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GENERAL REPORT OF MINISTER OF MINES OF THE PROVINCE OF QUEBEC FOR THE YEAR ENDING MARCH 31ST 1951

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Énergie et Ressources naturelles
Québec

GENERAL REPORT

OF THE

MINISTER OF MINES

OF THE

PROVINCE OF QUEBEC

FOR THE YEAR ENDING MARCH 31st

1951

P. R. No 260

Quebec, October, 1951.

To the Honourable
Gaspard Fauteux, P.C.,LL.D.,D.D.S.,L.D.S.,
Lieutenant-Governor of the Province of Quebec.

Sir,

I have the honour to submit to you a summary report of the work carried out by the Department of Mines during the fiscal year ending March 31st, 1951.

Your respectful servant,

C.D. FRENCH,
Minister of Mines.

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REPORT OF THE DEPARTMENT OF MINES

OF THE PROVINCE OF QUEBEC

For the Fiscal Year Ending March 31st, 1951

To the Honourable C.D. French,
Minister of Mines,
Quebec, Que.

Sir,

In compliance with the Quebec Mining Act, which states in Section 229, chapter 196, Revised Statutes of Quebec 1941, that "the Minister of Mines shall submit, with his annual return to the Legislature a statement respecting the mines of the Province", I have the honour to present a summary report on the work carried out by the staff of the Department of Mines, during the fiscal year of April 1st, 1950, to March 31st, 1951.

Your obedient servant,

A.O. Dufresne,
Deputy Minister.

THE MINING INDUSTRY OF THE PROVINCE OF QUEBEC

DURING THE FISCAL YEAR 1950-51

During the calendar year 1942 the value of the mineral production of the Province of Quebec exceeded $100,000,000 for the first time, but it took less than ten years to double that value and attain, in 1950, the imposing amount of $220,665,103, a noticeable increase on the total of the preceding year, which was $165,168,603.

The three categories of mineral substances — metals, industrial minerals, and building materials — contributed to this increase of more than $55,000,000. For the first time in the history of the mining industry the value of metal production exceeded $100,000,000, representing close to 50 per cent of the value of all minerals. Of all the metals produced, gold still holds first place with a record production exceeding one million ounces having a value above $40,000,000.

The mines of Western Quebec — Abitibi and Temiscamingue — supply the greatest part of the metallic substances, although the year 1950 marks the start of a new production, the importance of which will be very great in a few years. In fact, more than 100,000 tons of titaniferous iron ore was extracted from the deposits situated north of Havre St-Pierre, on the north shore of the gulf of St. Lawrence, and shipped to Sorel, where close to 1,700 tons of iron and 1,600 tons of titanium oxide contained in the slags were recovered.

With regards to the work already under way in New Quebec, Hollinger North Shore Exploration Company, Limited, continued reconnaissance and geological work on the mining lands, while, at the same time, it pushed ahead the construction of the railroad which will link Sept-Iles to Burnt Creek. From the reports supplied by the companies interested in the project, ore reserves at the end of 1950 were given as 281,022,000 gross tons in New Quebec, which was an increase of 38,741,000 gross tons on the total of the preceding year.

In another part of the Province, the beginning of production of the new Suffield Exploration Ascot Metals Corporation mine, in the township of Ascot near Sherbrooke in the Eastern Townships, deserves attention. The ore is sent to the company's own concentration plant at Moulton Hill mine, where mining is also in progress.

Industrial minerals, which constitute the first subdivision of non-metallic substances, also registered a noticeable rise in production during the course of the year. Except during 1949, when operations were suspended for almost five months in asbestos mines because of a general strike, the value of industrial minerals always showed an increase. During 1950, the value was $72,979,415, which was an increase of more than $25,000,000 on the total of the preceding year. This increase is due almost exclusively to the greater production of asbestos which amounted to $64,361,529, or $24,000,000 more than the value for 1949. New discoveries of asbestos were made during the course of the year, and United Asbestos Corporation is preparing to exploit deposits discovered under Black lake, near Thetford Mines.

In the category of mineral substances used as building material, a slight advance has also been recorded. This group of minerals returned $38,638,408, in comparison with $35,266,545 for 1949.

During the course of the first three months of 1951, the principal metals, gold, silver and copper, recorded a slight decline in the quantities produced, whereas zinc was the only metal to show more important shipments in comparison with the corresponding period of the preceding year. With regards to non-metallic substances, the number of

tons of asbestos produced has already exceeded, by 50,000 tons, the total obtained during the course of the first three months of 1950, thus forecasting a new record for the present year. Although it is difficult to compile statistics on building materials, the few products on which reports are known reveal a slight increase in the quantities shipped to date.

Table I.-Average Prices of Metals in 1949 and 1950

	1949	1950
Gold, per ounce troy fine	$36.00	$38.05
Silver, per ounce troy fine ...	0.7425	0.8082
Copper, per lb.	0.19973	0.2342
Lead, per lb.	0.158	0.1445
Zinc, per lb.	0.13247	0.1565

Table II.-Value of the Mineral Production of the Province of Quebec in Calendar Years 1949 and 1950

(Compiled by C.O. Beaudet, Chief, Division of Mineral Statistics of the Quebec Department of Mines)

	Value 1949	Value 1950
METALS		
Bismuth	$ ------	$ 65,261
Chromite	7,148	------
Copper	27,092,363	34,141,997
Gold	(a)34,574,688	41,782,020
Iron (ingots)	------	138,284
Lead	1,832,510	2,218,475
Molybdenite	------	60,059
Selenium	204,403	111,913
Silver	2,412,773	3,510,603
Titaniferous iron ore	2,892	7,706
Titanium (slag)	------	149,565
Zinc	16,601,312	26,861,397
Sub-totals	$ 82,728,089	$109,047,280
NON-METALLICS		
I.-Industrial Minerals		
Arsenic	$ 17,535	$ 35,809
Asbestos	39,746,072	64,361,529
Feldspar	388,934	378,782
Industrial lime	2,532,742	3,125,750
Industrial limestone	1,187,601	1,153,695
Magnesitic dolomite, brucite	1,536,200	1,717,879
Marl	28,005	26,144
Mica	71,217	90,213
Mineral waters	145,831	158,457
Ochre and iron oxide	184,586	262,632
Peat moss	445,636	360,459
Phosphate	291	357
Pyrite	348,806	627,594
Quartz and industrial sand	380,477	498,852
Soapstone and talc	160,036	181,263
Sub-totals	$ 47,173,969	$ 72,979,415
II.-Building Materials		
Building lime	$ 618,894	$ 666,519
Building limestone	4,433,412	6,116,022
Cement	13,722,635	14,523,855
Clay products (Brick	4,182,762	4,849,145
Clay products (Other products	1,396,364	1,473,767
Granite	2,578,169	2,485,460
Marble	182,147	129,707
Sand and gravel	7,326,456	7,172,632
Sand-lime brick	303,250	389,156
Sandstone	520,607	830,225
Slate and shale	1,849	1,920
Sub-totals	$ 35,266,545	$ 38,638,408
Grand Totals	$165,168,603	$220,665,103

(a) Value in Canadian funds. The standard value at the rate of $20.671834 per ounce troy is $19,853,395 for 1949 and $22,699,369 for 1950.

Table III.-Subdivision of the Annual Value of the Mineral Production of the Province of Quebec, 1946-1950

Year	Metals	Per Cent	Industrial Minerals	Per Cent	Building Materials	Per Cent	Total
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	51	47,173,969	28	35,266,545	21	165,168,603
1950	109,047,280	49	72,979,415	33	38,638,408	18	220,665,103

LEGISLATION

During the session of the Quebec Legislature which was held from Januray 24th to March 14th, 1951, the Quebec Mining Act (Revised Statutes 1941, chapter 196) was amended by adding to article 9 the following:

"9a. All persons other than the owners of the land who claim mining rights abandoned by the Crown under the provisions of section 9 and all owners of mining concessions followed by letters patent issued before the first of July, 1911, must, before the first of October, 1951, cause their titles to be registered if they have not already been registered, or, in the opposite case, renew the registration thereof, at the office of the registration division where such mining rights or mining concessions are situated.

In the case of any mining right or mining concession contemplated by the preceding paragraph the registration of which has not been so effected or renewed before the first of October, 1951, the mines shall, from such date, again become the property of the Crown in right of the Province.

The renewal of registration prescribed by this section shall be effected in conformity with article 2131 of the Civil Code."

MINERAL RIGHTS BRANCH

During the fiscal year ending March 31st, 1951, the number of miner's certificates issued numbered 6,594, an evident increase when compared to that recorded for the fiscal year 1949-50, which amounted to 4,608.

To some extent the number of such certificates issued is proportional to the amount of prospecting carried out. In fact a miner's certificate, which is good only for the current year in which it is purchased, entitles its holder to stake out five standard claims of 40 acres each, or in all a total of 200 acres, in unsurveyed territory. In surveyed territory divided into lots, he may proceed in the same manner (sections 60 and 61 of the Mining Act), staking out one or two lots of one hundred acres or four half lots of fifty acres each.

The number of claims staked and recorded in the fiscal year ending with March 31st, 1951, was 18,532, in comparison with 14,398 claims recorded during the preceding year.

J.X. Mercier is the chief of this Branch of the Department of Mines.

Table IV.-Various Titles issued by the Department of Mines
(Fiscal Years 1949-50 and 1950-51)

Designation of Title	1949-50	1950-51
Claims recorded at Amos	5,915	9,201
Claims recorded at Noranda	2,375	2,560
Claims recorded at Quebec	6,108	6,771
Total	14,398	18,532
Miner's certificates issued	4,608	6,594
Development licenses issued	746	1,014
Development licenses renewed	4,422	4,393
Mining concessions, number	6	9
Transfers of titles	1,115	1,513
Reports of works: man-days reported	485,149	655,459
Reports of works: diamond drilling, feet	295,312	458,122

Table V.-Titles Issued since 1941-42
(Fiscal Years)

Fiscal Year	Number of Miner's Certificates	Number of Claims Recorded	Number of Development Licenses	Concessions		Transfers of Mining Rights
				Number	Acres	
1941-42	1,589	4,991	1,936	10	3,765	447
1942-43	1,710	4,420	2,107	4	569	463
1943-44	3,113	8,941	2,788	3	341	978
1944-45	7,303	19,547	4,219	3	726	2,358
1945-46	9,225	26,501	8,676	7	2,566	3,721
1946-47	5,408	16,332	9,885	12	4,475	2,166
1947-48	5,119	16,735	6,858	14	6,065	1,448
1948-49	4,425	14,000	5,647	5	995	1,431
1949-50	4,608	14,398	5,168	6	994	1,115
1950-51	6,594	18,532	5,407	9	3,717	1,513

Table VI.-Comparative Statement of Exploration Work on Mining Claims and Licenses During Calendar Years 1940 to 1950

Year	Number of Days' Work	Diamond Drill Holes (feet)
1940	335,499	240,370
1941	255,352	169,110
1942	175,338	115,056
1943	40,160	25,913
1944	59,066	37,209
1945	250,846	205,991
1946	1,463,934	1,296,074
1947	3,186,453	2,753,671
1948	772,568	517,526
1949	595,581	345,818
1950	498,460	317,558

INSPECTION OF MINES BRANCH

The Chief Inspector of Mines, R.H. Taschereau, submits the following report for the fiscal year under review.

The main duties of this Branch comprise:-

a) the inspection of mines and quarries, including treatment plants, to ensure the observance of the "Regulations for the Safety and Protection of Workmen in Mines and Quarries";

b) keeping the Department informed on the development and progress of the mining industry of the Province.

In addition, the Inspectors of Mines note and report on the observance of various sections of the Mining Act, notably these dealing with operational problems, such as mill-sites, tailings-sites, water supply, and permits to export ores and concentrates.

The administration of the Mine Rescue Training Plan, carried out in collaboration with the Quebec Workmen's Compensation Commission and the Western Quebec Mines Accident Prevention Association, is also a function of this Branch.

The Province is divided into four inspection districts as follows:- No.1- The Eastern Quebec district; No.2- the Central district; No.3- the Western district; No. 4- the more or less undeveloped area north of the above three districts, and including Anticosti and Magdalen Islands.

In the fiscal year 1950-51, Mr. Georges Lacaille resigned as Inspector in the Western Quebec district, and Mr. Lucien Trudel, Senior Electrical Engineer, was transferred from the Noranda office to the head office of the Branch in Quebec City.

Mr. Maurice Lachance, Ventilation Engineer, carried out ventilation surveys in ten mines, which involved the counting of 129 samples of air-borne dust, and measurements of the flow of air in mines and surface plants.

Special Agents, in Val d'Or, Noranda and Thetford Mines, assist the inspectors in various phases of their work, and carry out other duties assigned to them.

The Inspection Branch records its appreciation of the co-operation received from many sources, and particularly from all the other branches of the Department, from the Quebec Workmen's Compensation Commission, and from mine and quarry operators throughout the Province.

The Mine Rescue Training programme was continued without interruption. No emergency calls for mine fires were received, but

the equipment was used in two instances to administer oxygen to victims of drowning accidents. Seventy-two certificates were awarded, bringing the total number of trained Mine Rescue personnel in the Western Quebec mines to 303. One hundred and twenty-eight Department of Mines Certificates in First Aid to the Injured were awarded in the period under review.

In accordance with the provisions of Section 196 of the Mining Act, all compensable accidents are reported by the mine and quarry operators to the Inspectors, and the latter classify these reports and forward them to the Quebec office. In the case of accidents of a very serious nature, even where no loss of life may have occurred, the inspector makes a thorough investigation and report. These reports, both in French and English, are mimeographed, and copies are forwarded to all the mine and quarry operators, and to other parties interested in mine safety work.

Orders-in-Council enacted during the fiscal year included nine permissions to export concentrates and two approvals of mill-sites.

Under the provisions of the Unwrought Metal Sales Act, nine new licenses were issued during the fiscal year. Monthly reports were received from twenty-two license holders.

GEOLOGICAL SURVEYS BRANCH

I.W. Jones reports that this Branch, of which he is the Chief, had an active year in carrying out its principal function, that of investigating the geology of extensive regions in widely separated parts of the Province.

The ultimate aim of the investigations is to cover all the Province with geological maps on the scale of 1 inch to 1 mile and to have reports describing the geology, physiographic features and resources of the different areas mapped.

Though relatively much remains to be done, it is gratifying to note that distinct progress is being made and that these geological investigations are producing results that are appreciated by prospectors, the mining industry and the population at large.

Fourteen geologists were in charge of that same number of investigations carried out by the Geological Surveys Branch during the year under review. Twenty-eight other geologists and students of various universities completed the different parties along with twenty-six other men engaged locally as canoemen, portageurs and cooks. Most of the parties covered areas of about 200 square miles each.

The areas examined and the geologists in charge of the investigations were:

Mistassini Territory

J.M. Neilson continued geological investigation of the hitherto unknown Takwa River area northeast of Mistassini lake and, in 1950, covered some 200 square miles of territory between latitudes 51°15'-51°30' and longitudes 72°30'-72°45'.

Chibougamau Region: Abitibi-East County, Abitibi Territory and Mistassini Territory

Three parties mapped areas bordering the Chibougamau region which, with completion of the road that the Quebec Department of Mines built from lake St. John to Chibougamau lake, has returned to importance as a possible producer of gold and base metals.

J.E. Gilbert mapped the Bignell area, northeast of Chibougamau, between latitudes 50°00'-51°15' and longitudes 73°45'-74°00'.

The Rinfret area, east of Chibougamau, between latitudes 49°45'-50°00' and longitudes 73°45'-74°00', was covered by W.W. Longley.

South of Chibougamau lake, P.E. Imbault investigated the Queylus area, lying between latitudes 49°30'-49°45' and longitudes 74°00'-74°30'

Lake St. John Region

In order to obtain a general, preliminary knowledge of the extensive area lying north of lake St. John, S.H. Ross made reconnaissance traverses along some of the major rivers draining into that lake from the north, such as the Shipshaw, Alex, Rat, Mikosis and part of Ashuapmouchouan river.

Eastern Townships

H.C. Cooke made a geological investigation of the Granby area, between latitudes 45°15'-45°30' and longitudes 72°30'-73°00'.

Champlain, St-Maurice and Laviolette Counties

T.H. Clark continued his investigation of the St.Lawrence lowlands by, in 1950, covering the Three Rivers area, between latitudes 46°15'-46°30' and longitudes 72°30'-73°00'.

Jacques Béland began mapping the area around the important industrial centre of Shawinigan Falls and investigated the region bounded by latitudes 46°30'-46°45' and longitudes 72°30'-73°00'.

Charlevoix County

Following discoveries of radioactive minerals in the region west of Saguenay river, M.L. Miller was assigned the task of geologically investigating an area near St. Siméon, from latitudes 47°45' to 48°00' and longitudes 69°45' to 70°00'.

Saguenay County

Paul-E. Grenier continued the mapping of the Beetz Lake area, about 40 miles northeast of Havre St. Pierre. In 1950, he examined the area lying between latitudes 50°30'-50°45' and longitudes 62°30'-62°45'.

Gaspé Peninsula

Important mineral deposits on the point of reaching the production stage are drawing increased interest to Gaspé Peninsula. In order to meet growing demands for information, H.W. McGerrigle made reconnaissance surveys in different sections of that part of the Province which will permit issuing of a geological map of the peninsula on the scale of one inch equals four miles.

During the course of the year, a report on the geology of Eastern Gaspé was issued, giving the results of several years of investigation. This report, accompanied by five coloured geological maps, is being widely requested, not only from points in America but also from other parts of the world.

Côme Carbonneau in 1950 began mapping an area bordering Cascapedia river, in the central interior part of the peninsula between latitudes 48°30'-48°45' and longitudes 66°15'-66°30'.

Surface Geology and Water Supply

Roland DeBlois went to several places in answer to requests for technical assistance in finding water and, in several instances, was able to be of distinct assistance to individuals who had been encountering difficulties in obtaining adequate or proper water supply. At intervals, he also made a beginning in the study of the surface geology of the region surrounding Quebec City.

It is with sincere pleasure that acknowledgment is made here of the very valuable cooperation offered during the winter months of this year by the United States Geological Survey. Beginning with January, 1951, the long-established Ground Water Branch of that organization kindly took Mr. DeBlois for a three-month training period in its headquarters at Washington and in various of its field stations in the Southern States. Mr. DeBlois was thus able to gain valuable experience that is proving of great help in meeting and solving water problems that arise in this Province.

Other Work

Dr. McGerrigle and Mr. DeBlois examined and recorded the nature of the rocks encountered in the various deep-drilling operations that are being conducted in the search for oil in Gaspé.

F.F. Osborne served in an advisory and supervisory capacity in the geological investigations that were undertaken in the Laurentian or Grenville section of the province.

Members of the geological staff represented the Department of Mines and contributed papers at meetings of engineering, prospecting and other scientific societies held during the year. Some of these contributions, and other articles prepared by members of the staff, were published in various technical and scientific journals; they are listed in another part of this general report.

Equipment Section

Arthur Boucher, custodian of equipment, reports to Dr. I.W. Jones that, during the fiscal year 1950-51, his section furnished and maintained in condition instruments and camping equipment for 35 geological and engineering parties.

MINERAL DEPOSITS BRANCH

Bertrand T. Denis, Chief of this Branch, reports as follows on the activities during the past fiscal year:-

The technical officers of this Branch make geological investigations of mineral deposits, mining properties and mineralized areas with a view to furthering the development of the mineral industry within the Province. Technical advice is given to prospectors and to companies engaged in exploration and development.

During the summer and early autumn, 13 parties were in the field, and in addition the resident geologists stationed at Rouyn

and Val d'Or made examinations of mining properties under development in each of their respective fields.

P.E. Bourret, Mining Engineer in charge of industrial minerals technology, examined 62 mines, quarries and prospects in the southern part of the province. The purpose of these visits is to advise the owners of the economic value of the deposits concerned and to furnish information regarding the development, mining and milling operations, and the marketing of their products.

Jean Dugas made a detailed geological study of the east half of Lesueur township. This is in the Bachelor Lake district where deposits of gold and of base metals of economic importance are under development by O'Brien Mines Limited and Dome Exploration (Quebec) Limited.

Peter Eakins has undertaken a programme of research on wallrock alteration in the vicinity of gold deposits in Western Quebec. The deposits studied during the field season are those of the Malartic area. A part of this project is a study of the feasibility of the application of geo-chemical prospecting methods.

Henri Girard mapped the Lake à la Tortue Peat bog. This work included the establishment of the levels for planning the drainage of the bog and also the collection of samples for laboratory study. In the last weeks of the season, samples were also collected from the Rivière-du-Loup peat bog for a study which is being made in the Laboratories Branch of the Department.

R. Bruce Graham has commenced detailed geological studies in the Chibougamau area. During the season, he completed the sheet covering the northwestern quarter of Obalski township. The opening to traffic of the road built by the Department of Mines to provide access to the Chibougamau area was followed, as anticipated, by much exploration activity in the area and several discoveries of gold and copper mineralization were reported.

In addition to the properties under development in the northwestern quarter of Obalski township, Dr. Graham also visited and reported on four mining properties in the district.

W.N. Ingham, resident geologist for the eastern half of the Western Quebec Mining Belt, completed the compilation, at a scale of one inch equals 1,000 feet, of the geology of the township of Senneville and of three-quarters of the township of Vassan. Preliminary drafts of the compilation of the southeast quarter of Vassan township and of the north halves of Dubuisson and Bourlamaque townships are well

under way. Compilations of the geology of Senneville and Barraute townships, at a scale of one inch equals 1/2 mile, were also completed. During the year 67 visits were made to mining properties in the district.

Burdett Lee continued geological mapping of a strip of territory lying to the north and south of the southern boundary of the townships of Palmarolle and Poularies. The purpose of this mapping is to guide exploration in the vicinity of a strong shear zone near which gold and base metal mineralization has been found by prospectors.

R.L. L'Espérance continued detailed geological mapping in Duprat township in the Rouyn section of the Western Quebec Mining Belt. During the past season the southeast quarter of Duprat township was completed as well as a strip of territory three miles wide extending along the east half of the southern boundary of Destor township.

Pierre Mauffette made a detailed geological study of part of Fabre township. Within this area occurrences of base and precious metals have been under exploration for several years.

Ovide D. Maurice has been placed in charge of a study of the deposits of materials of construction in the province. This important branch of our mining industry is concentrated especially in the southern portions of the province, and, during the field season, 22 quarries were visited, of which ten were surveyed and examined in detail for the purpose of advising the owners of the economic value of the deposits concerned and to furnish information regarding the development, quarrying operations and the marketing of the products.

David J. McDougall commenced a new programme of detailed geological mapping in the eastern half of the Western Quebec Mining Belt. The southwest quarter of Pascalis township was completed during the field season. Gold deposits, notably at Perron Mine, have been under development and in operation for many years in this area.

J.E. Riddell continued a programme of research on geochemical prospecting methods. An investigation was made by the dithizone method of the base metal content of stream waters and vegetation in Gaspé Peninsula.

Peter Riordon commenced a detailed geological study of the asbestos deposits in the Thetford area, with a view to guiding exploration for other deposits and the planning of development of the district.

W.G. Robinson, resident geologist for the west half of the Western Quebec Mining Belt, completed compilations, at a scale of one inch equals 1,000 feet, of the geology of the northwest and southeast quarters of Duprat township, and of the west half and southeast quarter of Dufresnoy township. Forty-eight visits were made to mining properties under development in the district.

W.W. Weber continued detailed geological mapping of an area centered about Amos, and during the year he completed the study of the east half of Duverny township, ranges I to IX, the whole of Lamorandière township exclusive of range X, the northeast quarter of Landrienne township and the northwest quarter of Barraute township. The Barraute township area was the site of the discovery of large deposits of zinc and silver which were under most active development throughout the winter months. The presence of the mineralization was first drawn to the attention of prospectors by Dr. Weber.

This branch is responsible for the acceptance of reports, maps and diamond-drill logs submitted in support of applications for credit towards assessment work requirements through geophysical or detailed geological surveys and diamond drilling. During the year, 61 geophysical reports and maps were examined, as well as 38 detailed geological surveys and 243 diamond-drill logs. In addition, 65 reports or prospectuses were studied at the request of the Registrar, Quebec Securities Act. Finally, nine engineers' reports submitted in support of applications for mining concessions were studied; most of these cases have to be studied and investigated individually and are the subject of a detailed report.

A series of elementary prospectors' courses were given in the afternoons and evenings for a period of a week in each of the following localities in the Province:-

> Dolbeau, St. Félicien, Roberval, Hébertville, Jonquière, Bagotville, St. Joseph d'Alma, Normandin, Notre-Dame de la Doré, LaTuque, Rimouski, Mont-Joli, Amqui.

These courses were prepared and presented by Dr. Ovide D. Maurice. The geologists of the Branch are also called upon from time to time to prepare papers or lectures to stimulate interest in prospecting and in mineral resources of the Province. In the course of the year, seven such lectures were given to technical societies or to university or school groups.

Dr. Carl Faessler undertook to prepare a compilation of rock and mineral analyses made on specimens from the Province of Quebec;

the project is about half-completed, and it is planned to continue work on it in 1951.

The search for new mineral deposits throughout the Province was pursued by prospectors and companies engaged in mining exploration. It is noteworthy that these activities were pursued individually in such widely separated portions of the Province, as the Chibougamau area, Gaspé Peninsula, the Sherbrooke area in the Eastern Townships, the Barraute area in Abitibi-East and the Labrador Trough in New Quebec.

DIVISION OF TECHNICAL INFORMATION AND DISTRIBUTION OF PUBLICATIONS

The division of Technical Information and Distribution of Publications has charge of collecting all technical information concerning the mineral resources of the province of Quebec, and of answering enquiries and requests for available information on this subject.

Jean-Paul Drolet, mining engineer, submits the following report on the work of the division during the fiscal year ending March 31st, 1951.

A.—	Requests for information concerning mining companies	480
	Various enquiries and correspondence concerning mining companies, technology, and mineral collections	985
B.—	Verbal and written requests for publications of the Department of Mines	5,735
	Publications sent out from mailing lists without notice	2,768

During the fiscal year ending March 31st, 1951, the distribution staff of the division sent out 35,140 copies of the Department of Mines publications, in answer to requests of all kinds concerning geology and the mineral resources of the Province, and 6,561 other publications were sent out from our regular mailing lists.

This division carried out the work of compiling and classifying numerous reports and plans sent in by the inspectors of mines and outside technicians as well as technological pamphlets concerning the mining industry and mining companies. It has also established a new system of classification by subject and exact location of all geological reports and plans of the Department of Mines and other sources.

Moreover, this division also collects, compiles, classifies, and prepares an index of all items of interest concerning the mining industry and mining companies cut out from technical reviews and newspapers. Photographs presenting a certain interest to geology and mining are also collected and classified.

In addition to the functions mentioned above, this division prepares the notices and advertising matter and articles for the newspapers, technical reviews and periodicals, by which the Department of Mines gives notice of the issuance of new reports, maps, and works on the geology, mineral deposits and resources and of the mining industry of the Province. These publications are the result of field-work by geologists, engineers and chemists of the Department of Mines. A list of these publications may be obtained on request addressed to the Department of Mines, Quebec.

LABORATORIES BRANCH

The Laboratories Branch comprises the following sections: I.- The laboratories of mineralogical and metallurgical research; II.- the laboratories of chemical analyses and assays of the Department of Mines established at Quebec, Montreal, and Thetford Mines; III.- the sampling and ore dressing plant at Val d'Or; IV.- the university courses in prospecting; V.- the Department of Mines' museum, and displays at exhibitions.

The director of this branch is Maurice Archambault and the assistant-director is P.E. Pelletier. The manager of the sampling and ore dressing plant is G.S. Grant; and Henri Boileau is chief of the chemical analysis laboratories.

I.-Research Laboratories

The research work effected during the fiscal year aimed to increase the value of the peat bogs, of our iron, titanium, zinc, and copper deposits, and also of waste substances from certain mining operations,such as arsenical waste. These researches were of a mineralogical, chemical, physical and metallurgical nature.

Project No. 7: Jean Laneuville continued a comparative study of iron ores from New Quebec and from foreign deposits. The tests made on these samples aimed to determine certain physical, chemical and physio-chemical properties of these ores, such as the sintering point, the fusion point, adsorption, and the content of elements in infinitesimal amounts.

Project No. 8: Claude Frémont continued a systematic study of various electronic circuits which would allow constructing a miniature magnetometer small enough to be used in drill holes, to measure the variations of the magnetic fields, in terms of depths. His studies were oriented towards the theory of the apparatus and also towards its practical realization. He methodically studied a certain number of systems of detection, mounted several electronic circuits and built a narrow band amplifier, a detector, a compensator and an electronic voltmeter.

Project No. 10: Georges Welter and J.A. Choquette continued the study of titanium and its alloys, their preparation, mechanical and thermic treatments, their structures, ductility, hardness and static resistances after plastic deformation. One hundred and forty binary, ternary, and quarternary alloys of metallic titanium were melted, forged or rolled. A control of the hardness of the samples was maintained at each one of these three main stages of the mechanical treatments and a large number of the metallographic structures were photographed. The rolled plaques were submitted to stamping under standardized gauges and each of the alloys was studied at its rolled stage, thermic treatment under two temperatures, tempering and maturing through its mechanical reactions of static resistance and ductility after plastic deformation. Many chemical, spectrographic, radiocrystallographic and thermogravimetric determinations were also effected.

Project No. 11: B.J. Walsh examined the behaviour of zinc concentrates produced in the Province of Quebec when submitted to electrolysis. His work consisted firstly in determining the impurities which could affect the electrolytic process and then in finding the best conditions of roasting, lixiviation, elimination of iron, recovery of cobalt, and the efficiency of current for the extraction of zinc.

Project No. 21: Joseph Risi, Charles E. Brunette and Dorothy Spence continued the systematic study of a large number of samples of peat from bogs situated at Lac-à-la-Tortue, Lanoraie and Farnham. This elaborate work prepares the way to new research on the development of considerable peat reserves in the Province of Quebec, particularly as a raw material for the industrial manufacture of wax, phenols and other products of pyrolytic decomposition, derivatives of humic acids, as well as ethylic alcohol and other products of fermentation. In this field, advanced work on the extraction and the purification of peat waxes has demonstrated that the waxes can advantageously replace more expensive vegetable waxes.

Project No. 22: J.U. MacEwan and J. Goth studied electric oven fusion of copper concentrates and of their products from roasting,

with a view to establishing a process which would especially suit small industries. After a study of the metallurgical and economic considerations of the various processes, they built an oven capable of handling 50 pounds which is specially adapted to this purpose.

Project No. 23: B.J. Walsh studied the magnetic fractionation of zinc concentrates from the Province of Quebec. He demonstrated that the magnetic susceptibility of the zinc concentrates varies in proportion to the content of isomorphic iron of the zinc compounds and that, according to the magnetic dividers used, it is possible to divide these concentrates into sphalerite, marmatite, christophite, pyrrhotine and other accessory minerals.

Project No. 24: B.J. Walsh, Laurent Bédard and V. Opratko devised in the laboratory a method of concentration of molybdenite and of extraction of bismuth. These researches were then carried out on an industrial scale at Molybdenite Corporation of Canada mills by the same investigators and the results obtained were excellent.

Project No. 26: Jean-Paul Girault worked on the reflecting power of minerals and metals in polished sections through the use of a metallographic microscope and of a Berek microphotometer.

Project No. 27: Fernand Claisse studied zinc concentrates from Candego, East Sullivan, Waite-Amulet, Normetal, Quemont, Golden Manitou, and New Calumet mines through the use of differential thermic analysis and the retrograde X-ray method.

Project No. 28: Pierre Grenier continued his research work on the possibility of using in concrete by-products of the mining industry, such as arsenic and asbestos waste.

Project No. 31: Fernand Claisse, Jean Girault and Florian East studied the behaviour of geothites and iron oxide gels in the iron ores of New Quebec using a Chevenard thermobalance.

II.-Laboratories for Chemical Analysis and Assays

In the course of the fiscal year these laboratories received 10,593 samples on which were performed 47,295 analyses and examinations. These figures comprise the quantitative chemical operations, and determinations by microscope, spectrograph, X-rays and radioactivity measurements.

These were distributed as follows:

Table VII.- Summary of Analytical Work Done in Laboratories

	Laboratories			Totals
	Quebec	Montreal	Thetford Mines	
Samples received	9,593	915	31	10,593
Quantitative analyses	16,593	2,070	135	18,958
Qualitative determinations	10,925	-	-	10,925
Spectrograph examinations	8,099	-	-	8,099
X-ray examinations	4,920	-	-	4,920
Radioactivity	480	-	-	480
Research analyses	3,913	-	-	3,913
Totals	45,090	2,070	135	47,295

The work of the Thetford laboratory is restricted to physical tests on the quality and classification of asbestos fibres. The Montreal laboratory does routine qualitative and quantitative chemical analyses for prospectors.

The main laboratories are at Quebec and comprise: 1.- a division of mineralogy and petrography; 2.- a division of spectrography, radiocrystallography and radioactivity; 3.- a division of chemistry; 4.- a division of metallurgy.

Mineralogy and Petrography Laboratory

In the course of the fiscal year ending March 31st, 1951, the mineralogists examined 7,262 mineral samples, which required 10,756 mineralogical determinations, of which 140 were subjected to optical examinations and 29 microscopic studies of thin sections.

They also have charge of dispatching, to the suitable laboratories the various samples and specimens received for analysis, according to their mineralogical nature or whatever research work to be effected on them.

The mineralogists also answered verbally or in writing numerous requests for information regarding the nature and economic possibilities of mineral samples and specimens submitted to them.

The following equipment was added to the mineralogy laboratory:

1.- A precision goniometer-theodolite for the measurement of the angles of the crystals.

2.- A Berman torsion scale for the accurate measurement of the density of the minerals in very small fragments.

Spectrography, Radiocrystallography and Radioactivity Laboratory

In the course of the fiscal year 1950-51, the personnel of this laboratory effected 13,499 operations distributed as follows: 8,099 spectrographic analyses, 4,920 radiocrystallographic analyses and 480 radioactivity measurements. In this total are included 2,822 research determinations and 237 radiocrystallographic quantitative analyses of quartz in industrial dusts for the division of Industrial Hygiene of the Provincial Department of Health.

During the course of the year, the laboratory acquired a Weissenberg gonio-camera for the detailed study of the crystalline structure of minerals. This instrument served to measure in a complete manner the crystalline parameters of two new kornerupines found in the Province.

The spectrography and radiocrystallography laboratory also contributed to experimentations of metallurgical problems.

Chemical Laboratory

The activities of the personnel of the pyroanalysis, wet process analysis, and geo-chemistry laboratories ended the fiscal year 1950-51 with an increase of 4,273 determinations in comparison with those of the preceding period.

In the course of the fiscal year under review the personnel of these laboratories effected 17,845 quantitative determinations in duplicate, of which 6,619 were quantitative analyses of precious metals and 10,134 general analyses. The research work which is being carried out in these laboratories necessitated 1,091 quantitative determinations in duplicate.

The shipments of steel samples to the chemistry section were numerous and totalled 229. The number of analyses for rare metals, such as uranium, thorium, beryllium, zirconium, etc., was appreciably higher this year.

Plans were also elaborated for the organization of a geo-chemistry laboratory fully equipped with modern instruments which will permit rapid and extremely precise analyses through physico-chemistry

methods. The ever increasing demand for geochemistry analyses for the study of geological formations had already for some time called for such an improvement of our laboratory organization.

Laboratory of Metallurgy

B.J. Walsh carried out the following work:

a) preliminary concentration of uranium minerals in samples from Portneuf county;
b) plans of a new laboratory for the milling of asbestos at Thetford.

Fernand Claisse and Florian East studied the reaction to dry corrosion of certain alloys of titanium, by means of the Chevenard thermobalance.

Fernand Claisse determined by differential thermic analysis and diffraction of X-rays at high temperatures, 22 points of transition of titanium and its alloys.

Fernand Claisse and Jacques Giguère carried out experiments with the Leits differential dilatometer and the Chevenard thermomagnetometer on various metals and minerals to determine the optima conditions of dilatation and thermomagnetism.

III.-Sampling and Ore Dressing Plant

This plant is near Val d'Or in Abitibi-East county.

Sampling Plant.-

Table VIII.-Samples of Ores Received at the Plant for Bulk Sampling

	Type of Ore	No. of lots	Weight (pounds)
Mylamaque Mines Ltd.	Gold	1	1,397,760
Sigma Mines Ltd	Gold	5	5,660
Quebec Gold Rock Exploration	Gold	1	82,020
New Formaque Mines Ltd.	Copper	1	1,280
Norlartic Mines Ltd	Gold	1	1,140
Totals		9	1,487,860

Ore Dressing Plant

Table IX.-Shipments of Ore Received for Treatment and Extraction of Gold

Shipped by	No. of Lots	Weight (pounds)
Consolidated Duquesne Mining Co. Ltd.	6	6,977
Elder Mines Ltd.	1	787
Norlartic Mines Ltd.	1	95
Watling Larder Mines Ltd.	1	104,540
Totals	9	112,399

During the processing of this ore 325.90 ounces (fine) of gold was recovered in ingot and concentrate.

Special work

James Bay Diamond Syndicate sent to the mill 147.6 tons of peridotite and amphibolite for the sampling of diamonds. None was found.

Molybdenite Corporation of Canada had 30.9 tons of molybdenite ore treated for the preparation of a molybdenite concentrate.

The mill also crushed, sifted and classified 1,800 pounds of rhyolite from Wendell Mineral Products Ltd., and 400 pounds of zinc ore from Golden Manitou Mines.

IV.-University Courses on Mineral Prospecting

To serve as a complement to the elementary courses on prospecting, and to give to the prospectors a broader knowledge of the science and the technique which would aid them in their pursuits, the Quebec Department of Mines subsidizes university courses in prospecting for minerals.

Thanks to the collaboration of the universities, prospectors may now register in the science faculties to take a special five-week course of lectures conducted solely for their benefit. Under the professors, who are authorities on the subjects of chemistry, geology and mineralogy, etc., the students are able to put their know-

ledge directly to practical tests during organized excursions in the field.

Last year these lectures were given at the Ecole Polytechnique of Montreal and at the Geology Department of the Faculty of Science of Laval University. At both places, 42 students followed the full course. Seven of these graduates found immediate employment with Quebec Iron Ore Co. and Fenimore Iron Ore Co. geological expeditions.

V.-Displays and Exhibitions

The Department of Mines participated during the course of the year in the Trois-Rivières, Rouyn, and Sherbrooke regional exhibitions and in the Canadian Society of Natural History scientific exhibition at the Botanical Garden in Montreal.

At Trois-Rivières and at Sherbrooke the exhibit called the attention of the visitors to the role of our copper industry in the national economy. Later, upon general request, this exhibit was displayed permanently in a window of Hydro-Quebec in Montreal where the Department of Mines has its offices.

At Rouyn, the exhibit placed in evidence the theme "Quebec Forward" illustrating in the same panel the old forges of the Saint-Maurice (the Past), the model of a modern mine (the Present), and the immense iron deposits of New Quebec (the Future).

The Young Naturalists' exhibit at the Botanical Garden at Montreal was a real success, particularly when we consider that, scheduled for one week, it lasted two months. The Department of Mines' contribution there was a display of minerals and typical rocks of the Province.

DRAUGHTING AND CARTOGRAPHY BRANCH

Léon Valois, P. Eng., is chief of this Branch, and Armand Blanchette, assistant-chief. There are eleven draughtsmen and a stenographer - a staff of fourteen.

The Draughting and Cartography Branch supplies the documents requested by the geological missions of the Department, these documents consisting mostly in aerial photos and in other compilations, at the desired scale, base maps representing only surveyed lines and existing aerial photos. In some cases, regions are photographed and cartographed to supply an adequate basis of operation for these geological parties.

The Branch maintains up to date two sets of township maps on tracing linen; on one of these are drawn the outlines of all mining claims and on the other set are shown the boundaries of lands held by mining companies. The first series, which shows the claims staked out, comprises 492 tracings on which were traced the boundaries of the 19,787 new claims recorded during the year; the second series comprises 181 tracings. From all these tracings, 9,316 blue prints were struck off during the year to satisfy requests from the interested public.

The following geological maps were prepared during the year by the Branch, which also supervised the printing of them.

Final Maps (coloured)

a) Completed

No. 818 - Mingan to Aguanish
No. 819 - Aguanish to Washicoutai Bay
No. 820 - Cawatose Region
No. 845 - Index map of geological maps

b) In Press

No. 799 - Montreal Area, (Vertical sections)
No. 800 - Montreal Area (Laval)
No. 801 - Montreal Area (Lachine)
No. 852 - Bachelor Lake Area
No. 853 - Iserhoff River Area

c) In Preparation

No. 807 - Belleterre Area
No. 821 - Hébécourt West
No. 822 - Hébécourt East
No. 823 - Duparquet West
No. 824 - Duparquet East
No. 825 - Destor West
No. 861 - Dalquier North-West
No. 862 - Dalquier North-East
No. 863 - Duverny North-West
No. 864 - Duverny North-East
No. 865 - Lamorandière North-West
No. 866 - Lamorandière North-East
No. 867 - Dalquier South-West
No. 868 - Dalquier South-East
No. 869 - Duverny South-West
No. 870 - Duverny South-East
No. 871 - Lamorandière South-West
No. 872 - Lamorandière South-East
No. 873 - Figuery North-West

No. 874 - Figuery North-East
No. 875 - Landrienne North-West
No. 876 - Landrienne North-East
No. 877 - Barraute North-West

Preliminary Maps

a) Completed

No. 619G- Lake St. John-Chibougamau Road (2 colours - reprint)
No. 670 - Témiscamie River (Reprint)
No. 681 - Waswanipi Lake, West (Reprint)
No. 691 - Goëland Lake (Reprint)
No. 699 - Albanel Lake (Reprint)
No. 770 - Hébécourt Western Half (2 colours - reprint)
No. 771 - Rawdon (Reprint)
No. 784 - South-West Lesueur (Reprint)
No. 827 - Waswanipi Lake, East (Reprint)
No. 828 - Montauban-les-Mines (Reprint)
No. 830 - Denholm-Hincks (Reprint)
No. 831 - Mazarin (Reprint)
No. 849 - Capisisit Lake
No. 854 - Part of Roquemaure and Palmarolle
No. 856 - Part of Palmarolle and Poularies
No. 858 - Eastern Half of Lesueur
No. 859 - South-West of Pascalis
No. 860 - Bignell

b) In Preparation

No. 878 - North-West of Obalski (2 colours)
No. 880 - Barraute
No. 881 - Queylus
No. 882 - Rinfret
No. 883 - St-Siméon
No. 884 - Beetz Lake
No. 885 - South-East Duprat
No. 904 - Takwa River

Our draughtsmen traced on linen thirty-six geological plans, not intended for publication; fifty-nine plans of furniture, machines, etc., and thirty-eight figures for illustration of final reports.

An edition of a special map of Abitibi, indexed under No. 855, was prepared to serve as index for the tracing of the townships of the Western part of the Province. There are indicated the lands owned by mining companies. An edition of a similar map of the Chibougamau region was also published under index No. 850.

Other works connected with draughting, as the mounting of maps on linen, and the compilation and classification of various information were also part of the activities of the Draughting and Cartography Branch.

CIVIL ENGINEERING BRANCH

L.A. St-Pierre, P.Eng., is chief of this branch which consists of two distinct divisions: a) Division of Mine Roads; b) Division of Mining Villages.

The Division of Mine Roads is also responsible for the drainage of peat bogs.

Division of Mine Roads

During the fiscal period under review, the Division of Mine Roads built 33.87 miles of new roads, bringing to 1,303.66 miles the total length of roads built by the Department of Mines. In addition, last year, our Branch improved or completed the construction of 54.6 miles. The total expenditure during the course of the year for new projects and the improvement or maintenance of existing roads amounted to $829,750.93. The total amount spent by our Department for the construction and improvement of mine roads is $12,748,825.12. During the course of the fiscal year 1950-51, $43,366.79 was contributed either by mining companies or other organizations interested in the construction of certain roads. The amount of $829,750.93 mentioned above also includes the construction of bridges on the Pémonka river at a cost of $59,579.61 and on the Dufresne river at a cost of $5,749.46. It also includes the completion of the bridge across du Cran river at a cost of $2,006.36 and the bridge over the Boisvert river, which cost $2,409.36.

New Mine roads built during 1950-51:

Counties	Road	Length in Miles
Abitibi-West ...	Duparquet township, road between ranges VIII and IX	4.0
Abitibi-East ...	Fournière township, forestry colony road.	3.77
Abitibi-East ...	Obaska Mine road	1.5
Abitibi-East ...	Mylamaque Mine road	2.5
Abitibi-East ...	Wendell Mineral Products Ltd. road	0.5
Abitibi-East ...	Campbell-Chibougamau, Merrill Island and Jaculet, tractor road	6.0
Megantic	Broughton Soapstone road	4.0
Rouyn-Noranda ..	Quesabe Mines Ltd. road	3.1

Papineau	Canadian Flint and Spar Ltd. road	6.5
Papineau	Arthur Wallingford Quarry road	1.0
Champlain	Sherwin Williams Ltd. road	1.0

Roads improved and completed during 1950-51:

Counties	Road	Length in Miles
Abitibi-East ...	Chibougamau	4.0
Abitibi-East ...	Senneterre-Lac Madeleine	21.0
Abitibi-East ...	New Formaque	2.9
Témiscamingue ..	Belleterre-Laforce	10.0
Mégantic	Flintkote Mines Ltd.	2.0
Gaspé-North	York River	4.0
Rouyn-Noranda ..	Quemont, Donalda and Macdonald	10.7

Chibougamau Road:

During the course of the fiscal year ending March 31st, 1951, our Branch completed the construction of the Chibougamau road as far as Gilman Lake which is located in the village of Chibougamau. The length of that section built during the course of the year was four (4) miles. We also built on the same road the following bridges:

1.-Pemonka River - This bridge is 140 feet 4 inches in length with double abutments, two free trusses of sixty (60) feet each and a centre pillar of 20 feet 4 inches. It is a permanent bridge with abutments, pillar, and a reinforced concrete deck.

2.- Dufresne River - This bridge is forty feet in length between abutments. It is built with steel beams resting upon wooden abutments filled with stones. The deck, rails and curbs are made of wood treated by osmose.

During the fiscal year 1950-51, the Civil Engineering Branch of the Department of Mines maintained, at a cost of $65,509.23, 197.7 miles of previously built roads.

Counties	Road	Length in Miles
Bonaventure	Grande Cascapédia River road	37.0
Rouyn-Noranda ..	Quemont, Donalda and Macdonald mines road	9.2
Abitibi-East ...	West Malartic mine road	3.0
Abitibi-East and Roberval	Chibougamau road	125.0
Abitibi-West ...	Hébécourt Township road	10.0
Gaspé-North	Levasseur Lake road	6.0

Maintenance of Winter Roads

No winter road was maintained by the Civil Engineering Branch of the Department of Mines during the winter 1950-51.

Peat Bog Drainage

Pursuant to a policy adopted by the Government of Quebec, the Civil Engineering Branch gave grants totalling $17,451.97 to certain operators of peat bogs to assist them financially in the drainage of their properties. A total length of 108,707 feet of drainage ditches was opened in the counties of Matane, Rimouski, Rivière-du-Loup, Lévis, and Saguenay.

Division of Mining Villages

Bourlamaque

The town of Bourlamaque continued to progress during the year 1950-51. The town extended by approximately four thousand five hundred (4,500') feet its waterworks and sewer service and completed the opening of approximately one (1) mile of streets. In addition, some forty new homes, a Roman Catholic school and a laundry were built. Construction permits totalled $419,000.00.

Val d'Or

In this municipality, residential construction permits totalling $246,385.00, $125,225.00 for commercial establishments, and $12,700.00 for other building purposes were granted. Twenty four (24) building lots were registered in the cadastre. Other developments worthy of mention were the opening of a municipal airport, the construction of approximately 8,550 feet of sidewalks, improvements to the local arena, the construction of a saw mill, a radio station, and a new park for children. The population of Val d'Or is approximately nine thousand (9,000). The assessment of taxable properties is $7,987,683.00 and that of non-taxable properties, $3,324,650.00. This mining centre services a population of about 40,000 persons.

Cadillac

The closing of certain mines in the vicinity of Cadillac delayed the development of this mining town. However, it is hoped that the development of the hydro-electric resources at Rapid No. 2 and the construction of a road to reach this Rapid will bring an era of prosperity.

Malartic

The town of Malartic had a population of 6,615 on March 31st, 1951, in comparison with 5,276 on the same date in the preceding year. During the course of 1950 the town issued 76 construction permits for a value of $182,945.00. In addition, must be recorded the construction of a Roman Catholic church, a school, and a city hall.

Rouyn

During the course of the year 1950 the town of Rouyn issued construction permits for a total value of $1,102,400.00. The sale of lots in Rouyn-South, which comes directly under the jurisdiction of this Branch, was rather slow during 1950.

Noranda

One hundred and sixty-six (166) new homes were built in Noranda from April 1st, 1950, to April 1st, 1951. In addition, a recreation centre, comprising a skating rink, a curling rink, and a gymnasium, was also built. An office building was erected, and a church was enlarged. Waterworks, sewer service, and paving of streets were continued and extended to service certain new subdivisions.

Belleterre

During the course of the year 1950-51 the town of Belleterre authorized the construction of approximately one thousand feet (1,000') of waterworks and sewer services. The town also gravelled certain streets in the town.

Chibougamau

During the month of July, 1950, the Department of Mines sold at public auction forty-eight (48) commercial lots. This sale returned more than $100,000.00. The sale of residential lots followed and nearly seventy (70) building lots were sold.

DIVISION OF MINERAL STATISTICS

With this division, of which C.O. Beaudet is chief, lies the responsibility of collecting monthly and annual statistics and of answering requests relating to the mineral industry of the Province of Quebec.

During the calendar year 1950 this division recorded the following:

The annual mineral production of the Province of Quebec and certain facts related to it, such as the number of persons employed by the mines and quarries, the number of man-hours of work accomplished by these employees, salaries and wages paid, fuel, electricity and other exploitation supplies used, dividends distributed, etc.;
The monthly mineral production;
The capital received by mining companies;
The lumber used by mines.

The annual production comprises firstly the total quantity and value for each mineral or mineral product. For several substances, such as asbestos and those composing the group of building materials, the production is again divided in accordance with classifications based on the quality of the product, its destination, the form under which it will be sent to the markets, or its process of fabrication.

The annual production figures, as well as those concerning the personnel employed by the mineral industry and the dividends paid by the mining companies are given elsewhere in this report or in our annual report "The Mining Industry in the Province of Quebec".

The monthly production statistics ordinarily take into consideration only quantities and they are limited to the principal minerals exploited in the Province, viz. gold, silver, copper, zinc, asbestos, clay products, lime and cement. These data aim only at making it possible to follow more closely the trend of the mineral production. These monthly statistics are published in monthly and trimestrial bulletins, which are sent regularly to approximately 325 newspapers or interested individuals, institutions, and companies.

The capital received by the mining companies includes only those funds which the companies operating in Quebec have effectively received during the course of the year after such transactions as the followings: the sale of capital shares; the sale of bonds or other titles which the companies issue; and long-term loans. From the reports gathered the amount of $48,650.000 was received from these three sources during 1950. This gives an idea of the funds which were effected or could be effected to exploration or development work of the mining lands of the Province. A similar survey made in 1949 revealed an amount of only $17,400,000.

With regards to lumber, the information collected consisted in the quantity and the cost of all the wood whether it was cut and prepared by the consumer or had been purchased, which was used by the mines of the Province for the construction of buildings, the

execution of mining works, or for any other end except that of having been used as fuel.

All these statistics are collected from reports made on appropriate forms which the mine operators and quarry owners supply upon request.

Reports received during the course of the year 1950 were the following:-

	Returns received
Reports on the mineral production and mining operations:	
Annual returns	2,739
Monthly returns	622
Annual reports from building contractors.	125
Annual reports on the timber used in mines	89
Annual reports on the capital received by mining companies	722
Total	4,297

Of the 2,739 annual returns received regarding mineral production and mining operations, which cover nearly all the mines of any importance, 1,252 came from mines and quarries in production or which made some shipments of mineral product; 300 were from mining properties not yet producing but on which exploration work or development work was effected during the year, and 1,187 stating that their properties were inactive the whole year.

New Mining Companies

The number of mining companies organized in 1950 was appreciably greater than that during the preceding year.

A summary is given here of new companies incorporated in 1950 and corresponding figures for 1949.

	1949	1950
Mining companies incorporated by Quebec Charters..	30	50
Mining companies incorporated by Ontario Charters and holding mining rights in Quebec....	13	15
Mining companies incorporated by Federal Charters and holding mining rights in Quebec....	1	1
Total	44	66

Mining Companies Incorporated by Quebec Charters in 1950

Company	Head Office	Date of Incorporation	Number of Shares	Par Value
Anacon Extension Limited	Montreal	Sept.28th	4,000,000	$ 1
Bar-Manitou Mines Ltd	Bourlamaque	Nov. 15th	3,000,000	1
Baronial Copper Mines Ltd	Montreal	Oct. 10th	40,000	1
Batiscan Mines Limited	Montreal	May 17th	4,000,000	1
Bearn Gold Mines Limited	Montreal	July 11th	4,000,000	1
Belle Copper and Gold Mines Limited	Rouyn	Dec. 29th	2,000,000	1
Belmont Mining and Exploration Company Limited	Montreal	July 27th	3,000,000	1
Bissonnette Limitée (Alfred) .	Ville St-Laurent	Aug. 22nd	500	100
			(a) 500	100
Brique Victoria Limitée	Victoriaville	Jan. 19th	400	100
Campbell Chibougamau Mines Ltd	Montreal	March 10th	3,000,000	1
Carrière Nolin Incorporée	St-Hyacinthe	June 21st	2,000	100
Charlevoix Uranium and Mines Corp.	Montreal	Feb. 7th	3,000,000	1
Chateau Mines Limited	Montreal	June 21st	3,500,000	1
Chavigny Mines Limited	Montreal	Nov. 30th	4,000,000	1
Chibougamau Explorers Ltd	Montreal	Sept.27th	3,000,000	1
Cie d'Amiante Lafayette Ltée.. (Lafayette Asbestos Co. Ltd).	St.Odilon, Beauce Co.	June 10th	3,500,000	1
Compagnie de Sable et Gravier St-Paul Ltée (La)	St-Paul d'Abbotsford	April 4th	3,000	1
			(a) 720	100
Consumers Quarry Ltd	Montreal	Oct. 23rd	400	100
Copper-Uranium Limited	Montreal	Dec. 18th	5,000,000	1
Coronet Gold Mine Limited	Montreal	June 2nd	3,000,000	1
Darwood Mining Company	Cap de la Madeleine		500	100
		Nov. 21st	(a)1,000	50
Dominion Asbestos Mines Ltd. .	Montreal	Oct. 11th	3,500,000	1
East Manitou Mines Ltd	Montreal	Nov. 16th	500	100
Gaspé Metals Limited	Montreal	May 15th	3,000,000	1
Grand Manitou Mines Ltd	Montreal	Nov. 16th	3,000,000	1
Granit Noir Péribonka Inc.(Le)	Hébertville	Oct. 28th	1,000	100
Grawmont Mines Limited	Montreal	June 3rd	3,000,000	1
Kokko Creek Mining Corporation Ltd	Montreal	Nov. 24th	3,500,000	1
Laurentide (Chibougamau) Mines Ltd	Montreal	Aug. 14th	4,000,000	1

(a) Preferred shares.

Company	Head Office	Date of Incorporation	Number of Shares	Par Value
Merrill Island Mining Corporation Ltd	Montreal	July 4th	3,000,000	$ 1
Mineral Fortunes Ltd	Montreal	Nov. 8th	3,500,000	1
Molybia Corporation Limited	Montreal	Oct. 24th	40,000	1
Pink and Grey Granite Co. Ltd.	Ste-Agathe-des-Monts	June 19th	100,000	1
Pittsco Explorations Limited	Garthby	May 5th	50,000	1
Quebec Chibougamau Goldfields Limited	Montreal	Jan. 12th	3,500,000	1
Quebec Copper Corporation Ltd	Montreal	Oct. 3rd	3,500,000	1
Quebec Diversified Mining Corporation Ltd	Montreal	July 4th	4,000,000	1
Ratté et Fils Ltée (J. Alph.)	Les Etroits	Feb. 10th	200	1
St. Adrian Asbestos Co. Ltd.	Lachine	July 20th	4,000,000	1
St. Cyr Asbestos Co. Ltd.	Sherbrooke	Oct. 11th	3,500,000	1
St. Régis Mines Limited	Montreal	Nov. 20th	3,000,000	1
St. Siméon Uranium Corporation.	St.Siméon	Feb. 7th	3,000,000	1
Shefford Marble Quarries Ltd...	Montreal	March 8th	(a)14,850	10
			1,500	1
Suffield Metals Corporation Limited	Sherbrooke	Sept.14th	3,500,000	1
Tor American Oils Limited	Montreal	Aug. 15th	3,500,000	1
Ward Asbestos Corporation Ltd..	Montreal	May 11th	3,500,000	1
Weedon Pyrite and Copper Corporation Limited	Montreal	Dec. 28th	3,000,000	1
West Manitou Mines Ltd.	Bourlamaque	Nov. 28th	3,000,000	1
Young Chibougamau-Opemiska Mines Limited	Montreal	June 29th	3,500,000	1
Zinc Metal Corporation	Noranda	Nov. 22nd	40,000	1

Mining Companies Incorporated by Ontario Charters in 1950, Holders of Mining Rights in Quebec

Company	Head Office	Date of Incorporation	Number of Shares	Par Value
Ava Gold Mining Company Ltd	Toronto	March 1st	3,500,000	$ 1
Barel Duc Mines Limited	Toronto	Dec. 20th	3,000,000	1
Barvue Mines Limited	Montreal	Jan. 4th	3,000,000	1
Beau Chibougamau Mines Ltd.	Toronto	June 27th	3,000,000	1
Beaupre Base Metals Mines Ltd..	Toronto	Nov. 27th	5,000,000	1

Company	Head Office	Date of Incorporation	Number of Shares	Par Value
Ellmargo Mining Company Ltd..	Haileybury	March 10th	3,000,000	$ 1
Forlartic Mines Limited	Toronto	May 16th	3,000,000	1
Fortress Mines and Oils Ltd..	Toronto	Sept. 7th	3,000,000	1
Gale Cummings Mines Limited .	Toronto	Nov. 3rd	3,000,000	1
Holland-Gaspé Mines Limited .	Toronto	June 9th	3,000,000	Nil
Montauban Mines Limited	Toronto	May 18th	3,000,000	Nil
Rigby Kirkland Mines Limited.	Toronto	Jan. 30th	3,500,000	1
Rotondo Rouyn Mines Limited..	Toronto	July 10th	3,000,000	1
R. and P. Metals Corporation Limited	Toronto	April 29th	(a) 350	$100
			5,000	Nil
Valdemaque Mines Limited	Toronto	June 13rd	3,000,000	1

(a) Preferred shares.

Mining Companies Incorporated by Federal Charters in 1950, Holders of Mining Rights in Quebec

Company	Head Office	Date of Incorporation	Number of Shares	Par Value
Horn Gaspé Mines Limited	Toronto	May 25th	10,000	Nil

DIVISION OF EDITING AND PRINTING OF PUBLICATIONS

The chief of this division, Maurice Brunet, submits the following report for the fiscal year ending March 31st, 1951.

Following is a list of the publications of the Department of Mines edited during the fiscal year 1950-51.

All publications are issued in French and in English.

The Mining Industry of the Province of Quebec in 1949
Manuel de sauvetage et de premiers soins dans les mines, by Maurice Lafontaine
Geological Report No. 20 -Geology of Quebec, Vol. I, Bibliography and Index (supplement)
Geological Report No. 20 -La Géologie de Québec, Vol.III (Géologie Appliquée) by John A. Dresser and T.C. Denis. (French edition)

Geological Report No. 35 -The Geology of Eastern Gaspé, by H.W. McGerrigle

Geological Report No. 45 -Marl Deposits of the Province of Quebec, by G.W. Waddington

Geological Report No. 47 -Bachelor Lake Area, by W.W. Longley

Geological Report No. 48 -Capisisit Lake Area, by J.E. Gilbert

Geological Report No. 49 -Iserhoff River Area, by Jacques Claveau

Preliminary Report No. 246 - Parts of Dalquier and Figuery Townships, by W.W. Weber

Preliminary Report No. 247 - Bignell Area, by J.E. Gilbert

Preliminary Report No. 248 - Parts of Duparquet, Hébécourt, Palmarolle and Roquemaure Townships, by Burdett Lee

Preliminary Report No. 249 - General Report of the Minister of Mines of the Province of Quebec for the Year Ending March 31st, 1950

Preliminary Report No. 250 - Queylus Area, by P.E. Imbault

Preliminary Report No. 251 - Rinfret Area, by W.W. Longley

Preliminary Report No. 252 - Saint-Siméon Area, by M.L. Miller

Preliminary Report No. 253 - Beetz Lake Area (East Half), by P.E. Grenier

Preliminary Report No. 254 - Takwa River Area, by J.M. Neilson

Preliminary Report No. 255 - La Morandière Township and Parts of Duverny, Landrienne and Barraute Townships, by W.W. Weber

Preliminary Report No. 256 - Mining Properties and Development in Abitibi and Témiscamingue Counties during 1948 and 1949, by J. Claveau, W.N. Ingham and W.G. Robinson.

INFORMATION AND PUBLICITY

In order to keep the public informed on the progress of the development of the mineral resources of the Province and of its mining industry, the officers of the Department of Mines prepare lectures, talks, communiqués and news-letters, which are delivered at meetings of scientific and technical societies and others. Numerous articles are also written for technical periodicals, mining newspapers, as well as for the daily press. Numerous official publications of the Department of Mines on geology and the mining industry keep the interested public well informed on the progress achieved from year to year.

Jean-Paul Drolet, mining engineer, reports that, during the course of the fiscal year 1950-51, the main activities in this field have been as follows:

By the Hon. C.D. French, Minister of Mines

"Mining Developments in the Province of Quebec during the Past 25 Years", address before the Compton County Teachers' Association, February 19th, 1951.

Address to the Northwestern Quebec Prospectors' Association at Rouyn, April 26th, 1950.

Address to the Thetford Mines branch of the Canadian Institute of Mining and Metallurgy, November 23rd, 1950.

By A.O. Dufresne, Deputy-Minister of Mines

"Les ressources minérales de la Province de Québec", article published in "Le Canada", June 1950.

"Quebec a Dominant Figure in Mineral Development", article published in the "Montreal Gazette", January 1951.

"The Recent Development in our Mineral Industry", lecture delivered before the Natural Resources Section of the Montreal Board of Trade, January 1951.

"L'ingénieur dans l'industrie minérale", lecture delivered before the members of the Quebec Chamber of Commerce, March 1951.

By B.T. Denis, Chief of Mineral Deposits Branch

"Les gisements métalliques de la Province de Québec", article published in "l'Annuaire de la Vallée de l'Or", 1950.

By I.W. Jones, Chief of Geological Surveys Branch

Participation in a Symposium entitled "Possible Future Petroleum Provinces of North America", annual meeting American Association of Petroleum Geologists (AAPG), Chicago, April 1951; published in the AAPG Bulletin, Vol. 35, No. 2, February 1951 (Quebec Section by I.W. Jones, pages 469-475) and also reproduced in book form by AAPG, Tulsa, Oklahoma.

By Maurice Archambault, Chief of Laboratories, and F.F. Osborne, Geologist

"Hisingerite from Montauban-les-Mines", article published in the Review "Le Naturaliste Canadien", Vol.LXXVII, No. 9-10, 283-90, September-October 1950.

By Jean-Paul Drolet, Chief of the Technical Information Division

Series of four articles on the mineral substances exploited in the Province of Quebec, published in "Sciences et Aventures", January to April 1951.

By C. Faessler, Geologist

"Relevé géologique le long du boulevard Talbot entre le grand lac Jacques-Cartier et Chicoutimi", paper presented at the annual

meeting of "L'Association Canadienne-française pour l'Avancement des Sciences (ACFAS)", Quebec, October 1950.

By Pierre Mauffette, Geologist

"Mode de gisement de la Kornérupine de la région du lac Sainte-Marie, Comté de Gatineau, Québec", paper presented at the annual meeting of ACFAS, Quebec, October 1950.

By H.W. McGerrigle, Geologist

"The Mineral Resources of Gaspé Peninsula", notes for a tourist pamphlet on the Gaspé Peninsula.

By Marcel Tiphane, Geologist

"Note sur la région de Granby-Waterloo", paper presented at the annual meeting of ACFAS, Quebec, October 1950.

By Fernand Claisse, Physicist

"A Roentgenographic Method for Determining Plagioclases", article published in the review "American Mineralogist", Vol. 35, 412-20, June 1950.

"Comportement thermique et étude roentgénographique des concentrés de zinc de la province de Québec", lecture delivered at the annual meeting of "L'Association Canadienne-française pour l'Avancement des Sciences", October 1950.

By Jean-Paul Girault, Mineralogist

"A new Method for Measuring the Refractive Indices in Micaceous Minerals", article published in the review "American Mineralogist", Vol. 35, 421-25, June 1950.

"Etudes sur la mesure du pouvoir réflecteur de certaines substances", lecture delivered at the annual meeting of "L'Association Canadienne-française pour l'Avancement des Sciences", October, 1950.

By Pierre Grenier, Chemistry Engineer

"A Wet Process for Refining Arsenic", article published in the review "Canadian Mining Journal", April 1950.

"Affinité chimique entre l'oxyde arsenieux et les constituants du béton", lecture delivered at the annual meeting of "L'Association Canadienne-française pour l'Avancement des Sciences", October 1950.

By Jean Laneuville, Chemist

"Contribution à l'étude physique des minerais de fer du Nouveau-Québec", lecture delivered at the annual meeting of "L'Association Canadienne-française pour l'Avancement des Sciences", October 1950.

By J. Risi, C.E. Brunette and Dorothy Spence, Chemists

"Etude chimique des tourbes du Québec III.- Composition des tourbières de Lanoraie et Farnham", lecture delivered at the annual meeting of "L'Association Canadienne-française pour l'Avancement des Sciences", October 1950.

By B.J. Walsh, Metallurgist

"Quebec Zinc Concentrates.- Mineralization - Impurities - Amenability to Electrolytic Process", article published in the review "Canadian Mining Journal". December 1950.

"Magnetic Fractionation of Sphalerite in Zinc Concentrates", article published in the review "Canadian Mining and Metallurgical Bulletin", March 1951.

By W.G. Robinson, Resident Geologist, Rouyn

"Structural Geology and Ore Deposits of the Noranda-Rouyn District", lecture delivered at the joint meeting of the Geological Association of Canada and the Prospectors and Developers Association, Toronto, March 1951.

By W.N. Ingham, Resident Geologist, Val d'Or

Lecture on Geology of the Val d'Or District", delivered before visiting students from Laval University at Val d'Or, May 1950.

"Structural Elements of the Malartic Gold Area", lecture delivered before the members of the Harricana Section of the Canadian Institute of Mining and Metallurgy, September 1950.

Lecture delivered before the students of Percival County High School, Val d'Or on Abitibi Mines", March 1951.

R.B. Graham, Geologist

"Geology and Mineral Possibilities of Chibougamau Area", lecture delivered at the annual meeting of the Prospectors and Developers Association at Toronto, March 1951.

By W.W. Weber, Geologist

"Geology of Barraute Area", lecture delivered at the annual meeting of the Prospectors and Developers Association at Toronto, March 1951.

By O.D. Maurice, Geologist

"Geochimie du zirconium", lecture delivered at the annual meeting of "L'Association Canadienne-française pour l'Avancement des Sciences", October 1950.

COLLECTION OF DUES ON MINES

S. Drouin, in charge of this division, submits the following report:

During the fiscal year 1950-51, the Department of Mines received sworn statements on mineral production from 33 mining companies. These returns give the statement of profits, accompanied by vouchers, as required by sections 12 to 24 of the Quebec Mining Act. From this source the Department of Mines collected a sum of $2,682,723.09*, on the net profits, as defined by the law.

In addition to the above dues, which is a tax on the annual net profits of mines, there is a small annual acreage tax of 10 cents per acre due by holders of mining concessions who have not carried out mining or development work on their idle mining lands during the year (Quebec Mining Act. Div. VIII, sec. 30). The Department received returns from 234 owners of unproductive properties. A sum of $2,175.34 was collected from 88 holders of such dormant properties. The other 146 holders of unproductive properties sent in sworn statements that at least two hundred dollars ($200) had been spent in development work on their concessions during the year. This is a statutory condition for the remittal of the acreage tax above mentioned (Quebec Mining Act, Div. VIII, sec. 50).

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*Dues on annual profits of Mines-There is a difference between the amount of this item as given by the assessor's office, and the amount given by the accountant's office. This divergence is due to the fact that a part of "deferred revenue", on the date of March 31st, 1951, was carried to the fiscal year 1951-52.

Table X.- Comparative Statement of Revenue Collected by the Department of Mines During the Fiscal Years 1948-49; 1949-50; 1950-51

(Prepared by Robert Samson, Chief Accountant)

	1948-49	1949-50	1950-51
Miner's certificates	$ 44,655.00	$ 45,811.00	$ 67,330.00
Development licenses	409,217.64	384,674.36	432,298.36
Penalties	350.00	150.00	------
Sales of mining concessions.	9,042.60	18,050.70	42,486.69
Fees for transfers of titles	14,310.00	11,150.00	15,124.00
Taxes on mining concessions.	2,206.66	2,660.06	2,175.34
Rights on townsite lots	10,613.30	4,215.19	7,814.95
Rentals on townsite lots ...	579.00	839.00	735.00
Dues on annual profits	1,375,721.55	2,264,313.85	2,369,867.29
Permits of sales of unwrought metals	12.00	18.00	18.00
Sales of maps, blue prints, etc.	2,812.80	2,684.75	3,707.00
Mineral collections	864.55	607.55	565.50
Fees for assay and analyses.	1,157.25	2,621.75	4,364.44
Miscellaneous	2,805.24	6,324.44	6,261.77
Casual revenue	179.68	7,958.02	193.55
	$1,874,527.27	$2,752,078.67	$2,952,941.89

THE LIBRARY

André Champagne, Librarian for the Department of Mines, submits the following report:

During the course of the year, the library received 1193 additional units distributed as follows: 199 volumes, 597 reports (bulletins, brochures, memorandums, etc.), 384 pamphlets and 13 manuscripts. Of this number the Department purchased 75 books treating on various subjects of the mineral industry, metallurgy and related sciences: mineralogy, geology, physics and chemistry. A quantity of books come from exchanges made with the governments of other provinces, the Federal government and a few foreign countries.

The Library subscribes to 110 periodicals and technical reviews. It also registered 186 loans apart from books consulted on the premises.

The public has continued to show its interest in the Library, and more than 400 visitors came during the course of the year.

SCHOLARSHIPS OF THE DEPARTMENT OF MINES

In accordance with its policy of encouraging young men to adopt a career related with the mineral industry, the Quebec Department of Mines was authorized by the Legislature to raise from $20,000 to $30,000 the amount to be spent in scholarships by the Department during 1950-51.

Forty-eight scholarships were thus awarded by the Department during the course of the year in review.

Following the procedure of past years, the Minister of Mines commissioned a committee composed of representatives from universities and from the Provincial Department of Mines to choose candidates for these scholarships.

This committee was composed of the following: A.O. Dufresne, Deputy Minister of Mines, as president; J.U. MacEwan, professor of metallurgy at McGill University; Ignace Brouillet, director of l'Ecole Polytechnique of the University of Montreal; Abbé J.W. Laverdière, director of the geological department of Université Laval; Louis Cloutier, assistant-secretary of the Science Faculty of Université Laval; I.W. Jones, chief of the Geological Surveys Branch of the Department of Mines, and Gisèle Landreville, secretary of the committee.

The committee proceeded, as in the past, to study applications. To begin with, it considered the applications of holders of diplomas who wish to obtain a Master of Science degree or a Doctorate; next, it studied the applications of holders of scholarships of the preceding year who fulfilled all the requirements for a renewal; and lastly it considered the applications of future geological engineers, metallurgical engineers, or mining engineers.

The forty-eight scholarships awarded in 1950-51 were distributed as follows:

Candidates to post-graduate courses	18
Students entering final year in science faculties	21
Students in less advanced years	9
Total	48

The members of the committee wish to express to the government and to the Minister of Mines their gratitude for the interest shown in the future of the mineral industry by encouraging the formation of competent technicians in the domain of the sciences connected with this industry.