area at the east end of the mine between the 2,500- and 2,900-foot levels. Other underground development consisted mainly of work on the extension of previously indicated ore structures and the outlining of possible zone-type orebodies.

Surface diamond drilling to check favourable structures outside of the present productive zone was started late in the year and is presently being continued.

Ore pass and ventilation raises were driven between the 3,400- and 2,800-foot levels. The ore pass between the 2,200- and 1,900-foot levels, which intersected ore, was replaced.

Positive ore reserves, as of January 1, 1960, were estimated at 2,365,710 tons grading 0.181 ounce of gold per ton, compared with 2,507,693 tons grading 0.183 ounce of gold per ton reported at the end of the previous year.

The mine manager is Mr. R.J. McKelvey. In 1959, the mine employed 554 men.

MALARTIC GOLD FIELDS, LIMITED

Abitibi-East Electoral District

Fournière Township

Producer: gold, silver

The mill of Malartic Gold Fields, Limited, treated 578,483 tons of its own ore, or a daily average of 1,584 tons, during the year reviewed. This compares with 659,522 tons milled at an average daily rate of 1,807 tons during the previous year. The reduction of mill feed was made in order to accommodate ore coming from Norlartic Mines, Limited.

The ore milled was derived mostly from stopes between the 1,200- and the 2,400-foot levels at the No. 1 mine, and from stopes between the 1,600- and 2,400-foot levels at the No. 2 mine.

Lateral development was restricted to the east end of the No. 1 mine. A major part of the exploratory drilling was also carried out in this area. Pockets of ore were outlined, which should total an expected 200,000 tons.

As of December 31, 1959, ore reserves were estimated at approximately 400,000 tons grading 0.17 ounce of gold per ton, compared with 725,000 tons grading 0.19 ounce of gold per ton for the previous year.

During the year, a sampling plant was added to the mill. Shipments of ore from Norlartic Mines were initiated in June 1959, and, from Barnat Mines, during December 1959.

The mine manager is Mr. R.W. Dempsey. In 1959, there were 512 men employed at the mine.

MANITOU-BARVUE MINES, LIMITED

Abitibi-East Electoral District

Bourlamaque Township

Producer: gold, silver, lead, zinc, copper

A total of 468,225 tons of ore was treated at the property of Manitou-Barvue Mines, Limited, during 1959. Of this tonnage, 297,650 tons was classed as copper ore with an average grade of 0.92 per cent copper and 0.025 ounce of gold per ton. This ore came from new horizons between the 210- and 1,870-foot levels. The remaining 170,575 tons was zinc ore, which averaged 6.44 per cent zinc, 0.77 per cent lead, 0.033 ounce of gold and 5.69 ounces of silver per ton, between the 2,330- and 3,090-foot levels. This compares with 295,790 tons of copper ore and 183,690 tons of zinc ore treated during the previous year. There was a reduction of 77,628 tons of copper ore and an increase of 85,828 tons of zinc ore in relation to the respective totals for the previous year.

The copper ore was derived from the block of mine levels located between the 210- and 1,870-foot horizons. Zinc production came entirely from the new zinc section between the 2,330- and 3,090-foot levels.

Development work was carried out from the levels between the 510- and 1,720-foot horizons in the copper zone, and between the 2,640- and 3,240-foot horizons in the zinc section.

All exploration holes were drilled underground, and most of it was carried out in conjunction with the above development work.

Assured zinc ore reserves, as of January 1, 1960, are reported at 438,172 tons grading 7.14 per cent zinc, 0.98 per cent lead, 0.03 ounce of gold and 5.64 ounces of silver per ton. Copper reserves are estimated at 797,328 tons grading 1.15 per cent copper and 0.017 ounce of gold per ton.

This company was formerly called Golden Manitou Mines, Limited.

The mine manager is Mr. S.A.J. Hopper. In 1959, there were 361 people employed.

MARBAN GOLD MINES, LIMITED
Abitibi-East Electoral District
Dubuisson Township

Underground development: gold

Marban Gold Mines, Limited, is a subsidiary of Malartic Gold Fields, Limited, and was incorporated to take over exploration and development of the claims of Consolidated Marbenor Mines, Limited, in Fournière and Dubuisson townships.

A decision was made to carry out an underground exploration and development programme on a section of this property where encouraging gold assays had been obtained from exploratory surface diamond drilling, carried out during previous years.

For this purpose, a shaft-sinking plant was assembled at the property and the sinking of the three-compartment vertical shaft was commenced. By year end, this opening, having penetrated about forty-five feet of overburden, was down to a depth of 53 feet below its collar.

The shaft site is in Range X, Dubuisson township, and is about 1 1/4 miles to the north of the main highway between the towns of Malartic and Val d'Or.

Mr. R.W. Dempsey, mine manager of Malartic Gold Fields is in charge of operations.

MERRILL ISLAND MINING CORPORATION, LIMITED
Abitibi-East Electoral District
Obalski Township

Producer: copper, gold, silver

During the year 1959, Merrill Island Mining Corporation, Limited, hoisted 139,787 tons of ore having an average copper content

of 2.51 per cent, plus 0.0126 and 0.585 ounces of gold and silver per ton respectively.

The mill treated 139,988 tons for a production of 6,526,035 pounds of copper, 1,040.21 ounces of gold and 52,790.77 ounces of silver. A small portion of the ore treated was derived from test shipments of ore from Bateman Bay Mining Company, Limited, which was treated by Merrill Island on a custom basis.

Cut-and-fill stopes in the "A" and "B" ore zones above the 450-foot level contributed the major proportion of the mill feed.

Most of the underground development work completed during the year was carried out in the "B", "C" and "D" zones between the 150-foot and 925-foot levels. This work consisted of 2,216 feet of lateral drives and 2,686 feet of raising.

Exploratory diamond drilling, most of which was carried out from the underground workings, amounted to 21,763 feet.

Estimated ore reserves are considered adequate to maintain milling operations at the present rate for approximately three more years.

Considerable portions of this company's property have been leased to Campbell Chibougamau Mines, Limited. One such area forms an integral part of this latter company's main mine and another one, the Kokko Creek section, was brought into production by Campbell Chibougamau during the current year.

The mine manager is Mr. E.W. Watt. In 1959, the labour force numbered 115 persons.

MOLYBDENITE CORPORATION OF CANADA, LIMITED

Abitibi-East Electoral District

Lacorne Township

Producer: molybdenite, bismuth

During 1959, Molybdenite Corporation of Canada, Limited, treated 207,533 tons of ore in the mill at its mine. The daily ore treated average, on a six-day-week basis, was about 664 tons, a 46-ton daily increase over the ore tonnage treated during the previous year. The average grade of the mill feed was approximately 0.36 per cent molybdenite and 0.039 per cent bismuth.

Molybdenum production amounted to 831,511 lb. of which about 35 per cent was converted into molybdic oxide. The remainder was contained in molybdenite concentrates. About 3,700 lb. of this latter product was used in research work to develop a marketable molybdenum disulphide of lubricant grade.

Mining operations have been carried out in both the east-west and the north-south structures. Ore was extracted from all horizons, down to the bottom active or 750-foot level.

Lateral development was centered mainly on the No. 29-E.-W. vein system, located in the northern part of the mine. This vein has been traced and opened at every level, except on the 625-foot level, where headings were advanced in the No. 6-78 and 83 vein systems.

The deepening of the inclined shaft, to open two new levels at the 875- and 1,000-foot horizons, was started in July and completed in November.

Underground diamond drilling, outside of routine work supplementing the lateral work, consisted in testing the downward extension of the ore zones at the 875- and 1,000-foot horizons.

Blocked out ore reserves, as of December 31, 1959, amounted to 237,541 tons, compared with 205,558 tons reported for the previous year.

The mine manager is Mr. B. Joyal; 153 persons were employed during the year.

MONTCLAIR MINING CORPORATION, LIMITED

Témiscamingue Electoral District

Laverlochère Township

Underground development: gold

Construction of a surface mining plant and of a mill building was started near the end of 1958 by Montclair Mining Corporation, Limited. However, this work was suspended early during 1959, and no further work was reported to have been carried out at this company's property.

NEW CALUMET MINES, LIMITEDPontiac Electoral DistrictGrand-Calumet Township

Producer: zinc, lead, gold, silver, copper

Milling was maintained by New Calumet Mines, Limited, at the rate of 350 tons of ore per day throughout 1959. A total of 103,120 tons of ore was treated, grading, on the average, 7.55 per cent zinc, 1.89 per cent lead, 0.015 ounce of gold and 4.80 ounces silver per ton.

Of the ten stopes that were in regular operation in 1959, six were in the No. 3 internal shaft, three were in the No. 4 shaft area and one was near the No. 1 shaft.

An intensive development programme was carried out during the year, with the result that ore reserves increased from 151,987 tons to 225,925 tons. The average zinc content was brought up to 7.99 per cent. Increases in the lead, gold and silver content were also recorded. Total diamond drilling footage amounted to 9,889 feet. At year end, four drifts were being advanced toward a new ore zone, on the 1,200-, 1,350-, 1,675- and 1,800-foot levels.

The mine manager is Mr. J.C. Cunningham-Dunlop; there were 143 persons on the payroll in 1959.

NORANDA MINES, LIMITEDRouyn-Noranda Electoral DistrictRouyn Township

Producer: gold, silver, copper, pyrite

The total quantity of ore delivered from the Horne mine to the smelter and concentrator of Noranda Mines, Limited, during 1959, was 1,381,000 tons, which was about the same as for the previous year. The concentrator that treated 954,823 tons of ore from the Horne mine produced 148,810 tons of copper-gold concentrate, 207,873 tons of pyrite concentrate, 40,407 tons of pyrrhotite, and 66 tons of mixed pyrite and pyrrhotite.

The copper-gold concentrate was sent to the smelter, and the pyrite concentrate was treated by cyanidation to recover its gold

and silver content. The pyrite and pyrrhotite produced were shipped to chemical plants after drying.

In addition to the copper concentrate from the concentrator, the smelter treated 426,363 tons of smelting ore from the Horne mine, 163,796 tons of flux ore from the Don Rouyn section, and 465,383 tons of copper concentrate, which was treated on a custom basis for other companies.

In the Horne mine, the gold-copper-bearing ores were mined in stopes located between surface and the 2,975-foot level. Most of this mining consisted in pillar recovery.

General development consisted of 3,257 feet of drifting, most of which was carried out on the 5,975-foot horizon. Stope preparation involved some 201 feet of raising and 212 feet of drifting.

Underground diamond drilling, totalling 15,654 feet, was done for exploratory purposes and in detailed examination of known orebodies. No exploratory diamond drilling was carried out from surface.

After extracting 1,381,000 tons of ore from the Horne mine, ore reserves were reduced by about 800,000 tons, as they were during the year 1958. They stand at about 13,400,000 tons.

No work was done in the portion of the Joliet property that is leased by Noranda.

The mine manager is Mr. C.E. Anderson. In 1959, the mine employed 1,971.

NORLARTIC MINES, LIMITED

Abitibi-East Electoral District

Vassan Township

Producer: gold, silver

Starting at the beginning of June 1959, a total of 66,736 tons of ore, grading 0.13 ounce of gold per ton, was shipped to the Malartic Gold Field's mill by Norlartic Mines, Limited. This corresponds to a daily shipment rate of 312 tons of ore per day.

The shaft-deepening was completed to a final depth of 1,055 feet, immediately before shipping of ore commenced, and involved

472 feet of sinking during the year. This makes available, for underground ore development, four new levels at 125-foot intervals, below the former bottom, or 500-foot, level.

About 30 per cent of the ore shipped came from a surface stockpile of development ore. The remainder came from stoping operations above the 250-, 375- and 500-foot levels, and from development headings on the 875- and 1,000-foot horizons.

Following the completion of the shaft-deepening work, a programme of exploration and development was initiated on the new, deeper block of mine levels.

Ore reserves, as of December 31, 1959, were estimated at 731,500 tons grading 0.16 ounce of gold per ton, in the main zone, and 41,000 tons of ore grading 0.20 ounce of gold per ton in the north zone.

The mine manager is Mr. R.W. Dempsey, and, in 1959, the mine disposed of a 30-men labour force.

NORMETAL MINING CORPORATION, LIMITED

Abitibi-West Electoral District

Desmeloizes Township

Producer: zinc, copper, gold, silver, pyrite

During 1959, the concentrating plant of Normetal Mining Corporation, Limited, treated an average of 1,031 tons per calendar day, compared with 974 tons daily during 1958. The average grade of the ore treated was 3.17 per cent copper, 3.73 per cent zinc, 0.025 ounce of gold, and 2.07 ounces of silver per ton. A total of 18,429 tons of pyrite concentrate was shipped to chemical plants and pulp mills.

Of the ore milled, 79 per cent came from the No. 4 shaft area, about 20 per cent, from the No. 3 shaft section, and the remainder, from the upper mine horizons at the No. 2 shaft. Mining above the 3,070-foot horizon consisted mainly of pillar recovery, and of ore salvage work.

The installation of a conveyor, on the 3,070-foot level, to transfer the broken ore hoisted in the No. 4 internal shaft to the loading pocket of the No. 3 shaft, was completed about the end of April.

A total of 2,432 feet of lateral work and 540 feet of raises was completed during the year. Most of the raising was done to improve the main ventilation system of the mine.

The No. 4 internal shaft was deepened 825 feet to a bottom depth of 6,225 feet from surface. Four levels were established at the 5,560-foot, 5,760-foot, 5,960-foot and 6,160-foot horizons. The deepening of the shaft was begun at the end of March and was completed late in the fall. By year end, lateral work was in progress on the bottom, or 6,160-foot, level only.

No exploratory diamond drilling was carried out from surface during the year. Underground, only a small amount of outline drilling between stopes was completed.

Ore reserves decreased by an amount about equal to the tonnage milled during the year. The ore reserves were reported to be adequate for about four and a half years at the current production rate, which amounts to nearly 1,680,000 tons.

The mine manager is Mr. R.J. Allen. In 1959, there were 576 people employed at the property.

NORVEX MINING COMPANY, LIMITED

Terrebonne Electoral District

Mille-Iles Seigniory

Producer: iron ore

In 1959, 720 long tons of crushed iron ore was shipped to Montreal by Norvex Mining Company, Limited. The waste rock was sold as crushed stone, in sizes ranging from 1/4 inch to 2 inches; 10,000 tons was sold in 1959 and there is a stockpile of 35,000 tons at the mine.

Eleven holes, totalling 850 feet, were drilled; the deepest of these reached a depth of 100 feet.

Plant installation was completed and some modifications were made.

The plant was closed on November 18th, 1959, and will probably be reopened on or about April 1st, 1960.

The company president is Mr. A. Veilleux. While in operation, the mine employed 18 men.

OPEMISKA COPPER MINES (QUEBEC), LIMITEDAbitibi-East Electoral DistrictLévy Township

Producer: copper, gold, silver

During 1959, the milling plant of Opemiska Copper Mines (Quebec), Limited, treated 443,444 tons of ore grading 3.36 per cent copper, 0.038 ounce of gold and 0.46 ounce of silver per ton. On completion of an expansion programme, the treatment rate reached a new high of 2,000 tons per day, in December 1959. In the same month of the previous year, the daily average was 1,069 tons. The all-year daily average for 1959 was 1,215 tons. The concentrator, which was operating 98.66 per cent of the time, recovered 94.58 per cent of the copper, 89.47 per cent of the gold, and 80.66 per cent of the silver.

The No. 3 vein supplied approximately 70 per cent of the mill feed; 9 per cent of the feed was derived from the No. 4 vein, 8 per cent, from the No. 2 vein, and the remainder was drawn from the Nos. 0, 1, 12, 13 and 6 veins. The mining methods used were cut-and-fill, shrinkage, panel, and open stoping. Stope mining was carried out from the 975-foot level up.

Development work was centralized mainly on the No. 3 vein, east and west zones, between the 1,475-foot and the 525-foot levels. A total of 11,483 feet of lateral work was advanced at the Springer mine during the year reviewed. At the Perry mine, 4,183 feet of drifting and cross-cutting was carried out as part of the programme for outlining the ore body; this footage was realized on the 275-, 400-, 525-, 675-, 975- and 1,825-foot horizons.

Raising advances, at the Springer mine, amounted to 4,828 feet. This includes footages gained by the completion of the main ore pass, by the driving of 311 feet of main ventilation raises, and by regular inter-stope or inter-level raising.

At the Springer mine, 47,954 feet of diamond drilling was carried out underground and 364 feet, from surface. Underground drilling at the Perry mine totalled 22,218 feet, whereas 2,291 feet was done from surface.

The Springer No. 2 sinking headframe was dismantled and replaced by a 168-foot-high structural steel tower. While the construction of this tower was under way, the shaft was grouted from surface to

the 525-foot elevation. In the top of the tower, a 1,000 H.P. motor-driven Koepe hoist was installed. This production shaft, which started to operate on November 8, 1959, is designed for a hoisting capacity of 250 tons per hour from the main loading pocket on the 2,275-foot level of the mine. To ensure adequate surface storage capacity, a 700-ton ore bin has been provided in the tower, as well as a 5,000-ton catenary fine ore bin in the mill.

On surface, adjacent to the friction hoist tower, a new 250-ton-per-hour secondary crushing plant was completed during the year reviewed. It houses a short head and a standard cone crusher. From this plant, a belt conveyor system has been installed to transport the ore to the fine ore bin in the mill. In the mill, an 800-ton-capacity ball mill and classifier unit, as well as an additional filter and a bank of flotation cells, have been installed.

Underground ventilation has been improved by the installation of two new fans and a heating unit. The fans are in parallel and can deliver air at a maximum of 80,000 cu. ft. per minute.

The mine manager is Mr. F.G. Cooke. The labour force numbered 436 men in 1959.

PORTAGE ISLAND (CHIBOUGAMAU) MINES, LIMITED

Abitibi-East Electoral District

Roy Township

Underground development: copper

Early in the year, a decision was reached by Portage Island (Chibougamau) Mines, Limited, to carry out underground work on a diamond-drill indicated copper-gold-bearing zone. For this purpose a mining plant was installed and the sinking of a four-compartment vertical shaft was commenced in April and completed, in November, to an initial depth of 767 feet below surface.

Underground level stations were established at depths of 250, 400, 550 and 700 feet below surface. Cross-cutting to the indicated ore structure was well under way on the three lower mine levels before the end of the year.

This property is under the control of Patino of Canada, Limited, and its associated company, Copper Rand Chibougamau Mines, Limited, is in charge of the direction of the exploration and development programme. An existing arrangement provides that any ore

developed at the Portage Island property shall be treated in the mill at Copper Rand.

The property is being managed by Mr. D.C. McDonald.

QUEBEC CARTIER MINING COMPANY

New Quebec

Development: iron ore

Preparations to mine an iron ore deposit in the Lac Jeannine area, district of New Quebec, have been pursued throughout 1959 by Quebec Cartier Mining Company.

Milling and concentrating characteristics of the ore were the main reasons for the company's decision to mine the Lac Jeannine deposit first. The ore is a mixture of quartz and specular hematite grading 30 to 32 per cent iron. There is no magnetite present. A coarse grinding to 10 mesh will be sufficient to produce, with the help of Humphrey spirals, a concentrate grading 66 per cent iron.

The deposit is 6,600 feet long and 600 feet wide on surface. Mining by open-pit methods will create an excavation 8,800 feet long and 2,400 feet wide at its widest point.

Before the mill is ready to be placed into operation, a giant stripping operation will have to take place, involving the removal of 3,000,000 cubic yards of overburden and 9,000,000 tons of waste rock. This stripping is actually in progress; it is planned to build a 100-foot-wide road around the deposit and to prepare 11,000 linear feet of 40-foot-high benches. It is foreseen that, during the first 15 years of mining, the waste to ore ratio will be 0.6 to 1.

The other projects related to this enterprise are:

- 1 - Construction of a 60,000-ton-per-day concentrator;
- 2 - Installation of two primary crushers in a pit 85 feet in diameter and 100 feet deep;
- 3 - Construction of a dam on the Hart-Jaune river with an adjunct hydroelectric having an initial capacity of 60,000 H.P.;

- 4 - Construction of a 191-mile railway between Lac Jeannine and Port Cartier;
- 5 - Installation of a sea port capable of receiving at low tide fully-loaded cargo ships drawing 48 feet of water;
- 6 - Construction of two towns: Gagnon and Port Cartier.

The company plans to ship the first loads of concentrates early in 1961.

The president of the company is Mr. L.J. Severson. More than 6,000 men were at work on all phases of the project in 1959.

QUEBEC IRON AND TITANIUM CORPORATION

Saguenay Electoral District

Parker Township

Producer: ilmenite

Mining operations in the open pit of Quebec Iron and Titanium Corporation at Lake Allard began on June 1st, 1959.

At the end of September of the year reviewed, the 400,000-ton objective set at the beginning of the year had been reached. The 1959 production was approximately 600,000 tons of ore.

At Sorel, where ore grading over 75 per cent ilmenite is shipped, seven of the eight smelting furnaces operated continuously as of March 1959.

At the mine, operations are in progress in three zones.

In No. 1 zone, the bottom bench, the 610-foot, is being prepared for mining.

In No. 2 zone, only the 615-foot bench is being mined.

In No. 3 zone, the most active, mining is taking place on the 680-foot bench, while drills are operating on the 715-, 750-, and 785-foot benches.

The general manager of the company is Mr. R.B. Young. The mine employed 143 men in 1959.

QUEBEC SOUTH SHORE STEEL CORPORATIONGatineau Electoral DistrictHull Township

Development: iron ore

Early in 1959, Quebec South Shore Steel Corporation acquired the assets, including the mining property, of Hull Iron Mines, Limited, located at Ironside, near Hull, Quebec.

Sinking of the No. 1 vertical shaft was completed to a depth of 820 feet early in the summer of 1959. Underground development work was suspended for the rest of the year to permit the installation of a new electric hoist and headframe.

At year end, ore reserves were estimated at 4,250,000 tons of iron ore, grading 50 per cent iron.

In December 1959, work began on the construction of a concentrating plant and a steel-making plant at Varennes, near Montreal. The plant will be built by Koppers Company and will use the Strategic-Udy process to produce pig iron and puddled steel. The steel plant will have an annual capacity of 150,000 tons, 120,000 tons of which will be puddled steel.

The Ironside mine was under the supervision of Mr. D. Sykes.

QUEMONT MINING CORPORATION, LIMITEDRouyn-Noranda Electoral DistrictRouyn Township

Producer: copper, zinc, silver, gold, pyrite

During the year 1959, Quemont Mining Corporation, Ltd., treated an average of 2,329 tons of ore per day, compared with 2,357 tons per day, in 1958. The average grade of the ore treated, which was 1.33 per cent copper, 2.66 per cent zinc, 44.1 per cent pyrite, 0.178 ounce of gold and 0.87 ounce of silver per ton, was about the same as for the year 1958.

The copper concentrate was treated in the Noranda smelter, and most of the zinc concentrate was shipped to treatment

plants in the United States. After cyanidation, for the purpose of recovering its content of precious metals, the pyrite concentrate was sent to chemical plants, at a sufficient rate to supply the available market demand.

In the mine, ore was drawn from stoping operations between the 200-foot to the 2,160-foot levels. Above the 720-foot level, mining operations consisted mainly of pillar recovery. Variations of cut-and-fill mining accounted for 52.5 per cent of the total, and 47.1 per cent came from sub-level open stopes. The remainder came from development work.

During the year, most of the mine development work consisted of the deepening of the No. 2 five-compartment production shaft from a depth of 3,510 feet to a bottom depth of 4,150 feet from surface. New levels were established at depths of 3,570 feet, 3,720 feet, and 3,870 feet. The shaft deepening programme, which was begun on the 2nd of February, was completed about the middle of September. During that period, development work on the block of levels below the 2,340-foot horizon was temporarily suspended, but was resumed during the latter part of the year.

Most of the underground exploratory diamond drilling was concentrated on the 1,260-foot level. On surface, exploration of the northern part of the property was begun early in the year in an attempt to ensure that no new ore possibilities were being overlooked. Surface geological mapping was reviewed, all geophysical surveys made previously were carefully studied, and several areas were re-surveyed. Diamond drilling at regular intervals to a depth of 2,000 feet was carried out. As each hole was completed, an electromagnetic survey was made along its length. Seven holes had been drilled and surveyed at the end of the year.

No new ore was developed during the year, consequently ore reserves were reported to have decreased by an amount equal to the tonnage milled during the year. The grade was reported to have remained about the same. At December 31, 1958, the ore reserves were reported to be 7,120,000 tons containing 0.177 ounce of gold and 1.06 ounces of silver per ton, 1.33 per cent copper, 2.67 per cent zinc, and 53 per cent pyrite.

The mine manager is Mr. A.G. Ballachey; the personnel employed at the mine numbers 714.

SIGMA MINES (QUEBEC), LIMITED
Abitibi-East Electoral District
Bourlamaque Township

Production: gold, silver

The quantity of ore treated in the mill of Sigma Mines (Quebec), Limited, during 1959, amounted to 410,112 tons, for a daily average treatment rate of about 1,124 tons, grading 0.187 ounce of gold per ton. This compares with a total of 417,777 tons treated during the previous year, for an average daily rate of 1,143 tons.

About 7 per cent of the ore milled came from development headings, whereas the remainder was derived from mining operations mainly between the 350- and 2,100-foot levels.

Lateral development work was chiefly carried out in the block of mine levels between the 1,225- and 3,150-foot horizons. This includes a minor amount of drifting, east of the main workings, in an adjacent block of ground purchased from Lamaque Mining Company, Limited.

Exploratory drilling, which totalled 47,872 feet, consisted mostly of routine work in various parts of the mine. Of this, 3,562 feet was drilled from Lamaque's 2,400-foot level.

Preparatory work was continued during 1959 towards the sinking of an internal (No. 3) shaft to a proposed depth of about 1,000 feet below present mine workings. In conjunction with this programme, enlargement of the No. 2 or main shaft to four-compartment dimensions was completed, and the service hoist and cage were installed. The system of ore and waste passes between No. 2 and No. 3 shafts was also completed.

The winze hoistroom, which will house a friction hoist, was opened immediately above the winze location on the 2,700-foot level, and about 149 feet of sinking was carried out partly between the 2,850- and 2,700-foot levels, and from the 3,150-foot level.

The system of ventilation raises has been extended to the bottom, or 3,150-foot, level.

There were a few minor alterations to the surface ore bins and to the mill's flow sheet, which should permit a daily tonnage capacity increase of about 50 tons.

Ore reserves, as of December 31, 1959, are estimated at 1,383,600 tons, with 563,100 tons of broken ore having no assigned grade, and 820,500 tons of ore in place grading 0.228 ounce of gold per ton.

The general manager is Mr. F.J. O'Connell; the mine employed 405 people in 1959.

SULLIVAN CONSOLIDATED MINES, LIMITED

Abitibi-East Electoral District

Dubuisson Township

Producer: gold, silver

During the year 1959, a total of 178,942 tons of ore, grading 0.240 ounce of gold per ton, was treated in the mill of Sullivan Consolidated Mines, Limited.

The ore milled was derived mostly from veins Nos. 4, 9 and 16, in the block of mine levels between the 1,550- and 2,375-foot horizons. The remainder came from numerous other veins of the upper and lower levels, but from which only small tonnages were obtained.

Lateral work was centered mainly on the development of the above veins, on the 650-, 1,550-, 1,650-, 1,750-, 2,615- and 2,960-foot levels, northwest of the No. 2 shaft. This development was supplemented by underground exploratory drilling.

Ore reserves, as of December 31, 1959, are estimated at 645,945 tons grading 0.241 ounce of gold per ton.

The mine manager is Mr. J.P. Bonneville. There were 256 people employed at the mine in 1959.

WAITE-AMULET MINES, LIMITED

and subsidiary

AMULET DUFAULT MINES, LIMITED

Rouyn-Noranda Electoral District

Dufresnoy Township

Producer: gold, silver, copper, zinc, pyrite

The mill at this property treated copper-zinc ore, from the Waite-Amulet and Amulet Dufault sections, at an average rate of 853 tons per day, compared with an average daily rate of 790 tons, during 1958. The average grade of the ore treated, which was 4.36 per cent copper, 3.73 per cent zinc, 0.033 ounce of gold, and 0.97 ounce of silver per ton, was in all these metals, except in silver, slightly higher than that of the ore treated during the previous year, 1958.

In addition to its own ores, this company also, during the month of January only, treated daily an average of 444 tons of zinc-pyrite ore for West Macdonald Mines, Limited, on a custom basis.

The East Waite orebody supplied 38.6 per cent of the ore treated. The remainder came from the Amulet Dufault and the Waite-Amulet "A-11" Winze sections of the property. Most of this mining consisted of pillar recovery.

Exploratory diamond drilling at the East Waite section was concentrated on the 2,035-foot level. At the Amulet section, it was confined to the 1,300-foot and 1,400-foot levels of the "A" shaft. On surface, diamond drilling was carried out west of the "F" shaft. No new ore discoveries were reported.

Ore reserves were reported to be adequate for a year and a half to two years, at the current production rate.

The mine manager is Mr. T.E. Little. A total of 265 persons was employed at the mine in 1959.

WEEDON MINING CORPORATION

Wolfe Electoral District

Weedon Township

Producer: copper, zinc, pyrite

In June 1959, Weedon Pyrite and Copper Corporation, Limited, changed its name to Weedon Mining Corporation.

Mining operations were suspended on November 16th, 1959 after the old mine workings caved in, which caving extended from the 400-foot level to surface. It was estimated that 200,000 tons of rock fell in the old stopes, diluting the ore to such an extent that recover of pillars became impossible.

The principal underground work at Weedon consisted of the recovery of the pillars in the old mine workings and the No. 3 shaft pillar, and the sinking of the No. 4 shaft from the 16th to the 17th level.

The mill treated a total of 123,934 tons of ore, at a daily rate of 450 tons per day. Average grade of the ore was 1.4 per cent copper.

Most of the ore came from the recovery of pillars between the 700-foot level up to surface. The remainder came from regular mining in a stope above the 1,500-foot level, and from exploration work on the two bottom levels, where drifts of 1,000 and 125 feet in length were driven towards the east and the west, to reach interesting diamond-drill intersections.

Sinking of the No. 4 shaft was completed in June, after reaching a depth of 1,840 feet measured along the 48° slope.

Pyrite shipments were at low levels throughout most of the year, but, at year end, a few interesting sales contracts were obtained.

The mine manager was Mr. W.W. Bake; the mine employed 120 men during its operating period in 1959.

WEST MacDONALD MINES, LIMITED

Rouyn-Noranda Electoral District

Dufresnoy Township

Producer: gold, silver, zinc, copper, pyrite

Ore production at West Macdonald Mines, Limited, was suspended, for an indefinite period, at the end of January 1959, because of a lesser demand for pyrite and zinc. During the month of January, an average of 444 tons of ore per day was transported by aerial tramway to the concentrator of Waite-Amulet Mines, Limited, for treatment.

Underground work consisted entirely of drawing the remainder of the broken ore from the open stopes. All movable equipment except the mine pumps, which were left in operation, was taken to surface.

I N D U S T R I A L M I N E R A L S

ALUMINUM COMPANY OF CANADA, LIMITEDGatineau Electoral DistrictWakefield Township

Production: Magnesium oxide, lime

Two deposits were mined in 1959: the Maxwell deposit, at Wakefield, from which 265,000 tons of ore was extracted, and the Cross deposit, at Farm Point, which supplied 5,000 tons of ore during the three months it was in operation.

The finished products delivered by the Wakefield plant were the following:

Lime used by paper mills	15,000 tons
Hydrated lime	30,000 tons
Quicklime	12,000 tons
Agricultural lime	12,000 tons
Magnesium oxide, 90%	11,000 tons
Magnesium oxide, 65%	6,000 tons

The two lime kilns were in continuous operation in 1959.

In the Maxwell deposit, mining was done on two benches at elevations 240 and 265 feet.

In the Cross deposit, mining was carried out intermittently on the top of a hill at an elevation of 700 feet.

The manager of the property, where 103 men were employed in 1959, is Mr. J. Gneadinger.

ASBESTOS CORPORATION LIMITEDMegantic Electoral DistrictThetford Township

Production: asbestos

In 1959, the fibre sales of Asbestos Corporation Limited increased three per cent in value and five per cent in volume, compared with those of 1958.

The Normandie mine operated at full capacity throughout the year, whereas operations at the British-Canadian mine were suspended for two months and the King-Beaver operated at 68 per cent of its rated capacity.

The following table summarizes all the company's activities during 1959 and 1958.

	<u>1959</u>	<u>1958</u>
Overburden removed, cubic yards ...	392,398	771,914
Rock broken, tons	8,678,833	6,776,317
Ore treated, tons	3,332,955	3,207,103
Rock broken per day, tons	53,329	42,802
Ore treated per day, tons	13,612	13,064

The tonnages of ore supplied by each of the three mines were in the following ratios: the King-Beaver mine, 29 per cent; the British-Canadian mine, 34 per cent; and the Normandie mine, 37 per cent. The 28 per cent increase in the tonnage of rock broken this year, compared with that of last year, denotes an increase of activity in open-pit operations.

A summary of the work performed at each mine follows.

King-Beaver mine

All the ore treated in the new mill, located at the Beaver property, was mined, crushed and dried at the King section of the mine. Tonnage of ore treated amounted to 963,756 tons, for a daily average of 4,575 tons. This represents an increase of 16 per cent over the tonnage treated last year.

Thirty per cent of this tonnage came from underground operations conducted in blocks 701, 706 and 711 above the 700-foot level, and 20 per cent, from blocks 903, 908, 910 and 919 above the 855-foot level. Development work was concentrated in blocks 711, 716, 907, 908 and 913. Two thousand and thirty-seven feet of drifts and 1,698 feet of raises were driven. The remaining 50 per cent of the mill feed came from the open-pit section of the mine, part of which is located in the old pit of Bell Asbestos, the rest being in Asbestos Corporation ground adjacent to the Bell property in this area. Open-pit preparation entailed the removal of 1,983,537 tons of waste rock and 6,520 cubic yards of overburden. This work was done on Asbestos Corporation ground to extend, on that side, the open-pit of the Bell Asbestos. The mill of the King mine and some buildings of both the King and the Beaver mines were demolished during the year.

No important work was done in the Beaver open-pit.

As planned in the programme of the new King-Beaver organization, the ore extracted from both the King and the Beaver mines is trucked to the King for crushing and drying; it goes afterward to the Beaver for milling.

A 10,000-ton fibre storage shed has been built near the King-Beaver mill.

British-Canadian mine

The mill of the British-Canadian mine treated 1,121,903 tons of ore, for a daily average of 4,857 tons, a ten per cent reduction of the tonnage treated in 1958. Waste rock removal totalled 2,659,796 tons; this represents a waste to ore ratio of 1 to 2.3.

A new tailings removal system was inaugurated in June.

Normandie mine

The mill treated an average of 4,402 tons of ore per day for a total of 1,247,296 tons. Open-pit preparation necessitated the removal of 4,033,500 tons of waste rock and 385,878 cubic yards of overburden. The ratio of ore to waste is 1 to 3.2. Compared with the work done in 1958, the tonnage of ore mined rose by two per cent during the year under review, whereas the amount of waste rock removed increased by 43 per cent. A large amount of work was done on the upper benches, to permit mining at depth.

The general manager of the company is Mr. G. F. Jenkins. The three mines had a combined working force of 1,776 men in 1959.

BAKER TALC LIMITED

Brome Electoral District

Potton Township

Production: soapstone, talc

The total tonnage of rock extracted from the soapstone and talc deposit of Baker Talc Limited, in Potton township, amounts to 10,000 tons per year. Mining is done in the open-pit during the summer and in the underground section during the winter.

A limited amount of exploration work was done underground in 1959. The adit was extended southwestward for some 300 feet. Exploratory diamond drilling was done at right angles to the new adit section, to study ore values in that area.

A new rotary dryer and crushing system were installed in the mill located at Highwater.

The general manager of the company is Mr. J.H. Morgan. Twelve men were employed in 1959 by Baker Talc Limited.

BROUGHTON SOAPSTONE AND QUARRY LIMITED

Megantic Electoral District

Leeds Township

Production: soapstone, talc

Broughton Soapstone and Quarry Limited operates a mill in Leeds township and owns a quarry in each of the following townships: Leeds, Broughton and Thetford. The quarries located in these last two townships were in operation during the summer of 1959.

Approximately 15,000 tons of soapstone and talc ore are extracted per year. Part of this production is cut and sold in various shapes; the rest is ground to a powder and sold in bags.

The manager of the company is Mr. P.A. Cyr. In 1959, the company employed 14 men.

BELL ASBESTOS MINES LIMITED

Megantic Electoral District

Thetford Township

Production: asbestos

In 1959, Bell Asbestos Mines Limited followed its regular schedule of operations.

Total tonnage of ore treated in the mill amounted to 572,000 tons for a daily average of 1,900 tons, approximately the same as last year.

Most of the ore was extracted through underground mining operations in blocks 2, 3, 4 and 5, above the 650-foot level. About

four per cent of the ore came from development headings in blocks 5 and 6 above the 650- and the 700-foot levels, where 20 and 25 per cent of the development work remains to be done before regular mining can be started.

A small quantity of waste rock, about eight per cent of the tonnage extracted, was removed by sorting before treatment.

The practice of hand-picking crude asbestos fibres, in the open-pit, was definitively suspended at the end of the year.

The president and general manager of the company is Mr. G. W. Smith. The working force numbered 441 persons in 1959.

BLACKBURN BROS. LIMITED

Gatineau Electoral District

Hull Township

Production: mica

Mica was mined from the Blackburn mine, at Perkins Mill, in a sporadic fashion in 1959.

From May to October, an old open-pit, located 400 feet west of No. 1 shaft, was in operation. During the remainder of the year, underground mining was done in the northern section of the 100-foot level of the mine.

Mica is first sorted by hand in the working place. This is followed by a further sorting in the crushing and screening plant.

The mine produced 60 tons of mica in 1959.

The mine manager is Mr. D. Fisher-Rowe. In 1959, there were 21 men employed at this property.

CANADIAN JOHNS-MANVILLE COMPANY LIMITED

Richmond Electoral District

Shipton Township

Production: asbestos

During 1959, a total of 6,395,528 tons of rock was extracted from both the underground and the open-pit mines of the company.

The mill treated a total of 4,231,573 tons of ore at a daily rate of 18,000 tons.

About 58 per cent of the ore was extracted from underground stopes above the 750-foot level; daily tonnage mined decreased from 12,000 to 7,000 tons. The rest, 42 per cent, was supplied by the open-pit. Mining was conducted on three benches, at elevations 335, 370 and 405 feet. The open-pit average daily output of ore rose from 7,000 to 12,000 tons. The ratio of ore to waste rock was 1 to 1.4.

To allow mining at depth in the open-pit, 4,052,908 cubic yards of overburden had to be removed on the east side. Open-pit mining will gradually replace underground extraction.

The scope of underground development work has greatly decreased; it was confined to block 9-11 at the end of the year.

Some development was done on the 750-foot level in a deposit located northwest of the main one and already explored by surface diamond drilling. Interesting results were obtained, both as to the quality and the quantity of the fibres present.

The manager of the mine, where 1,713 persons were employed in 1959, is Mr. J.O. Eby.

CANADIAN REFRACTORIES LIMITED

Argenteuil Electoral District

Grenville and Harrington Townships

Production: magnesitic dolomite

Production at the Canadian Refractories mine was maintained at 460 tons of ore per day, during 1959. Most of this tonnage was shipped to the company's brick plants at Kilmar and Marelan.

Mining activity at the mine, in 1959, can be summarized as follows:

Ore extraction

No. 1 mine -	308 stope	23,279 tons
No. 2 mine -	8335 stope	19,636 tons
	7375 stope	<u>62,863 tons</u>
	Total	105,778 tons

Exploration

No. 1 mine	-	22 drill holes	-	1,715 feet
No. 2 mine	-	98 drill holes	-	17,728 feet
Totals ...		120 drill holes	-	19,443 feet

Development

No. 1 mine	-	Drifts	97 feet
		Crosscuts	79 feet
		Raises	101 feet
No. 2 mine	-	Drifts	3,643 feet
		Crosscuts	783 feet
		Raises	<u>1,127 feet</u>
		Total advance ..	5,830 feet

Total tonnage of calcined products amounted to 80,169 tons.

During 1959, the mine, under Mr. Wm. T. Bray, manager, worked 229 days with a labour force averaging 97 men.

CANADIAN SILICA CORPORATION LIMITEDDeux-Montagnes Electoral DistrictSeigneurie du Lac des Deux-Montagnes

Production: sand, silica flour

The plant of Canadian Silica Corporation Limited had an output of 5,000 tons of finished products per month.

The manager of the company is Mr. B.C. Fillingham. The company employed 33 men in 1959.

CAREY-CANADIAN MINES LIMITEDBeauce Electoral DistrictBroughton Township

Production: asbestos

During 1959, mining operations were conducted in the open-pit of the "C" deposit, on the first two benches.

The mill was treating an average of 2,400 tons of ore per day at the end of the year, an increase of 400 tons since July.

The general manager of the company is Mr. E.A. Boadway. The working force numbered 246 persons in 1959.

DOMINION LIME LIMITED
Wolfe Electoral District
Dudswell Township

Production: limestone

During 1959, 212,000 tons of rock was mined from this company's open-pit.

A total of 75,000 tons was crushed and screened, to be sold as aggregate. The crushing and screening plant was operated from May till October.

About 37,000 tons of agricultural limestone was produced; of this total, 25,000 tons was to be sold in bulk and 12,000 tons, in bags.

The 100,000 tons remaining was calcined to produce 50,000 tons of lime.

The general manager of the company is Mr. R. Pudden. The company employed 77 persons in 1959.

DOMINION SILICA CORPORATION
Montcalm Electoral District
Lussier Township

Production: crushed silica

The output of the St. Donat quarry of this company varied between 300 and 600 tons of crushed silica per day in 1959.

Forty-six men were employed under Mr. G.P. Blix.

FLINTKOTE MINES LIMITEDMegantic Electoral DistrictThetford TownshipProduction: asbestos

During 1959, the mill treated 575,000 tons of ore at a rate of 2,000 tons per day.

The ore was extracted from lots 18 and 19, range VI, Thetford township, each lot supplying 50 per cent of the total. On lot 18, mining was done on benches Nos. 4 and 5, and on benches Nos. 3 and 4, on lot 19.

Waste rock, to the amount of 1,500,000 tons had to be removed on the south side of the open-pit to allow mining at depth. The orebody dips at 55° to the south.

On the east side of the open-pit, preparations went ahead for the installation of an inclined skip way.

The manager of the mine, where 210 men were employed in 1959, is Mr. J.P. Hodgson.

GOLDEN AGE MINES LIMITEDBeauce Electoral DistrictSeigneurie Rigaud-VaudreuilDevelopment: asbestos

Golden Age Mines Limited continued the development of its asbestos deposit located on lots 16 to 19, range I, Seigneurie Rigaud-Vaudreuil.

Some 5,000 tons of ore was taken from pit No. 3, on Lot 17, and was treated in the pilot-plant with some asbestos obtained through drilling with a Calyx drill and a diamond drill.

The 10-ton-per-hour pilot-plant was in intermittent operation until the end of the working season, December 8th, 1959.

Some of the asbestos produced was shipped to the United States as a sample to assess the commercial value of the short fibres.

The mine manager is Mr. P.H. Lachance. The company employed 18 men in 1959.

INTERNATIONAL MINERALS AND CHEMICALS CORPORATION (CANADA) LIMITEDPapineau Electoral DistrictBuckingham and Derry Townships

Production: potash feldspar

The Buckingham plant of International Minerals and Chemicals treated an average of 900 tons of feldspar per month in 1959.

The ore is extracted from two partly underground mines in Derry township, 17 miles from Buckingham.

At the Back mine, the output averaged 32 tons per day; at the Smith Lake mine, 13 tons.

The manager is Mr. W.H. Hood. The working force numbered 30 in 1959.

JOHNSON'S ASBESTOS COMPANYMegantic Electoral DistrictColeraine Township

Production: asbestos

During 1959, the Johnson's mine at Black Lake, operated regularly until December 12th, when production was suspended for three months, because of an oversupply of milled fibres.

Total tonnage of rock mined amounted to 1,738,500 tons, of which 866,100 tons was treated in the mill at a daily rate of 4,000 tons. This represents a decrease of eight per cent when compared with the 1958 production.

The ore was extracted in equal amounts from the No. 2 and No. 3 open-pits. In the first one, mining is taking place on two benches at elevations of 1,060 and 1,100 feet; in the second pit, work is proceeding on three benches at elevations of 1,000, 1,060 and 1,100 feet. These elevations are above the mean sea level.

The height of the pit faces varies from 40 to 55 feet and mining is progressing so as to join the two pits into one.

A new fibre warehouse was built during the year; this building is 250 feet long, 50 feet wide and has a storage capacity of 2,000 tons.

The general manager is Mr. W.J. Johnson. In 1959, the company employed 256 persons.

JOHNSON'S COMPANY LIMITED
Megantic Electoral District
Thetford Township

Production: asbestos

In 1959, the mill treated a total of 566,000 tons of ore at a daily rate of 2,400 tons, a 14 per cent decrease from the previous year's tonnage.

The main stoping areas are blocks Nos. 2 and 3, above the 700-foot level, which supplied 40 per cent of the ore, and blocks Nos. 11 and 18, above the 1,100-foot level, which supplied 10 and 50 per cent of the ore, respectively.

Development work consisted in routine preparation of blocks Nos. 11 and 18, above the 1,100-foot level.

Some surface stripping was done on lot 461, Thetford township, to expose a deposit that will be mined by open-pit methods. A total of 24,000 cubic yards of overburden was removed; many houses and their outbuildings, located on adjacent lots, had to be moved. The company foresees the mining of 375,000 tons of rock per year; of that amount, 200,000 tons will be ore-grade material. This represents a daily rate of 800 tons of ore contained in 1,500 tons of extracted rock.

Some changes were made in the rock drying plant. Three of the six rotary driers were modified so as to burn oil instead of coal. The other three driers will be dismantled and replaced by two vertical oil-fired driers.

A 2,000-ton-capacity warehouse was built near the mill during the year. Seven-ton capacity aluminum skips have replaced the six-ton steel skips as hoisting medium.

The general manager is Mr. W.J. Johnson. The working force totalled 551 in 1959.

LAKE ASBESTOS OF QUEBEC LIMITEDMegantic Electoral DistrictIreland TownshipProduction: asbestos

The year 1959 marked the second year of production for this company. Extraction from the "A" and "C" deposits in the open-pit was increased gradually until the mill reached a daily treatment rate of 5,500 tons.

Along with its mining operations, the company did some stripping and waste rock removal. In the "A" deposit, mining took place on the 630-, 590- and 550-foot benches, whereas, in the "C" deposit, work was done only on the two benches at elevations of 590 and 550 feet.

A total of 5,493,116 tons of rock was mined; of this, 1,407,466 tons was ore grade material.

Dredging of the former lake bed was suspended in September 1959, as being too costly a way to remove what was left.

The general manager is Mr. M.J. Messel. In 1959, the mine employed 479 persons.

NATIONAL ASBESTOS MINES LIMITEDMegantic Electoral DistrictThetford TownshipProduction: asbestos

In 1959, the company was engaged in bringing into production an asbestos deposit on lot 15, range IV, Thetford township. Mining will be by open-pit methods. A 35-foot-deep trench was dug in the centre of the deposit, in an east-west direction, at right angles with the strike of the orebody. Benching will follow, allowing mining to progress both toward the east and the west.

A total of 708,099 tons of rock was mined from the open-pit and contained 614,363 tons of asbestos ore. This was treated in the mill at an average rate of 3,000 tons per day.

Stripping operations entailed the removal of 553,111 cubic yards of overburden.

Mining is carried out on a bench at an elevation of 1,150 feet.

The mine manager is Mr. R.S. Coleman. In 1959, 157 persons were employed at this property.

NICOLET ASBESTOS MINES LIMITED

Arthabaska Electoral District

Tingwick Township

Production: asbestos

In 1959, 412,707 tons of ore was mined from the open-pit, and 365,490 tons was treated in the mill at a rate of 1,600 tons per day. Sorting prior to treatment eliminated 11 per cent of the rock mined as being too low grade.

Surface diamond drilling on the south side of the open-pit disclosed enough ore to supply the mill for ten years at the actual rate of feed.

A total of 20,000 cubic yards of overburden was removed by stripping.

The quality of the milled fibres has improved greatly following the installation of new machinery in the mill.

The manager of the mine, where 102 men were employed in 1959, is Mr. L.O. Monpetit.

QUEBEC LITHIUM CORPORATION

Abitibi-East Electoral District

Lacorne Township

Production: lithium oxide, feldspar

During 1959, 166,292 tons of ore, grading 1.50 per cent lithium oxide (lithia), was treated to produce a 5.95 per cent grade of lithia concentrate. The previous year's mill feed averaged 1.55 per cent lithium oxide producing a 5.43 per cent grade of lithia concentrate.

About 3,910 tons of spodumene concentrate of ceramic grade and 3,000 tons of feldspar were produced. Most of the feldspar has been sold and its production has been discontinued indefinitely. Two-thirds of the ceramic-grade concentrate had been sold by year end.

Mining operations were carried out above the 150- and 275-foot levels. The mill feed was supplied by the mining of the "A", "B", "U" and "V" dykes, and from stope preparation in the "S" stope.

No exploration or development work was carried out in 1959, and mining and milling operations have been discontinued since November 1959, after a sufficient stockpile of concentrate was accumulated on surface. At year end, this stockpile totalled 6,700 tons grading 5.91 per cent lithia. Mining operations are expected to be resumed during the summer of 1960, when the stockpile will have been used up.

The machinery is almost completely installed in the refinery that was built the previous year. The capacity of production will be about 12,000 pounds of lithium carbonate per day. This will be obtained from the treatment of some 50 tons of concentrate per day.

Broken ore reserves are estimated at 224,086 tons. Ore ready to be mined out exceeds 1,000,000 tons, and total known reserves are such that no exploration is expected for years to come.

The general manager is Mr. L. Béliveau. In 1959, the mine employed 200 persons.

SPAR-MICA CORPORATION LIMITED

Saguenay Electoral District

Johan-Beetz Township

Production: feldspar

In 1959, the concentrator of Spar-Mica Corporation was not in continuous operation.

Most of the work stoppages were due to repairs and adjustments to the dry concentration process. In addition, the plant was shut down from July 18th to August 20th, while a new dust collecting system was installed. When operating, the mill processes an average of 113 tons of feldspar per day.

In the open-pit, mining is centered in the higher-grade South deposit. A 40-foot-wide trench has been mined toward the sea (north-south). Mining is progressing toward the west, on a 35-foot-high bench.

The president of the company is Mr. G.S. Diamond. At the mine, 53 men were employed in 1959.

B U I L D I N G M A T E R I A L S

CARRIÈRE ANDORNOLaval Electoral DistrictCap Saint-Martin

Production: dressed limestone

Not operating during the winter months, this quarry produces 5,000 tons of rough stone per year.

A. BILLET LIMITÉELaval Electoral DistrictCanton Bélanger

Production: crushed limestone

Production at the quarry of A. Billet Limitée varied between 3,000 and 3,500 tons of crushed stone per day.

BRIQUE CITADELLE LIMITÉEQuebec Electoral DistrictBoischatel and Beauport-Est

Production: bricks

The plants of this company were in operation from February 17th to April 27th, 1959. At the date of inspection on October 29th, there was no indication that the work stoppage brought by a strike would be ending soon.

Daily normal production amounts to 60,000 bricks a day.

BRODIE'S LIMITEDLabelle Electoral DistrictCampbell Township

Production: building granite

The quarry of this company, at Guénette, was in operation until September 15th, 1959, producing 20 tons of rough stone per day.

CANADA CEMENT COMPANYGatineau Electoral DistrictHull Township

Production: limestone for cement

Quarrying is taking place on two benches at elevations of 5 and 55 feet.

In 1959, the quarry supplied 260,000 tons of limestone, from which 1,200,000 barrels of cement were produced.

Laval Electoral DistrictMontréal-East

The Montreal-East quarry delivers an average of 8,000 tons of limestone per day to the cement plant.

CANADIAN PINK GRANITE REGD.Labelle Electoral DistrictCampbell Township

Production: building granite

About 75 tons of rough granite is extracted each week from the quarry located at Guénette.

CARRIÈRE BEAUDRY LIMITÉELaval Electoral DistrictVille Duvernay (Saint-Elzéar range)

Production: crushed limestone

This quarry is in operation all year, producing an average from 2,500 to 4,000 tons of crushed limestone per day.

CARRIÈRE BERNIER LIMITÉESaint-Jean Electoral DistrictBaronie de Longueuil

Production: crushed limestone

Production was maintained at 2,200 tons of crushed limestone per day, in 1959.

CARRIÈRE CHUTE-DU-DIABLELac Saint-Jean Electoral DistrictTaillon Township

Production: building granite

Operating only during the summer months, this quarry produces about 1,500 tons of rough stone.

ST. LAWRENCE CEMENT COMPANYQuebec Electoral DistrictBeauport-Est

Production: crushed limestone for cement

The quarry output averages 2,200 tons of rock per day, for a total of 440,000 tons of limestone per year, in addition to 20,000 tons of schist.

LES CARRIÈRES DE ROBERVAL LIMITÉERoberval Electoral DistrictRoberval Township

Production: crushed limestone

This quarry, located near Roberval, was operated during the summer months only; its output averages 250 tons of crushed stone per day.

LA CARRIÈRE DU CAP SAINT-MARTIN ENRG.Laval Electoral DistrictCap Saint-Martin

Production: crushed limestone

Production averages 225 tons per day.

CARRIÈRE DULUDE LIMITÉEChambly Electoral DistrictRange 25

Production: crushed siliceous limestone

Production averaged 1,500 tons of crushed stone per day; the quarry is idle during the winter months.

CARRIÈRE GOYER (DIVISION OF DOMINION LIME LIMITED)Chambly Electoral DistrictRange 22

Production: crushed siliceous limestone

This quarry produced an average of 3,000 tons of crushed stone per day.

CARRIÈRE ÉLIE GRENIER ENRG.St. Maurice Electoral DistrictShawinigan Township

Production: crushed granite

Production for 1959 has been estimated at 1,500 to 1,800 tons of crushed stone.

LES CARRIÈRES ET EXCAVATIONS BONNEAU LIMITÉEChambly Electoral DistrictVille Laflèche

Production: crushed schist

The quarry has been producing at the rate of 700 tons per day.

CARRIÈRE GOUIN LIMITÉEPortneuf Electoral DistrictSaint-Marc-des-Carrières

Production: crushed limestone

Production varied between 50 and 100 tons per day.

LES CARRIÈRES LAGACE LIMITÉELaval Electoral DistrictSaint-Martin and Cap Saint-Martin

Production: crushed limestone

This company operates two quarries:

- 1 - Carrière Lagacé: its production varied between 3,500 and 6,500 tons per day;
- 2 - Back River Quarries Limited: its production was rather uniform at 4,000 tons per day.

LES CARRIÈRES LAURENTIENNES LIMITÉE

Terrebonne Electoral District

Saint-Antoine-des-Laurentides, Sainte-Marguerite Range

Production: crushed limestone

This quarry began producing in 1959. Its production varied between 1,000 and 1,500 tons per day, during the summer months only.

LES CARRIÈRES MARTINEAU ET DESCHAMBAULT INC.

Portneuf Electoral District

Saint-Marc-des-Carrières

Production: crushed and dressed limestone

The combined output of the two quarries operated by this company, in Saint-Marc-des-Carrières, amounted to 1,200 tons of rough stone per day.

CARRIÈRE MONTRÉAL-EST LIMITÉE

Laval Electoral District

Ville Saint-Léonard-de-Port-Maurice

Production: crushed limestone

The production of this quarry varies widely, being from 4,500 to 8,000 tons per day.

LES CARRIÈRES NORMONT LIMITÉE

Laval Electoral District

Canton Bélanger

Production: crushed limestone

With its operations suspended during the winter season, the quarry produced between 3,000 and 3,500 tons of crushed rock per day.

CARRIÈRE POINTE CLAIRE INC.Beaconsfield, Jacques-Cartier

Production: crushed limestone

Quarry production was between 2,800 and 3,000 tons a day.

CARRIÈRE DE ROLAND GAUTHIERGatineau Electoral DistrictHull Township

Production: limestone for lime

Quarrying is done on a 10-foot bench at the rate of 30 tons per day.

Production is shipped to a paper mill nearby.

CARRIÈRE J. O. SAUBEGatineau Electoral DistrictHull Township

Production: limestone for lime

The production of this quarry averages 55 tons per day and is used by MacLaren Paper Company in its Masson plant.

Quarrying is progressing on a 15-foot bench.

CARRIÈRE SAINT-BARTHÉLEMI LIMITÉEBerthier Electoral DistrictCanton du Sablé

Production: crushed limestone

Production at this quarry averaged 100 tons per day.

CARRIÈRE ST-MAURICE INCORPORÉESt. Maurice Electoral DistrictSainte-Marguerite Range

Production: crushed limestone

In operation from March till December, this quarry has produced between 1,200 and 1,500 tons of stone per day.

CARRIÈRE ST-RÉGIS QUARRY ENRG.Laprairie Electoral DistrictCanton St-Régis

Production: crushed limestone

This quarry, located at Saint-Isidore Jonction, has produced crushed stone at the rate of 4,000 tons per day.

LA CARRIÈRE SHAWINIGAN LIMITÉESt. Maurice Electoral DistrictShawinigan Township

Production: crushed granite

Production at this quarry was at the rate of 400 tons per day.

L. CHARBONNEAU ET CIE.Laval Electoral DistrictVille Saint-François

Production: Dimension limestone

This quarry has a steady production of 6 to 7 tons of rough stone per day.

CARRIÈRES VARENNES LIMITÉEVerchères Electoral DistrictButte aux Renards Range

Production: crushed gneiss

This quarry was placed in operation in 1959. It has produced an average of 1,200 tons of stone per day.

CARRIÈRE DE W.M. WALLINGFORDGatineau Electoral DistrictHull Township

Production: stone for backfill

This quarry located near Cantley was operated at irregular

intervals in 1959. Its production of 65,000 tons of stone was used as backfill on the road bordering Gatineau river near Pointe-à-Gatineau.

CIMENT QUÉBEC INCORPORÉE

Portneuf Electoral District

Seigneurie d'Auteuil

Production: crushed limestone for cement

The quarry output varied between 800 and 1,500 tons per day.

DUMAS ET VOYER

Portneuf Electoral District

Bois Township

Production: building granite

The production of this quarry, located at Rivière-à-Pierre, varied depending on contracts on hand. As an average, 17 tons of rough stone can be quarried per day.

ELZÉAR VERREAULT LIMITÉE

Quebec Electoral District

Giffard

Production: crushed limestone

Production has averaged 1,200 tons per day.

FEATHEROCK INCORPORATED

Yamaska Electoral District

Saint-François-du-Lac

Production: clay for light aggregates

Operations of Featherock Incorporated, at Saint-François-du-Lac, were resumed in June, having been suspended during the winter season.

The aim of the company is to treat clay so as to obtain aggregates to be used in concrete or in refractory bricks. The rated capacity of the plant is 400 cubic yards of clay per day.

During a few months of the year, the plant treated 200 cubic yards of clay per day. The finished product was sold in Montreal for building purposes. The company states that the use of this light aggregate in concrete structures will reduce their weight by 30 per cent without impairing their strength.

J.-O. GAUTHIER LIMITÉE
Portneuf Electoral District
Saint-Marc-des-Carières

Production: crushed and dressed limestone

The yearly production of this quarry averages as follows:

38,000 tons of crushed stone;
6,000 tons of dressed stone;
46,000 tons of stone for paper mills.

GINGRAS ET FRÈRES LIMITÉE
Portneuf Electoral District
Saint-Marc-des-Carières

Production: dimension limestone

Production averaged 48 tons per week.

GRANIT NATIONAL LIMITÉE
Lac Saint-Jean Electoral District
Signay Township

Production: building granite

This company operates two quarries; one at Saint-Gédéon, the other at Ile d'Alma; they both produce about 75 tons of rough stone per day.

JEAN BÉDARD LIMITÉE
Caughnawaga Reserve, Laprairie

Production: crushed limestone

The quarry, situated on the outskirts of Caughnawaga village, produced between 2,000 and 3,000 tons a day.

COOKSVILLE-LAPRAIRIE BRICK LIMITEDLaprairie Electoral DistrictLaprairie and Delson

Production: bricks

This company operates two schist quarries: one at Laprairie, having an output of 3,200 tons per day; the other at Delson, with an output of 9,000 tons per month.

LAURENTIAN GRANITE COMPANY LIMITEDLabelle Electoral DistrictCampbell Township

Production: building granite

The quarry of this company, located at Guénette, produced an average of 120 tons of rough stone per month, until August 1959, when operations were suspended.

MELROSE GRANITE LIMITEDLabelle Electoral DistrictCampbell Township

Production: building granite

This quarry, located at Guénette, produced an average of 50 tons of rough stone per week.

MICHAUD ET SIMARD INCORPORÉEQuebec Electoral DistrictCharlesbourg-Ouest

Production: crushed limestone

Idle during the winter season, this quarry produced between 2,000 and 3,000 tons of crushed limestone per day, during the rest of the year.

With a mobile crushing plant, the company produces 800 to 1,000 tons of gravel per day.

MIRON ET FRERESLaval Electoral DistrictVille Saint-Michel

Production: crushed limestone

In 1959, production of crushed stone averaged 15,000 tons per day.

A cement plant, with a rated output of 3,000,000 barrels per year, will be placed in operation early in 1960.

MONTREAL CUT STONE LIMITEDLaval Electoral DistrictVille Saint-François

Production: dimension stone

This company has produced about 4,000 tons of dressed stone during the year.

MOUNT-ROYAL PAVING AND SUPPLIES LIMITEDBerthier Electoral DistrictBrandon Township

Production: sand

The company's sand pit, located at Saint-Gabriel-de-Brandon, has produced about 5,000 tons of sand per day.

NATIONAL QUARRIES LIMITEDLaval Electoral DistrictVille Saint-Michel

Production: crushed limestone

During the summer season, this quarry produced between 17,000 and 24,000 tons of crushed stone per day; this was reduced to 3,000 or 4,000 tons per day in winter time.

PAUL VIAU CONSTRUCTIONBeauharnois Electoral DistrictNouveau Salaberry de Valleyfield

Production: crushed limestone

This quarry has produced about 600 tons of crushed stone

PLOURDE ET PLOURDE LIMITÉE
Chicoutimi Electoral District
Tremblay Township

Production: crushed limestone

This quarry, located at Saint-Honoré, produced between 400 and 800 tons of stone per day, during the summer season.

RED GRANITE QUARRY LIMITED
Argenteuil Electoral District
Grenville Township

Production: granite

This company operates a granite quarry at Rawcliffe, during the summer months. The production is sold for monuments and for building purposes.

SABLE DES MILLE-ILES LIMITÉE
L'Assomption and Joliette Electoral Districts

Production: sand

This company operates three sand pits:

- 1 - at Saint-Henri-de-Mascouche; its output equals 600 tons per day;
- 2 - at Mascouche; output equals 400 tons per day;
- 3 - at Notre-Dame-de-Lourdes (Joliette); output also equals 400 tons per day.

ST. FRANCIS ROCK PRODUCTS AND EQUIPMENT LIMITED
Jacques Cartier Electoral District
Ville de Saint-Laurent

Production: crushed limestone

In 1959, production averaged 400 tons of stone per day.

ST. LAWRENCE BRICK COMPANY LIMITEDLaprairie Electoral DistrictVille Laprairie

Production: bricks

The schist quarry operated by the company, at Laprairie, supplies enough raw materials to assure the production of 175,000 bricks per day.

SCOTSTOWN GRANITE COMPANY LIMITEDArgenteuil Electoral DistrictGrenville Township

Production: granite blocks

In 1959, the company's Rawcliffe quarry produced about 500 tons of granite in blocks. These were sent to the dressing plant located at Cap-Saint-Martin.

STANDARD LIME COMPANY LIMITEDJoliette Electoral DistrictVille de Joliette and Sainte-Emilie

Production: crushed limestone, lime and sand

The company's quarry produces about 50,000 tons of rough stone per month.

The Sainte-Emilie sand pit produced 2,500 tons of sand and 40 tons of gravel per day during the year.

Portneuf Electoral DistrictSaint-Marc-des-Carrières

Production: crushed limestone and lime

The Standard Lime quarry operated at the rate of 550 tons of rock per day in summer time, and at 400 tons per day during the remainder of the year.

UNION CONSTRUCTION LIMITEESaint-Jean Electoral DistrictBaronie de Longueuil

Production: crushed limestone

This quarry had an average production of 2,500 tons per day.

UNION DES CARRIÈRES ET PAVAGES LIMITÉEQuebec Electoral DistrictCharlesbourg-Ouest

Production: crushed limestone

This quarry's production varied between 2,500 and 2,800 tons per day.

The company also produces gravel at the rate of 1,200 tons per day, using a mobile crushing plant.

UNITED STONE PRODUCTS LIMITEDJacques Cartier Electoral DistrictSainte-Geneviève Parish

Production: crushed limestone

Production has averaged 1,000 tons per day.

WESTERN QUEBEC CONSTRUCTION LIMITEDGatineau Electoral DistrictHull Township

Production: crushed stone

Quarrying is progressing on a 13-foot-high bench. In November 1959, a lower bench, 20 feet high, was being readied for quarrying.

The output of crushed stone averaged 100 tons per hour, with three sizes of stone produced: 1 inch, 5/8 inch and 3/8 inch.

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959

(Locality means township except when otherwise stated;
symbols "p" "t" signify parish and territory.)

Locality	Mine	Mine (Feet)	Total (Feet)	
Aloigny	Area Mines Ltd.	937	737	
Aylmer	Fortunata Mines Ltd.	485	485	
Bapst	Silco Exploration Co. Ltd.	847	847	
Barlow	Phelps Dodge Corporation of Canada Ltd.	1,194	1,194	
Barraute	Bargold Mines Ltd.	3,083		
	Canadian Shield Mining Corp.	6,696		
	Terra Nova Explorations Ltd.	3,740		
	Tri-Cor Mining Co. Ltd.	9,929	23,448	
Béarn	Stadacona Mines (1944) Ltd.	1,925	1,925	
Beauchastel	Alrose Mining Co. Ltd.	2,353		
	Eplett (G.S.) Mining and Development Co. Ltd.	2,528		
	Macon Mining Co. Ltd.	1,916		
	R.M. Nickel Mines Ltd.	20,752		
	Ventures Limited	816		
	West Wasa Mines Ltd.	3,587		
	Wm. Leys Mining Corp. Ltd.	2,200	34,152	
	Benoft	McIntyre Porcupine Mines Ltd.	1,447	1,447
	Berthiaume	Jaylac Mines Ltd.	404	404
	Bossé	Chesbar Chibougamau Mines Ltd.	17,083	17,083
Bourlamaque	East Sullivan Mines Ltd.	70,854		
	Lamaque Mining Co. Ltd.	78,533		
	Manitou-Barvue Mines Ltd.	57,482		
	Rainville Mines Ltd.	14,500		
	Sigma Mines (Quebec) Ltd.	47,872	269,241	
Bouthillier	Itala Copper Ltd.	208	208	
Branssat	The Mining Corporation of Canada Ltd. ...	400	400	
Bristol	The Hilton Mines	9,856	9,856	
Brongniart	The Mining Corporation of Canada Ltd. ...	348	348	
Broughton	Carey-Canadian Mines Ltd.	3,165	3,165	
Brouillan	Selco Exploration Co. Ltd.	798	798	
Bruneau	Roberval Mining Corporation	175	175	
Carheil	Silco Exploration Co. Ltd.	1,304	1,304	

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)
Carpiquet	Nightlen Mines Ltd.	1,005	1,005
Casa-Berardi	Moneta Porcupine Mines Ltd.	2,318	2,318
Cavelier	Cartier Quebec Explorations Ltd.	3,843	
	Chimo Gold Mines Ltd.	1,923	
	East Sullivan Mines Ltd.	5,452	
	Quebec Manitou Mines Ltd.	1,202	12,420
Champlain	Robert McMaster and Son	3,024	3,024
Château- Richer (P.)	Gagnon et Frères	550	550
Chazel	Rouandah Oils and Mines Ltd.	678	678
Coleraine	Central Asbestos Mines Ltd.	1,284	1,284
Comporté	Three Brothers Mining Exploration Ltd. ..	1,943	1,943
Courville	Big Town Copper Mines Ltd.	3,862	3,862
Currie	Southwest Potash Corp.	502	502
Dalet	Kerr-Addison Gold Mines Ltd.	4,566	4,566
Daniel	Anchor Petroleum Ltd.	502	
	Bidcop Mines Ltd.	1,000	
	Canada Radium Corporation Ltd.	1,128	
	Dearing Explorers Corporation Ltd.	1,984	
	Daniel Mining Company Ltd.	14,684	
	D'Aragon Mines Ltd.	4,131	
	Donalda Mines Ltd.	501	
	Mile 18 Mines Ltd.	2,069	
	Negor Mines Ltd.	3,127	
	New Hosco Mines Ltd.	64,336	
	Newmont Mining Corporation of Canada Ltd.	19,098	
	The Consolidated Mining and Smelting Co. of Canada Ltd.	2,250	
	The Mining Corporation of Canada Ltd.....	7,092	121,904
	Dasserat	Odyno Exploration and Development Ltée ..	597
	Pitchvein Mines Ltd.	7,597	8,194
Daubrée	The Mining Corporation of Canada Ltd. ...	385	385
Denain	Lamaque Mining Co. Ltd.	1,496	1,496
Desmazures	Alcourt Mines Ltd.	1,376	
	Harrison Minerals Ltd.	3,066	
	North Mattagami Mines Ltd.	661	5,103
Desmeloizes	Duvan Copper Co. Ltd.	7,225	
	Normetal Mining Corporation Ltd.	3,963	11,188

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)
Disson	Rouandah Oils and Mines Ltd.	571	571
Dolomieu	The Mining Corporation of Canada Ltd. ...	2,375	2,375
Douay	North Mattagami Mines Ltd.	418	418
Dubuisson	Malartic Gold Fields Ltd.	15,998	
	Wisik Gold Mines Ltd.	750	16,748
Ducros	Valray Explorations Ltd.	6,379	6,379
Dufresnoy	Consolidated Vauze Mines Ltd.	26,902	
	Lake Dufault Mines Ltd.	30,822	
	South Dufault Mines Ltd.	3,452	
	The Consolidated Zinc Corporation of Canada Ltd.	7,419	
	Waite-Amulet Mines Ltd.	23,453	92,048
Duparouet	Stadacona Mines (1944) Ltd.	1,609	1,609
Duplessis	McIntyre Porcupine Mines Ltd.	913	
	Moneta Porcupine Mines Ltd.	1,391	2,304
Duprat	Ansil Mines Ltd.	15,525	
	New West Amulet Mines Ltd.	6,377	21,902
Dussieux	Candore Explorations Ltd.	1,768	1,768
Duverny	Dumont Nickel Corporation	4,097	4,097
Eardley	McDougall Luska Mineral Exploration	800	800
Enjalran	Kesagami Syndicate	5,433	
	Prospectors Airways Co. Ltd.	142	
	Silco Exploration Co. Ltd.	4,936	10,511
Fournière	Barnat Gold Mines Ltd.	52,858	
	Canadian Malartic Gold Mines Ltd.	38,060	
	East Amphi Gold Mines Ltd.	1,429	
	East Malartic Mines Ltd.	59,468	151,815
Franquet	Southern Union Oils Ltd.	1,588	1,588
Galinée	Bracemac Mines Ltd.	5,038	
	Camflo Mattagami Mines Ltd.	1,693	
	Dolmac Mines Ltd.	3,810	
	Dome Exploration Co. (Quebec) Ltd.	6,547	
	Duvex Oils and Mines Ltd.	2,000	
	Joburke Gold Mines Ltd.	7,386	
	Korich Mining Co. Ltd.	550	
	Lynx Yellowknife Gold Mines Ltd.	2,494	

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)	
Galinée (Cont'd.)	McIntyre Porcupine Mines Ltd.	4,572		
	Noranda Mines Ltd.	79,000		
	Watson Lake Mines Ltd.	7,452	120,842	
Gamache	The Mining Corporation of Canada Ltd. ...	914	914	
Grand-Calumet	New Calumet Mines Ltd.	14,541	14,541	
Grasset	The Mining Corporation of Canada Ltd. ...	1,197	1,197	
Grevet	East Sullivan Mines Ltd.	6,393	6,393	
Guercheville	Lyndhurst Mining Co. Ltd.	3,210		
	Watson, G.O.	1,511	4,721	
Guettard	Fortunata Mines Ltd.	137	137	
Guyenne	Trade-Horne Ltd.	2,477	2,477	
Ham Sud	Amalgamated Larder Mines Ltd.	634		
	Asbestos Crude and Fibre Mines Ltd.	5,307	5,307	
Harrington	Canadian Refractories Ltd.	19,443	19,443	
Hébécourt	Nealon Mines Ltd.	2,371	2,371	
Holland	Gaspé Copper Mines Ltd.	48,107	48,107	
Hull	Quebec South Shore Steel Corp.	10,647	10,647	
Ireland	Lake Asbestos of Quebec Ltd.	10,118	10,118	
Isle-Dieu	Chibougamau Mining and Smelting Co. Inc.	3,094		
	Garon Lake Mines Ltd.	1,684		
	Mattagami Explorers Corp.	1,600		
	North Mattagami Mines Ltd.	1,664		
	Norvalie Mines Ltd.	3,009		
	Orchan Mines Ltd.	71,814		
	Radiore Uranium Mines Ltd.	15,199		
	Ventures Limited.	3,238	101,302	
	Joannès	East Sullivan Mines Ltd.	3,587	3,587
	Jonquière	Saguenay Exploration and Mining Inc.	1,271	1,271
Augustus Exploration Ltd.		1,368		
Joutel	East Trinity Mining Corp.	1,000		
	Prospectors Airways Co. Ltd.	1,857		
	Rio Tinto Canadian Exploration Ltd.	900	5,125	
Lacorne	Molybdenite Corporation of Canada Ltd. ..	26,455	26,455	
Lacroix	Kennco Explorations (Quebec) Ltd.	860	860	

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)
La Gauche- tière	Franksin Mines Ltd.	1,583	
	Northcal Oils Ltd.	1,678	
	Southern Union Oils Ltd.	3,350	6,611
La Moran- dière	East Sullivan Mines Ltd.	4,269	4,269
LaMotte	Bilson Quebec Mines Ltd.	1,518	
	Canperu Mining Corporation Ltd.	304	
	Falconbridge Nickel Mines Ltd.	6,984	8,806
Languedoc	McIntyre Porcupine Mines Ltd.	629	
	Rouandah Oils and Mines Ltd.	279	908
La Pause	Baycourse Mines Ltd.	500	
	East Sullivan Mines Ltd.	906	1,406
Lavergne	East Sullivan Mines Ltd.	2,513	2,513
Laverlochère	Montclair Mining Corp. Ltd.	8,244	8,244
Lemoine	Chibougamau Mining and Smelting Co. Inc.	207	207
Lespérance	Opemisca Explorers Ltd.	1,323	
	Quebec Smelting and Refining Ltd.	2,771	4,094
Lévy	Chiboug Copper Corporation	3,377	
	Hoyle Mining Co. Ltd.	779	
	Opemiska Copper Mines (Quebec) Ltd.	72,827	76,983
Ligneris	Rouandah Oils and Mines Ltd.	697	697
Louvicourt	Akasaba Gold Mines Ltd.	13,484	
	Bevcon Mines Ltd.	42,315	
	Camflo Mattagami Mines Ltd.	852	56,651
Lozeau	Chibougamau Mining and Smelting Co. Inc.	2,087	
	Mattagami Syndicate	1,237	
	New Faulkenham Mines Ltd.	1,521	
	Rio Tinto Canadian Exploration Ltd.	1,554	
	R.J. Jowsey Mining Co. Ltd.	1,932	8,331
Maizerests	Kennco Explorations (Quebec) Ltd.	377	377
Malartic	East Sullivan Mines Ltd.	773	
	Lavandin Mining Co.	3,065	3,838

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)
McKenzie	Campbell Chibougamau Mines Ltd.	46,428	
	Chibougamau Mining and Smelting Co. Inc.	1,354	
	Copper Rand Chibougamau Mines Ltd.	26,823	
	Norbeau Mines Ltd.	6,997	
	Taché Lake Mines Ltd.	1,207	82,809
McLachlin	Geisler, R.A.	1,087	1,087
Mistassini (T)	Albanel Minerals Ltd.	9,999	
	Bibis Yukon Mines Ltd.	4,504	
	Broadback Mines Ltd.	4,000	
	Canadian Northwest Mines and Oils Ltd. ..	5,994	
	Dauphin Iron Mines Ltd.	4,373	
	Deranco Mines Ltd.	5,200	
	Fundy Bay Copper Mines Ltd.	1,512	
	Jacobus Mining Corporation	2,016	
	Phelps Dodge Corporation of Canada Ltd ..	4,732	43,330
	Montauban	Ghislau Mining Corp. Ltd.	2,200
Montbeillard	Odyno Exploration and Development Ltée ..	150	150
Montbray	Inmont Copper Mines Ltd.	1,700	1,700
Montgolfier	Ansil Mines Ltd.	3,422	
	Selco Exploration Co. Ltd.	1,174	5,196
Nelligan	McIntyre Porcupine Mines Ltd.	777	
	Ventures Limited	1,790	2,567
Normanville	Mount Wright Iron Mines Limited	4,909	
	Moore, W.S.	2,005	6,914
Obalski	Bakeman Bay Mining Co.	13,443	
	Campbell Chibougamau Mines Ltd.	111,931	
	Chib-Kayrand Copper Mines Ltd.	5,679	
	Chibougamau Mining and Smelting Co. Inc.	982	
	Kennco Explorations (Quebec) Ltd.	935	
	La-Chib Mines Ltd.	2,009	
	Merrill Island Mining Corp. Ltd.	18,168	153,147
Oka (P.)	Quebec Columbiun Ltd.	8,521	
	St. Lawrence River Mines Ltd.	18,883	27,404
Opemisca	Magnum Copper Ltd.	2,892	2,892
Pascalis	Pascalis Gold Mines Ltd.	3,231	3,231

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)
Poirier	Rio Tinto Canadian Exploration Ltd.....	6,725	6,725
Potton	Baker Talc Ltd.	795	795
Preissac	Anglo American Mines Ltd.	343	
	Preissac Molybdenite Mines Ltd.	1,000	1,343
Price	Terra Nova Exploration Ltd.	2,464	2,464
Quévillon	East Sullivan Mines Ltd.	1,470	
	Quebelle Mines Ltd.	3,150	4,620
Rageot	The Mining Corporation of Canada Ltd. ...	2,481	2,481
Rasles	The Mining Corporation of Canada Ltd. ...	1,269	1,269
Rohault	Anacon Lead Mines Ltd.	24,668	
	Rohault Mines Ltd.	6,062	30,730
Rouyn	East Sullivan Mines Ltd.	3,001	
	Elder Mines and Developments Ltd.	7,655	
	Eldrich Mines Ltd.	15,308	
	Here Fault Copper Ltd.	231	
	Invex Iron Mines Ltd.	801	
	New Rouyn Merger Mines Ltd.	8,849	
	Noranda Mines Ltd.	15,654	
	Noranglo Mines Ltd.	2,010	
	Quemont Mining Corporation	54,819	
	Tribag Mining Co. Ltd.	1,606	109,934
	Roy	Chibougamau Mining and Smelting Co. Inc.	1,097
Grandroy Island Ltd.		1,248	
Portage Island (Chibougamau) Mines Ltd.		750	3,095
St. Armand (P.)	La Mine de Cuivre Frelighsburg	300	300
Ste. Hélène	St. Mary's Explorations Ltd.	3,000	
	Selco Exploration Co. Ltd.	1,450	
	Three Brothers Mining Exploration Ltd. ..	492	4,942
St. Hilaire (P.)	Chess Mining Corporation	2,000	2,000
St. Maurice	Caprive Oil and Gas Co. Ltd.	1,740	
	Robert McMaster and Son	1,006	2,746
St. Urbain (P.)	Kelly Mining Corporation	15	
	Les Minéraux Laurentiens Ltée	1,612	1,627
Seignelay	Pickands-Mather and Co.	13,810	13,810

Table 43.- Exploratory Diamond Drilling in the
Province of Quebec in 1959 (Cont'd.)

Locality	Mine	Mine (Feet)	Total (Feet)
Senneterre	Kennco Explorations (Quebec) Ltd.	2,378	2,378
Senneville	Lake Expanse Gold Mines Ltd.	1,964	1,964
Scott	Chibougamau Mining and Smelting Co. Inc	450	450
Shipton	Canadian Johns-Manville Co. Ltd.	20,739	20,739
Stratford	Cyprus Exploration Corp. Ltd.	6,679	
	East Sullivan Mines Ltd.	14,996	
	Lake Chibougamau Mines Ltd.	1,002	
Subercase	Moneta Porcupine Mines Ltd.	527	23,204
	Grasset Lake Mines Ltd.	2,933	
	Hudson Bay Exploration and Development Co. Ltd.	23,014	
Thetford	Newlund Mines Ltd.	1,055	27,002
	Asbestos Corporation Ltd.	27,215	
	Empire Asbestos Ltd.	4,606	
Tiblemont	Paradis, J.A.	1,206	33,027
	Smith-Tiblemont Mines Ltd.	19,951	19,951
Tingwick	Nicolet Asbestos Mines Ltd.	12,879	12,879
Turgeon	Kennco Explorations (Quebec) Ltd.	2,340	2,340
Ungava (T.) and New Quebec	Great Whale Iron Mines Ltd.	10,224	
Vassan	Hollinger North Shore Exploration Co. Ltd.	12,752	
	Keewa Quebec Mines Ltd.	3,850	
	Main Exploration Co. Ltd.	3,349	
	Noranda Mines Ltd.	941	31,116
Weedon	Norlartic Mines Ltd.	18,257	
	Stadacona Mines (1944) Ltd.	802	19,059
	Weedon Mining Corporation	6,286	6,286
	Total		2,154,637

Table 44. - General Mining Operations in the

Province of Quebec in 1959

(As reported in annual reports of mining companies when available)

Mining Company	Lateral Work (Feet)	Raising (Feet)	Shaft Sinking (Feet)	Exploratory Diamond Drilling (Feet)
Anacon Lead Mines Limited	5,176	1,654	680	24,670
Barnat Mines Limited	(a) 10,346	-	-	52,858
Belleterre Quebec Mines Ltd...	(b) -	-	-	-
Bevcon Mines Limited	-	-	-	42,315
Campbell Chibougamau Mines Limited	11,656	977	879	135,293
Canadian Malartic Gold Mines Limited	9,064	3,437	-	37,970
East Malartic Mines Limited ..	8,293	-	-	59,468
East Sullivan Mines Limited ..	(a) 12,454	-	-	70,852
Elder Mines and Developments Limited	996	182	-	7,655
Eldrich Mines Limited	2,339	342	-	15,308
Gaspé Copper Mines Limited ...	(c) 9,112	2,340	-	48,107
Lamaque Gold Mines Limited ...	8,840	6,854	-	78,538
Malartic Gold Fields Limited .	-	-	-	-
Manitou Barvue Mines Limited .				57,482
Merrill Island Mining Corporation	1,853	1,667	-	3,645
Molybdenite Corporation of Canada Limited	6,682	814	228	19,722
New Calumet Mines Limited	(a) 3,304	-	-	9,889
Noranda Mines Limited	3,469	201	-	15,654
Normetal Mining Corporation Limited	2,432	540	825	3,969
Opemiska Copper Mines (Quebec) Limited	15,689	7,032	-	72,827
Quebec Lithium Corporation ...	44	16	-	-
Quemont Mining Corporation Limited	3,705	1,929	632	54,819
Sigma Mines (Quebec) Limited .	8,705	6,455	473	47,872
Sullivan Consolidated Mines Limited	8,998	5,776	-	44,461
Waite-Amulet Mines Limited	-	-	-	23,453

(a) Includes raises

(b) Operations suspended February 15th, 1959

(c) Includes inclined roadways

Table 45. - Production from Gold Mines in the Province of Quebec in 1959

(As reported in annual reports of mining companies when available)

Mine	Ore Treated (Tons)	R E C O V E R Y		Gold Recovered Per Ton of Ore Treated (Ounces)
		Gold (Ounces)	Silver (Ounces)	
Anacon Lead Mines Limited	98,108	17,955	12,503	0.1830
Barnat Mines Limited	224,472	-	-	-
Belleterre Quebec Mines Limited	14,289	3,909	4,304	0.2728
Bevcon Mines Limited	243,788	29,420	11,182	0.1207
Canadian Malartic Gold Mines Limited ...	467,413	41,220	15,852	0.0881
East Malartic Mines Limited	544,137	-	-	-
Elder Mines and Developments Limited ...	143,431	20,391	-	0.1422
Eldrich Mines Limited	120,476	16,528	-	0.1372
Lamaque Gold Mines Limited	758,470	122,933	19,331	0.1620
Malartic Gold Fields Limited	578,482	96,326	5,442	0.1665
Sigma Mines (Quebec) Limited	410,112	73,852	-	0.1801
Sullivan Consolidated Mines Limited	178,942	41,043	9,432	0.229

Mining Industry

Table 46. - Ore Reserves of Producing Gold Mines in the Province of Quebec in 1959

(As reported in annual reports of mining companies when available)

Mining Company	Reserves (Tons)	Gold Content Oz./Ton	Tons Treated 1959	Mill Heads Oz./Ton	Commencement of Operations
Anacon Lead Mines Limited	324,000	0.206	98,105	0.204	1956
Barnat Mines Limited	692,264	0.153	224,472	-	1938
Bevcon Mines Limited	300,000	0.140	243,788	0.130	1952
Canadian Malartic Gold Mines Limited	952,500	0.110	467,413	0.098	1935
East Malartic Mines Limited	1,328,271	0.208	544,137	0.213	1938
Elder Mines and Developments Limited	-	-	143,431	-	1946
Eldrich Mines Limited	-	-	120,476	-	1956
Lamaque Gold Mines Limited	2,365,710	0.181	758,470	0.166	1935
Malartic Gold Fields Limited	375,000	0.180	578,482	-	1939
Sigma Mines (Quebec) Limited	1,383,600	0.228	410,112	0.187	1937
Sullivan Consolidated Mines Limited	645,945	0.241	178,942	0.240	1934

Table 47. - Production of Base-Metal Mines in the Province of Quebec in 1959

(As reported in annual reports of mining companies when available)

Mining Company	Tons Treated	P R O D U C T I O N					
		Copper (Pounds)	Zinc (Pounds)	Lead (Pounds)	Gold (Ounces)	Silver (Ounces)	Pyrite (Tons)
Anacon Lead Mines Limited	98,108	778,955	-	-	17,955	12,503	-
Campbell Chibougamau Mines Ltd...	735,637	31,036,537	-	-	36,411	248,720	-
East Sullivan Mines Limited	957,137	14,363,734	2,511,349	-	4,240	148,822	-
Gaspé Copper Mines Limited	2,344,000	66,822,000	-	-	4,356	462,610	-
Manitou Barvue Mines Limited	468,225	5,167,305	20,395,803	2,212,823	10,583	751,695	-
Merrill Island Mining Corporation	149,850	7,357,729	-	-	1,218	59,075	-
New Calumet Mines Limited	103,120	-	15,685,893	3,979,812	1,161	351,900	-
Noranda Mines Limited	1,381,000	52,960,000	-	-	186,600	987,000	232,900
Normetal Mining Corporation Ltd..	376,360	22,513,116	18,884,201	-	6,833	582,577	18,530
Opemiska Copper Mines (Quebec) Limited	443,444	28,544,531	-	-	13,080	169,300	-
Quemont Mining Corporation	850,099	20,745,362	33,241,006	-	108,282	360,362	240,294
Waite-Amulet Mines Limited	311,400	25,660,000	17,100,000	-	7,132	198,550	55,130

Mining Industry

Table 48. - Ore Reserves of Base-metal Mines in the Province of Quebec in 1959
(As reported in annual reports of mining companies when available)

Mine	Reserves (Tons)	Copper Content (Per Cent)	Zinc Content (Per Cent)	Gold Content (Oz./Ton)	Silver Content (Oz./Ton)	Tons Treated in 1959	Commencement of Operations
Anacon Lead Mines Limited	324,000	0.39	-	0.206	-	98,108	1956
Campbell Chibougamau Mines Ltd.	2,437,609	2.52	-	0.052	-	735,637	1955
East Sullivan Mines Limited ...	3,004,000	1.00	0.73	0.008	0.218	957,137	1943
Gaspé Copper Mines Limited	63,710,000	1.29	-	-	-	2,344,000	1955
Manitou Barvue Mines Limited:						468,225	1942
Copper ore	800,000	1.1	-	0.02			
Zinc ore	438,200	-	7.1	0.03	5.7		
Merrill Island Mining Corp. ...	600,286	2.36	-	0.01	0.40	149,850	1958
New Calumet Limited	225,925	-	7.99	0.019	4.45	103,120	1943
Noranda Mines Limited:						1,381,000	1927
Sulphide ore	9,303,000	2.29	-	0.19			
Fluxing ore	928,000	0.13	-	0.12			
Chadbourne	1,550,000	-	-	0.13			
Zone No. 5	320,000	-	-	0.23			
Zone No. 5	1,500,000	0.7	-	0.12			
Normetal Mining Corporation ...	1,598,700	3.59	5.05	-	-	376,360	1937
Opemiska Copper Mines (Quebec) Limited	4,759,100	2.90	-	-	-	443,444	1954
Quemont Mining Corp. Limited ..	6,220,000	1.32	2.71	0.176	1.06	850,099	1949
Waite-Amulet Mines Limited	550,000	4.70	3.40	-	-	311,400	1937

Table 49. - Production of Various Mines in the Province of Quebec 1959

(As reported in annual reports of mining companies when available)

Mining Company	Tons Treated	Bismuth (Pounds)	Molybdenum (Pounds)	Lithium Oxide (Pounds)
Molybdenite Corporation of Canada Limited ..	153,222	93,016	599,565	
Quebec Lithium Corporation	203,740	-	-	2,756,280

Table 50. - Ore Reserves of Various Mines in the Province of Quebec in 1959

(As reported in annual reports of mining companies when available)

Mining Company	Tons Treated	Molybdenite (Per Cent)	Lithium (Per Cent)	Tons Treated in 1959	Commencement Of Operations
Molybdenite Corporation of Canada Limited ..	340,889	0.39	-	-	1942
Quebec Lithium Corporation	4,000,000	-	1.55	203,740	1955

EMPLOYMENT, WAGES, AND ACCIDENTS IN MINES
AND QUARRIES DURING THE YEAR 1959

EMPLOYMENT

During the year 1959, there were 32,984 men employed in the mining industry of the Province of Quebec, an increase of 1,057 compared with the figure for the previous year.

In the mines, the number of men employed in the development and production of metals increased by 682, compared with that of the year 1958.

In the quarries, employment increased by 375, in relation to that of the year 1958. The number of man-hours worked was 63,249,727.

Employment was distributed among 532 mines, mining contractors and exploration companies, 172 quarries, 3,992 sand and gravel pits, of which 1,707 pits were operated by the Quebec Department of Roads and 1,032, by the Quebec Department of Colonization, and 34 diamond-drilling contractors, as well as numerous claim-holders who carried out assessment work.

Table 51. - Men Employed in Mines and Quarries
in the Province of Quebec from 1953 to 1959

	1953	1954	1955	1956	1957	1958	1959
Number of men employed	29,088	29,680	31,103	31,743	34,726	31,927	32,984
Number of million man-hours worked	56.812	57.853	61.940	63.919	65.962	61.203	63.250

Table 52 shows the distribution of workmen in the various branches of the mining industry.

Table 52. - Personnel Employed in the Mining Industry of the
Province of Quebec in 1959

Substance	Number of Employees	Salaries and Wages	Number of Hours Worked	Number of 300-day Workers (a)
METALLICS				
Columbium, uranium	41	\$ 100,852	49,665	21
Copper (includes sulphur and selenium)	6,822	28,772,006	14,186,098	5,911
Gold	3,358	12,282,752	7,299,290	3,041
Iron and titanite iron (includes titanium dioxide)	3,818	21,929,434	8,638,616	3,600
Magnesium	163	653,086	253,033	105
Molybdenum	204	614,382	387,183	161
Nickel	13	24,516	9,716	4
Zinc and lead	524	2,018,172	1,102,290	459
Diamond drilling contractors	709	2,738,856	1,619,871	675
Sub-totals	15,652	\$ 69,134,056	33,545,762	13,977
NON-METALLICS				
I. - Industrial Minerals				
Asbestos	6,071	\$ 28,352,682	12,596,981	5,249
Feldspar	100	288,070	181,444	76
Lime	312	1,097,514	660,600	275
Lithium	200	775,169	440,795	184
Magnesitic dolomite and brucite	343	1,472,633	734,808	306
Marl	48	110,650	73,390	30
Mica	25	37,106	35,099	14
Mineral water	14	23,256	24,041	10
Ochre and iron oxide	22	45,275	37,807	16
Petroleum	26	38,016	18,879	8
Peat	730	763,024	885,496	369
Quartz and industrial sand	170	470,834	282,728	118
Soapstone and talc	26	77,632	64,413	27
Other (fluorite, graphite, kaolin, pyrite)	13	21,613	25,324	11
Sub-totals	8,100	\$ 33,573,474	16,061,805	6,693
II. - Building Materials				
Cement	937	\$ 4,434,704	2,050,125	854
Clay products	1,100	3,767,042	2,058,410	858
Granite	747	1,631,388	1,172,976	489
Limestone	1,419	4,519,200	2,967,784	1,237
Marble	42	88,014	75,480	31
Sand and gravel	4,811	5,920,301	5,014,864	2,090
Sand-lime products	40	182,593	104,264	43
Sandstone	125	357,646	179,815	75
Slate and shale	11	29,126	18,442	7
Sub-totals	9,232	\$ 20,930,014	13,642,160	5,684
TOTALS	32,984	\$ 123,637,544	63,249,727	26,354

(a) Number of hours divided by 2400.

WAGES

Wages paid to mine and quarry employees in the Province in 1959 amounted to \$123,637,544, compared with \$115,883,179 in 1958.

Details concerning wages and employment in the various branches of the mining industry are listed in Table 53. Of the total, workmen in mines received \$102,707,530 and quarry workers, \$20,930,014 compared with \$95,922,693 and \$19,960,486, respectively, in 1958.

The average wage per man per 300 days of work in the mining industry was \$4,969, compared with \$4,856 in the previous year.

The average wage per man per 300 days of work in the quarrying industry was \$3,682 compared with \$3,477 in the previous year.

Table 53. - Men Employed in Producing and Non-producing Mines, and in Diamond Drilling in 1959

	Number Employed	Salaries and Wages	Number of Man-hours of Work	Number of 300-day Workers
Producing mines	21,793	\$ 95,925,230	45,728,766	19,054
Non-producing mines ..	1,250	4,043,444	2,258,930	941
Quarries and sand and gravel pits	9,232	20,930,014	13,642,160	5,684
Diamond drilling contractors	709	2,738,856	1,619,871	675
Totals	32,984	\$123,637,544	63,249,727	26,354

ACCIDENTS

During the year 1959, the Department of Mines received reports of 820 accidents that occurred in mines, quarries, peat bogs and sand and gravel pits in the Province of Quebec, compared with 734 accidents in the previous year.

Included in these figures are 19 fatalities and 801 accidents of over five days' lost time, or otherwise compensable.

The accident rate per million man-hours worked was 13.5 for the year 1959.

Accidents and man-hours worked at the Sept-Iles Railway Terminal and the Arvida and Sorel Smelters are not included in these accident statistics.

Accident prevention work was continued throughout the Province and again showed a low accident frequency rate. In this respect, Johnson's Company Limited and New Calumet Mines Limited, with the outstanding achievement of no compensable accident during the full year of 1959, won jointly, with another mining company in British Columbia, the John T. Ryan safety trophy.

It is pertinent to mention here that Elder Mines Limited and Eldrich Mines Limited also had to their credit a perfect record; unfortunately, they did not have enough employees to be eligible for the trophy.

The Mine Rescue Training Plan, sponsored by the Quebec Metal Accident Prevention Association and the Quebec Asbestos Mining Association operated throughout the Province under the supervision of the Department of Mines.

Active mine rescue personnel, distributed among 29 mines, now number 359. Fifty-six certificates of training in mine rescue work were issued to new trainees during the year under review.

Mine Rescue Stations

There has been no change in the number or location of Mine Rescue Stations. The following Mine Rescue Stations are now in operations:

Noranda	Main Station
Bourlamaque	" "
Thetford Mines	" "
Normetal Mining Corp.	Sub-station
Opemiska Copper Mines	" "
Campbell Chibougamau Mines	" "
Anacon Lead Mines	" "
New Calumet Mines	" "
Canadian Johns-Manville (Asbestos)	" "
Gaspé Copper Mines	" "

Mine Rescue Competition

The annual Mine Rescue Competition was held in Noranda in September. The trophy for proficiency in rescue operation was won by a team from East Malartic Mines Limited, which competed with four other teams.

Table 54. - Number of Victims of Accidents in Mines, Quarries and Annexed Plants in the Province of Quebec in 1959

	Fatal Accidents		Non-fatal Accidents		Total	
	No.	Per Cent	No.	Per Cent	No.	Per cent
Mines:						
Surface	3	0.4	237	28.9	240	29.3
Underground	11	1.3	267	32.6	278	33.9
Open pits	3	0.4	40	4.8	43	5.2
	17	2.1	544	66.3	561	68.4
Quarries:						
Surface	1	0.1	87	10.6	88	10.7
Pits	0	0.0	10	1.2	10	1.2
	1	0.1	97	11.8	98	11.9
Annexed plants:						
Concentrators	0	0.0	46	5.7	46	5.7
Repair shops	1	0.1	43	5.3	44	5.4
Crushing plants	0	0.0	22	2.7	22	2.7
Lime kilns	0	0.0	10	1.2	10	1.2
Warehouses	0	0.0	14	1.7	14	1.7
Dressing works	0	0.0	23	2.8	23	2.8
Smelter	0	0.0	1	0.1	1	0.1
Construction	0	0.0	1	0.1	1	0.1
Power plants	0	0.0	0	0.0	0	0.0
	1	0.1	160	19.6	161	19.7
	19	2.3	801	97.7	820	100.0

The ages of victims of fatal accidents in mines, quarries and annexed plants are shown below.

Fatalities According to Age Groups

17-20	21-25	26-30	31-35	36-40	41-45	46-50	Over 50	Total
3	5	3	2	1	4	0	1	19

The following table shows the accident frequency rate for the past ten years.

Table 55. - Accident Rates per 1,000,000 Man-hours

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Mines and annexed plants	22.1	21.5	17.5	16.7	13.5	15.7	17.0	15.5	12.0	14.2
Quarries and annexed plants ..	18.6	13.2	13.3	10.9	10.3	9.8	15.4	12.4	9.7	11.1
Mining industry ...	21.4	19.7	16.6	15.4	12.8	14.3	16.7	14.8	11.9	13.5

Table 56 presents a summary of accidents in mines, quarries and annexed plants in 1959.

Table 56. - Summary of Accidents in Mines, Quarries and Annexed Plants in the Province of Quebec in 1959

	Number of Million Man-hours	Accidents			Per 1,000,000 Man-hours
		Fatal	Non-fatal	Total	
Mines and annexed plants	46.949	18	651	669	14.2
Quarries and annexed plants	13.642	1	150	151	11.1
Totals ...	60.591	19	801	820	13.5

Table 57. - Analysis of Fatal Accidents in Mines, Quarries and Annexed Plants in the Province of Quebec in 1959

Cause of Accident	Under-ground	Surface	Open Pit	Annexed Plants	Total	
					No.	Per Cent
Mines:						
Fall of rock	5	0	0	0	5	26.2
Fall of person	1	2	0	0	3	15.8
Fall of object	0	1	0	0	1	5.3
Haulage and transportation	1	0	2	0	3	15.8
Explosives	2	0	0	0	2	10.5
Electricity	0	0	1	1	2	10.5
Slides of rock or other material	1	0	0	0	1	5.3
Total mines	11	3	3	1	18	94.7
Quarries:						
Fall of person	0	1	0	0	1	5.3
Total quarries	0	1	0	0	1	5.3
Totals mines and quarries	11	4	3	1	19	100.0

Table 58. - Summary of Fatal Accidents in Mines, Quarries and Annexed Plants
of the Province of Quebec in 1959

No.	Date	Mine or Quarry	Employer	Locality	Victim	Age	Marital Status	Occupation	Place	Cause of Accident
1	Jan. 14	Hull Iron Mines Ltd.	Dravo of Canada	Ironside	Alfred Henderson	37	Married 4 children	Mechanic	Vertical Shaft	Fall of rock
2	Jan. 14	Hull Iron Mines Ltd.	Dravo of Canada	Ironside	Harold MacDonald	25	Married	Miner	Vertical Shaft	Fall of rock
3	Feb. 11	Opemiska Copper Mines	Opemiska Copper Mines	Lévy	Gerard Porvin	28	Single	Driller	Stope 6-3-4	Caught by the gate of the chute
4	Feb. 19	Opemiska Copper Mines	Opemiska Copper Mines	Lévy	Jean-Guy Lavoie	28	Married 5 children	Miner	Tunnel 803	Explosives
5	Mar. 2	Iron Ore Company of Canada	Iron Ore Company of Canada	Schefferville	Léonard Ross	29	Single	Bulldozer Operator	Burnt Creek Mine	Collision of trucks
6	Mar. 5	Bevcon Mines Ltd.	Bevcon Mines Ltd.	Louvicourt	Lucien Johnson	41	Married 2 children	Miner	Stope 1602-3	Explosives
7	Apr. 11	Canadian Malartic	Canadian Malartic	Malartic	Charles-Emile Bernard	43	Married 2 children	Foreman	Stope 7-19-1	Fall of rock
8	Apr. 30	Iron Ore Company of Canada	Iron Ore Company of Canada	Schefferville	Robert-Marcel Gonin	31	Married 2 children	Truck Operator	Gagnon Mine "B"	The truck was completely submerged in the drainage sump.
9	May 18	Iron Ore Company of Canada	Iron Ore Company of Canada	Schefferville	Judes l'Italien	22	Single	Pipefilter	Pipefitting Shop	Electrocuted
10	May 28	Campbell Chibougamau	Campbell-Chibougamau	Chibougamau	André Fontaine	23	Single	Miner	Stope 17-2	Slides of rock

Table 58. - Summary of Fatal Accidents in Mines, Quarries and Annexed Plants
of the Province of Quebec in 1959 (Cont'd.)

No.	Date	Mine or Quarry	Employer	Locality	Victim	Age	Marital Status	Occupation	Place	Cause of Accident
11	June 2	Asbestos Corporation Limited	Asbestos Corporation Limited	Thetford Mines	Jean-Thomas Routhier	45	Married 3 children	Baging Machine Operator	King-Beaver Mine	Fall of object
12	June 19	Asbestos Corporation Limited	Asbestos Corporation Limited	Thetford Mines	Gilles Gosselin	20	Single	Apprentice Welder	Normandie Mine	Electrocuted
13	Aug. 21	Anacon Lead Mines Limited	Mindecon Limited	Rohault	Robert Holtman	20	Single	Shaftman	Bottom of Shaft	Fall of rock
14	Aug. 21	Iron Ore Company of Canada	Iron Ore Company of Canada	Schefferville	J.M. MacKenzie	31	Married 1 child	Labourer	Concrete Preparation Plant	Fall of person
15	Sept. 2	Normetal Mining Corporation Ltd.	Normetal Mining Corporation	Desmeoizes	Anselme Beaudoin	57	Married 4 children	Train Operator	Stope 4-400-E	He was crushed between the stull across 4,400-drift and the battery of the locomotive he was operating.
16	Oct. 15	Gaspé Copper Mines Limited	Gaspé Copper Mines Limited	Murdochville	Ghislain Fournier	23	Single	Miner	Stope 1,000-E	Fall of rock
17	Oct. 24	Standard Lime Company Limited	Standard Lime Company Limited	Joliette	Lionel Rondeau	43	Married	Charging Machine	Garage Road	Crushed by a car
18	Nov. 24	Asbestos Corporation Limited	Fournier Steel Works	Thetford Mines	Renaud Brouard	24	Single	Labourer	King-Beaver Mine	Fall of person
19	Dec. 14	East Sullivan Mines Limited	East Sullivan Mines Limited	Bourlamaque	J.G. Hamelin	19	Single	Miner	Stope H	Fall of person

Non-fatal Accidents:

Tables 59, 60 and 61 classify the non-fatal accidents according to causes.

Mines:

In mines, statistics indicate that diamond drilling again caused the greatest number of accidents. It may be noted, however, that diamond drilling is an occupation subject to several types of accidents, all of which have been included under the same general heading.

Table 59. - Non-fatal Accidents in Mines, 1959

Cause of Accident	Under-ground	Open Pit	Surface	Total	
				No.	Per Cent
Diamond drilling	22	0	106	128	19.7
Machinery and tools	17	3	63	83	12.8
Fall of person	15	8	37	60	9.1
Fall of rock	39	1	1	41	6.3
Handling rock or other material .	19	2	20	41	6.3
Fall of object	4	4	32	40	6.2
Haulage and transportation	25	4	11	40	6.2
Miscellaneous	5	7	20	32	4.9
Drilling	16	7	0	23	3.5
Flying rock or object	7	0	14	21	3.2
Lifting heavy object	13	0	7	20	3.0
Burns	3	1	13	17	2.6
Scaffolding and ladders	11	0	5	16	2.5
Scaling	12	0	0	12	1.8
Slides of rock or other material	8	0	2	10	1.5
Mechanical shovel or crane	4	3	2	9	1.4
Chute loading	9	0	0	9	1.4
Tramming	7	0	1	8	1.2
Explosives	6	0	2	8	1.2
Gearing, shafting and belting ...	3	0	5	8	1.2
Hoisting	7	0	0	7	1.1
Slushing and scraping	7	0	0	7	1.1
Timbering	5	0	0	5	0.8
Sledging	2	0	1	3	0.5
Hand mucking	0	0	2	2	0.3
Electricity	1	0	0	1	0.2
Totals	267	40	344	651	100.0

For statistical purposes, non-fatal accidents are those involving a loss of five days of work or resulting in permanent disability.

Quarries:

Over 53 per cent of the non-fatal accidents at quarries in the Province of Quebec was caused through fall of persons, fall of objects or while working with machinery or tools.

Table 60. - Non-fatal Accidents in Quarries
in 1959

Cause of Accident	Open Pit	Surface	Total	
			No.	Per Cent
Fall of person	1	28	29	19.3
Fall of object	1	25	26	17.3
Machinery and tools	1	24	25	16.7
Handling rock or other material ...	1	11	12	8.0
Haulage and transportation	1	9	10	6.7
Drilling	1	8	9	6.0
Burns	0	7	7	4.7
Flying rock or object	0	5	5	3.3
Gearing, shafting and belting	1	4	5	3.3
Mechanical shovel or crane	0	4	4	2.7
Lifting heavy object	0	4	4	2.7
Sledging	0	3	3	2.0
Miscellaneous	2	0	2	1.3
Slides of rock or other material ..	1	1	2	1.3
Nails	0	2	2	1.3
Electricity	0	2	2	1.3
Fall of rock	0	1	1	0.7
Explosives	0	1	1	0.7
Hand mucking	0	1	1	0.7
Totals	10	140	150	100.0

Annexed Plants:

Machinery and tools, fall of object and fall of persons headed the list as the most serious hazards, constituting 58.1 per cent of non-fatal accidents at annexed plants.

Table 61. - Non-fatal Accidents in Annexed Plants, 1959

Cause of Accident	Repair Shops	Construction	Lime Kilns	Concentration	Crushing Plants	Dressing Plants	Warehouse	Smelter	Total	
									No.	Per Cent
Machinery and tools	8	0	1	16	3	9	1	0	38	23.7
Fall of object	13	1	1	2	6	5	4	0	32	20.0
Fall of person	5	0	3	5	4	2	4	0	23	14.4
Handling rock	4	0	0	10	2	2	2	0	20	12.5
Flying rock	5	0	2	2	0	0	0	0	9	5.6
Miscellaneous	2	0	0	5	1	0	1	0	9	5.6
Burns	4	0	1	1	0	0	1	0	7	4.3
Lifting heavy object	0	0	0	1	1	3	1	0	6	3.7
Electricity	1	0	0	0	2	0	0	0	3	1.9
Gearing and shafting	1	0	1	0	0	1	0	0	3	1.9
Hand mucking	0	0	0	1	1	0	0	0	2	1.3
Haulage and transportation.	0	0	1	0	0	0	0	1	2	1.3
Scaffolding and ladders	0	0	0	2	0	0	0	0	2	1.3
Fall of rock	0	0	0	0	2	0	0	0	2	1.3
Scaling	0	0	0	1	0	0	0	0	1	0.6
Sledging	0	0	0	0	0	1	0	0	1	0.6
Totals	43	1	10	46	22	23	14	1	160	100.0

The following table shows the frequency of injuries to the various parts of the body in mining accidents. It will be noted that 70.4 per cent of all injuries occurred to the limbs and extremities of the body.

Table 62. - Location of Injuries on Body
in Mining Accidents in 1959

Parts of the Body	No. of Accidents	Per Cent
Hands	193	28.8
Feet	125	18.7
Legs	108	16.1
Trunk	88	13.1
Arms	46	6.9
Head	38	5.7
Eyes	24	3.6
Strained back	24	3.6
General	23	3.5
Totals	669	100.0

The following table shows the frequency of injuries to the various parts of the body in quarrying accidents. It will be noted that 71.5 per cent of all injuries occurred to the limbs and extremities of the body.

Table 63. - Location of Injuries on Body
in Quarrying Accidents in 1959

Parts of the Body	No. of Accidents	Per Cent
Feet	38	25.2
Hands	37	24.5
Legs	24	15.8
Trunk	20	13.2
Arms	9	6.0
Head	8	5.3
Eyes	6	4.0
Strained back	5	3.3
General	4	2.7
	151	100.0

Table 64. - Employment and Accidents to Employees at Mines and Annexed Plants

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Year	Number Employed	Persons Injured			Number of Million Man-hours			Rate Per Million Man-hours	
		Fatally	Non-fatally	Total	Producing Operations	Non-producing Operations	Total	Fatally	Non-fatally
1940	14,545	28	1,428	1,456	31.176	2.093	33.269	0.84	43
1941	15,487	32	1,539	1,571	33.163	2.177	35.340	0.91	44
1942	15,584	29	1,765	1,794	34.051	1.562	35.613	0.81	50
1943	13,990	20	1,703	1,723	31.853	768	32.621	0.61	52
1944	13,973	20	1,717	1,737	29.686	1.742	31.428	0.64	55
1945	13,805	22	1,616	1,638	25.920	4.118	30.038	0.73	54
1946	15,578	20	1,754	1,774	26.906	7.899	34.805	0.57	50
1947	16,774	36	1,447	1,483	30.023	6.840	36.863	0.98	39
1948	17,283	22	1,298	1,320	33.883	5.386	39.269	0.56	33
1949	17,489	24	1,072	1,096	35.062	2.827	37.889	0.63	28
1950	19,103	25	926	951	39.186	3.749	42.935	0.58	22
1951	20,430	25	960	985	40.979	4.788	45.767	0.55	21
1952	22,398	21	826	847	41.808	6.650	48.458	0.43	17
1953	21,283	16	719	735	37.520	6.382	43.902	0.36	16
1954	21,404	29	572	601	38.439	5.916	44.355	0.65	13
1955	22,319	27	721	748	44.091	3.602	47.693	0.57	15
1956	24,765	21	858	879	46.146	5.664	51.810	0.41	17
1957	24,037	24	770	794	44.756	6.304	51.060	0.47	15
1958	22,121	14	586	600	42.848	2.548	45.396	0.30	13
1959	22,487	18	651	669	46.084	2.259	48.343	0.37	13
Totals	374,855	473	22,928	23,401	733.580	83.274	816.854	-	-
Average	18,743	24	1,146	1,170	36.679	4.164	40.843	0.59	28

Department of Mines

1959

Table 65. - Employment and Accidents to Employees
at Quarries and Annexed Plants

Year	Number Employed	Persons Injured			Number of Million Man-hours Producing Operations	Rate per Million Man-hours	
		Fatally	Non- fatally	Total		Fatally	Non- fatally
1940	10,446	3	380	383	12,082	0.25	31
1941	5,975	3	383	386	7,843	0.38	49
1942	5,355	7	332	339	7,582	0.92	44
1943	5,190	2	277	279	6,888	0.29	40
1944	4,526	3	278	281	6,300	0.48	44
1945	4,762	3	323	326	7,130	0.42	45
1946	5,927	3	345	348	9,528	0.31	36
1947	6,591	1	394	395	11,014	0.09	36
1948	8,221	4	322	326	12,727	0.31	25
1949	7,411	5	345	350	12,468	0.40	28
1950	7,340	6	218	224	12,055	0.50	18
1951	8,068	8	164	172	13,027	0.62	13
1952	8,412	2	172	174	13,061	0.15	13
1953	7,805	4	136	140	12,890	0.31	11
1954	8,276	3	136	139	13,498	0.22	10
1955	8,784	6	134	140	14,246	0.42	9
1956	6,978	6	180	186	12,108	0.50	15
1957	9,326	2	183	185	14,902	0.13	12
1958	8,857	0	134	134	13,799	0.00	9
1959	9,232	1	150	151	13,642	0.07	11
Totals	147,482	72	4,986	5,058	226,784	-	-
Average	7,374	4	249	253	11,339	0.32	22

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Capacity	7	Canadian Northwest Mines and Oils	52
Dividends	10	Canadian Pink Granite Reg'd	119
Gold production	13	Canadian Refractories	32,109
Operations, 1959	69	Canadian Silica Corporation	39,110
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Cement -		Dividends	10
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Central Chibougamau area	53	East Sullivan Mines -	
Charlesbourg-Ouest, quarry at	127,131	Capacity	8
Chatelaine Molybdenite	61	Dividends	10
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Consolidated Vauze Mines	57,75	Featherrock Inc., quarry	125
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Cooksville-Laprairie Brick Limited	127	Production, 1959	3
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Average prices	11	Flintkote Mines	112
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Production, 1959	3	Dividends	10
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Capacity	8	Fournière township, operations ...	66,73,77,85
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Cyprus Exploration Corporation	63	Garon Lake Mines	55
		Gas, natural	35
Daniel Mining Company	55	Gaspé Copper Mines -	
Dauphin Iron Mines	52	Bismuth production	11
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Deranco Syndicate	52	Operations, 1959	81

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Genrico Nickel Mines	56	Iron ore -	
Ghislau Mining Corporation	60	Production, 1959	3
Gingras et Frères, quarry	126	Operations in 1959	16
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Operations in 1959	44,46	Operations in	110
Granit National Limitée	126	Lacorne township, operations	88,116
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Production, 1959	3	Production, 1959	3
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Production, 1959	3	Production, 1959	3,46
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Magnesium -		Operations, 1959	88
Production 1959	3	Montclair Mining Corporation	59,89
Operations in 1959	19	Montpetit et Fils, E.	40
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Production, 1959	3,47	Dividends	10
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Marchant Mining Company	57	New Kelore Mines	61
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Operations in 1959	28,31	New Quebec, operations in	83
Matatchewan Consolidated Mines	61	New Senator-Rouyn, dividends	10
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McIntyre Porcupine Mines	55	Nichols Chemical Company	38
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Melrose Granite Limited	127	Non-metallics	3,23
Merrill Island Mining Corporation -		Noranda Mines -	
Capacity	8	Capacity	8
Operations, 1959	87	Dividends	10
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Mistassini lake	52	Opawica area	54
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Molybdenite Corporation of Canada -			
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Paul Vieau Construction, quarry	128	Roy township, operations	70,90,95
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Production, 1959	3	Average prices	11
Operations in 1959	39	Production, 1959	3
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Quebec Ascot Copper Corporation	58	Shale -	
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Rio Tinto Canadian Exploration	59	Production, 1959	3,49
R.M. Nickel Mines	58	Smith Tiblemont property	56
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Roche Mines	52	Production, 1959	3
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Sulphur -		quarry at	122
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Surimau Minerals	60	Waite-Amulet Mines -	
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Taillon township, quarry at	120	Dividends	10
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Production, 1959	3,21	Production, 1959	3
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Tremblay township, quarry at	129		
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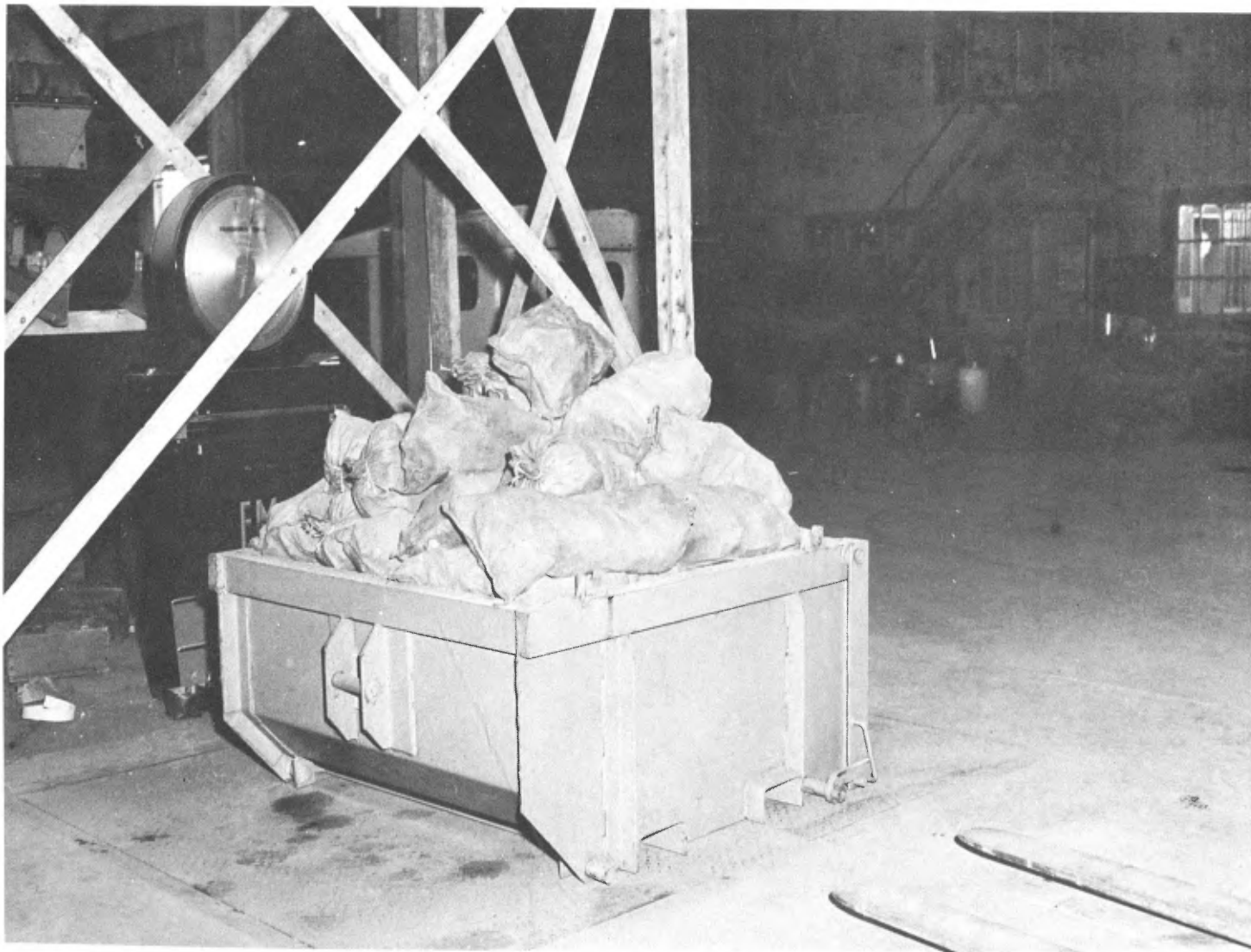


PLATE I

First ore shipment at the Department of Mines pilot plant. (Cinematography Branch of the Province of Quebec)



PLATE II

Port-Cartier wharf, December 1959 (Courtesy: Quebec Cartier Mining)



PLATE III

General view of Lac Jeannine — concentrator in center — (Courtesy: Quebec Cartier Mining)



Rock loader and electric shuttle car, at Gaspé Copper Mines Ltd. (Photo: Gaspé Copper Mines Ltd.)

