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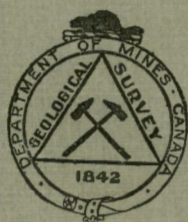
CANADA
DEPARTMENT OF MINES
HON. LOUIS CODERRE, MINISTER; R. G. McCONNELL, DEPUTY MINISTER
GEOLOGICAL SURVEY

MEMOIR 74

No. 61, GEOLOGICAL SERIES

A List of Canadian Mineral
Occurrences

BY
Robt. A. A. Johnston



OTTAWA
GOVERNMENT PRINTING BUREAU
1915

No. 1497

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ABBREVIATIONS USED IN THIS LIST.

- Am. Journ. Sci.—American Journal of Science and Arts.
 Bull. Soc. Min.—Bulletin de la Societe Mineralogique Francaise.
 Can. Journ. Sci.—Canadian Journal of Industry, Science, and Art, Toronto.
 C. M. J.—Canadian Mining Journal.
 Can. Nat.—Canadian Naturalist and Quarterly Journal of Science.
 Can. Rec. Sci.—Canadian Record of Science.
 Dana Sys. Min. 6 Ed.—Descriptive Mineralogy, 6th Edition, by Dana, with two appendices completing the work to 1909. New York and London.
 Edin. New Phil. Journ.—Edinburgh New Philosophical Journal, Edinburgh.
 Eng. and Min. Journ.—Engineering and Mining Journal.
 Geol. Can.—Geology of Canada, Report of Progress from its commencement to 1863.
 G. S. C.—Reports of progress of the Geological Survey of Canada from 1863-1884, inclusive—14 volumes.
 G. S. C., Mem.—Memoirs of the Geological Survey Department.
 G. S. C., M. R. C.—Geological Survey of Canada, Mineral Resources of Canada, Bulletin.
 G. S. C., N. S.—Geological Survey of Canada, New Series, 1885-1904, 16 volumes.
 G. S. C., Sec. Chem. and Min., 1906.—Geological Survey of Canada, Section of Chemistry and Mineralogy, 1906.
 How, Min. N. S.—How, Mineralogy of Nova Scotia.
 Jb. Min. Beil.—Jahrbuch fur Mineralogie Geognosie, Geologie und Petrefaktenkunde—Beilage Band.
 Journ. Bost. Soc. Nat. Hist.—Journal of the Boston Society of Natural History.
 Journ. Can. Min. Inst.—Journal of the Canadian Mining Institute, or Transactions of the Canadian Mining Institute.
 Journ. Chem. Soc.—Journal of the Chemical Society, London.
 Mem. Amer. Acad.—Memoirs of the American Academy of Arts and Sciences.
 Mines, B. C.—British Columbia, Report of the Minister of Mines.
 Min. and Geol.—Chapman's Mineralogy and Geology of Canada.
 Mines, G. S. Br., Sum. Rep.—Department of Mines, Geological Survey Branch, Sum. Rep.
 Mines, Min. Br.—Department of Mines, Mines Branch.
 Min. Oper. in Quebec—Department of Colonization, Mines, and Fisheries. Mining Operations in the Province of Quebec.
 N. S. Inst. Nat. Sci.—Proceedings and Transactions of the Nova Scotia Institute of Natural Science.
 Ont. Bur. Min.—Ontario Bureau of Mines, Toronto.
 Ottawa Nat.—Ottawa Naturalist.
 Phil. Mag.—London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, London.

- Proc. Acad. Phila.—Proceedings of the Academy of Natural Science, Philadelphia.
- Proc. Can. Inst.—Proceedings of the Canadian Institute.
- Quart. Journ. Geol. Soc.—Quarterly Journal of the Geological Society.
- Rep. Amer. Assoc.—Report of the American Association.
- Trans. Amer. Inst. Min. Eng.—Transactions of the American Institute of Mining and Engineering.
- Trans. R. S. C.—Proceedings and Transactions of the Royal Society of Canada.
- Vic. Mem. Mus.—Victoria Memorial Museum, Bulletin.

A List of Canadian Minerals.

INTRODUCTION.

A quarter of a century has elapsed since Hoffmann's "Annotated List of the Minerals of Canada" appeared first in the Transactions of the Royal Society of Canada, Vol. VII, Sec. III, 1889, and subsequently in the form of a revised reprint in the Annual Report of the Geological Survey for 1889. In that list the general descriptive plan followed by Hunt in the Geology of Canada, 1863, was adopted, a complete list of localities being neither intended nor implied. In addition to being an authoritative index of the knowledge of Canadian mineralogy up to the date of its publication, it was also in a large measure indicative of the progress of mineralogic investigation in Canada during the interval following the appearance of Hunt's earlier report.

In the present list a somewhat different plan is being followed. The intention here has been to bring together in as complete a list as possible all notable occurrences so far (December 1, 1914) recorded in Canada, thus leaving the compilation of a new descriptive list for consideration in some subsequent report. That such a course seems warranted is plainly evident from the inquiries that have been received from various quarters for specific lists of mineral occurrences in Canada.

The major part of the information herein contained has been gleaned from the reports of the Geological Survey of Canada, the Department of Mines, and of the Bureaus and Departments of Mines of the Provincial Governments. Resort has also been had to the mineral collections of the Department of Mines as occasion demanded. Much kindly aid and advice has also been freely accorded by the following gentlemen: Harry Piers, Esq., Provincial Museum, Halifax, N. S.; T. C. Denis, Esq., Superintendent of Mines, Quebec, Que.; Dr. F. D. Adams, Professor of Geology, McGill University, Montreal, Que.; Dr.

R. P. D. Graham, Professor of Mineralogy, McGill University, Montreal, Que.; W. F. Ferrier, Esq., Toronto, Ont.; Dr. W. G. Miller, Provincial Geologist, Toronto, Ont.; Dr. T. L. Walker, Professor of Mineralogy, University of Toronto, Toronto, Ont.; D. B. Dowling, Esq., Geological Survey, Department of Mines, Ottawa, Ont.; Wm. Nicol, Esq., Professor of Mineralogy, Queens University, Kingston, Ont.; Dr. R. C. Wallace, Professor of Geology, University of Manitoba, Winnipeg, Man.; Wm. Fleet Robertson, Esq., Provincial Mineralogist, Victoria, B. C.; Wm. Thomlinson, Esq., Cranbrook, B. C., and the late W. J. Sutton, Esq., to all of whom the writer wishes here to record his great indebtedness.

Part I of this list embraces a list of the minerals which have so far with reasonable certainty been identified as occurring in Canada and in each case a list of localities of occurrence is given for each province and territory in the Dominion.

In Part II are embraced lists of minerals known to occur in the various municipal and mining divisions into which the provinces and territories are subdivided. It is confidently expected that this arrangement will prove to be of value both to the prospector and to the collector.

It is proposed to publish supplements to this list at suitable intervals and when the accumulation of new information warrants such a course, to incorporate it in a new revised list.

Finally it may be said that the introduction of errors seems inseparable from the compilation of a list of this kind and it is earnestly requested that mistakes or omissions noted in this list will be freely communicated to the Department in order that they may be corrected in future editions of the list.

PART I.

NAMES OF MINERALS ARRANGED ALPHABETICALLY,
WITH LOCALITIES.**Acadialite.***(Chabazite.)**(Hydrous silicate of aluminum, calcium, and alkalis.)*

NOVA SCOTIA.—

CUMBERLAND COUNTY.—The reddish varieties of chabazite included under the name of acadialite are found at Partridge island, Swan creek, Two Islands (G. S. C., N. S., IV, 15T). It is also found elsewhere in the traps of the Bay of Fundy (Pr. Com. H. Piers).

Acmite.*(Silicate of iron and sodium.)*

QUEBEC.—

This mineral forms an important constituent of some of the nepheline-syenites at the following localities.—

HOCHELAGA COUNTY.—*Montreal* (G.S.C., N.S., IV, 15T).

ROUVILLE COUNTY.—*Beloeil* (G.S.C., N.S., IV, 15T).

Actinolite.*(Amphibole.)**(Silicate of calcium, magnesium, and iron.)*

BRITISH COLUMBIA.—

ALBERNI MINING DIVISION.—Actinolite occurs as the principal gangue mineral of the copper ore in the *Southern Cross Claim, Uchucklesit harbour, Barkley sound, Vancouver island* (Pr. Com. W. J. Sutton).

ATLIN MINING DIVISION.—Actinolite forms an important constituent in a series of slates occurring in close proximity to the contact of the granites with the gold series of *Birch, Boulder, and Ruby creeks* (G.S.C., N.S., XIII, 56-58A).

BOUNDARY DISTRICT.—In some of the claims of the *Deadwood Camp* and elsewhere in this district, actinolite constitutes one of the gangue minerals of the copper ore (G.S.C., N.S., XV, 109A).

KAMLOOPS MINING DIVISION.—Actinolite is found with the copper ore of this division (G.S.C., N.S., VII, 349B.)

REVELSTOKE MINING DIVISION.—Good specimens of actinolite have been found near *Illecillewaet* (G.S.C., N.S., VII, 101A).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Crystals of actinolite have been observed in granite veins cutting dark argillite schists near *Gaspereaux Station* (G.S.C., 1876-77, 329); it also occurs as an associate of the nickel ores of *St. Stephen* (G.S.C., N.S., X, 29M).

ONTARIO.—

Actinolite is of common occurrence in connexion with the older rocks at many points in this province, and in central and eastern Ontario it is a frequent associate of the Grenville limestone and has, at times, been the subject of commercial exploitation.

HALIBURTON COUNTY.—*Snowdon*, 20-I, where it is associated with magnetic iron ores (G.S.C., 1873-74, 202).

HASTINGS COUNTY.—*Elsevir*, 4-VII (Ont. Bur. Min., 1900, 192); *Madoc*, 11-V (*Seymour mine*) (G.S.C., 1873-74, 202).

LANARK COUNTY.—*Dalhousie* (G.S.C., N.S., IX, 51R).
North Burgess, 13-V (*Silver Queen mine*) (Mines, Min. Br., 118, 287).

LENNOX COUNTY.—*Kaladar*, 7-I (Ont. Bur. Min., 1900, 192).

RENFREW COUNTY.—*Westmeath* (G.S.C., N.S., VI, 15R).

SUDBURY DISTRICT.—Actinolite forms a principal constituent in a series of actinolite diorites and schists, which are regarded by Dr. Barlow as a phase of alteration of some of the norites of the district; examples of this kind are to be found in *Denison*, 12-III (*Gersdorffite mine*) (G.S.C., N.S., XIV, 71H); 5-V (*Crean Hill mine*) (Pr. Com. T. L. Walker); *Drury*, 1-II (*Toiten mine*); 2-II (*Worthington mine*) (G.S.C., N.S., XIV, 71H).

THUNDER BAY DISTRICT.—The dolomites in the vicinity of *White Fish lake* frequently acquire a decided greenish colour from the presence of minute filaments of actinolite scattered through them (G.S.C., N.S., III, 102H).

QUEBEC.—

As in Ontario, actinolite is frequently found as an associate of the Grenville limestones and it is also found associated with lower Silurian rocks, either forming beds by itself or more or less mixed with talc.

BEAUCE COUNTY.—Actinolite forms thick, heavy beds of tough greenish rock in the township of *St. Francis* (*Beauceville*) (Geol. Can., 1863, 466).

BROME COUNTY.—It is also found in fibrous form in *Bolton*, 4-IV (G. S. C., N.S., IV, 118K), and in the township of *Potton* (G.S.C., N.S., IX, 51R).

OTTAWA COUNTY.—Actinolite is found in *Hull*, 18-VIII (*Fortin and Gravelle mine*) (Mines, Min. Br., 118, 287).

YUKON.—

Actinolite-asbestos has been found on the *Klondike river* about 1½ miles from its junction with the *Yukon river* (G.S.C., N.S., XV, 432A).

Analyses of Actinolite.

	1	2
SiO ₂	52.30	56.70
Al ₂ O ₃	1.30	1.62
Fe ₂ O ₃		3.06
FeO.....	6.75	7.19
MnO.....		0.30
NiO.....	tr.	0.54
MgO.....	21.50	17.20
CaO.....	15.00	10.62
Na ₂ O.....		0.64
K ₂ O.....		0.24
H ₂ O at 100°.....	3.10a	0.64
H ₂ O above 100°.....		2.05 (dir. est.)
"a" volatile.....		
	99.95	100.80
Sp. Gr.....		2.941

1. From St. Francis by Hunt (Geol. Can., 1863, 466).
2. From Westmeath by Wait (Hoffmann, G.S.C., N.S., VI, 15R).

Aegirite.

(*Syn. Acmite.*)

(*Silicate of iron and sodium.*)

Agalmatolite.

(*Pinite-muscovite.*)

(*Hydrous silicate of aluminum, magnesium, potassium, etc.*)

A substance, which has been assigned to this sub-species by Dr. Hunt, is of frequent occurrence in both the Grenville and Silurian systems of the provinces of Ontario and Quebec (Geol. Can., 1863, 482).

Agate, Chalcedony, and Carnelian.

(Quartz.)

(Silicon dioxide.)

BRITISH COLUMBIA.—

According to the late Dr. G. M. Dawson, agates and chalcedony are of frequent occurrence in the volcanics of the Tertiary period.

ASHCROFT MINING DIVISION.—*Nicoamen Plateau* (G.S.C., N.S., VII, 347B).

KAMLOOPS MINING DIVISION.—In the neighbourhood of *Savona mountain* and of *Dufferin hill* near *Kamloops* (G.S.C., N.S., VII, 347B); frequent occurrences of these varieties have been noted along the *Thompson river* (G.S.C., N.S., VII, 185-6B); a few fine specimens of chalcedony have been found along the shores of *Kamloops lake*; it also occurs as a gangue mineral in the *Iron Mask Copper mine* near *Kamloops* (Pr. Com. W. J. Sutton).

NICOLA MINING DIVISION.—Handsome specimens of chalcedony have been found, sometimes in quite large masses, at the *Aspen Grove Camp* (G.S.C., N.S., XVI, 77A).

OMINECA MINING DIVISION.—*Ootsa lake* (Pr. Com. W. F. Robertson).

QUEEN CHARLOTTE MINING DIVISION.—These minerals are found as rolled pebbles in considerable abundance along the shores and rivers of the northern part of *Queen Charlotte island* (G.S.C., N.S., III, 110R); agate is frequently found in Tertiary volcanics on *Graham island* (Pr. Com. W. J. Sutton).

VANCOUVER ISLAND.—Agate is found to a small extent in the meta-volcanics of the Vancouver eruptive series (Pr. Com. W. J. Sutton).

NEW BRUNSWICK.—

Agate, chalcedony, and carnelian have been found at several places in this province. The following are some of the most important:—

KINGS COUNTY.—*Darling lake* and *Hampton* (G.S.C., N.S., III, 71S).

RESTIGOUCHE COUNTY.—*Dalhousie* (G.S.C., N.S., III, 71S).

QUEENS COUNTY.—*Washademoak river* (G.S.C., N.S., III, 71S).

VICTORIA COUNTY.—*Tobique river* (G.S.C., N.S., III, 71S).

NORTH WEST TERRITORIES.—

Chalcedony of an olive green colour is found in small veins on *Belanger island*, at the entrance to *Richmond gulf*, east coast of *Hudson bay* (G.S.C., N.S., IV, 27T).

NOVA SCOTIA.—

Very handsome specimens of agate, chalcedony, etc., have been found along the southern portion of the *Bay of Fundy* and also among the trap rocks adjacent thereto; some of these are beautifully banded, affording a fine sardonyx, varying in colour from milk-white to blue. Some of the more important localities are:—

CUMBERLAND COUNTY.—*Two Islands* (G.S.C., N.S., III, 71S).

DIGBY COUNTY.—*Digby neck*; *Sandy cove* (G.S.C., N.S., III, 71S); and also at *St. Mary bay* (G.S.C., N.S., IV, 15T).

KINGS COUNTY.—Between *Capes Blomidon* and *Split* (G.S.C., N.S., III, 71S).

ONTARIO.—

MANITOULIN DISTRICT.—*Michipicoten island* (G.S.C., N.S., III, 71S).

THUNDER BAY DISTRICT.—The most noted localities in Ontario are situated along the north shore of *Lake Superior* and on the islands adjacent thereto, where agate is found as loose pebbles and also in veins filling fractures in the trap; on *St. Ignace island* agates are found as nodules in the trap, and good specimens have also been found on *Simpson island* (G.S.C., N.S., III, 71S).

QUEBEC.—

It is very rarely that agates of good quality have been found in this province.

GASPE COUNTY.—Agate pebbles are found in the conglomerate of *Chaleur bay* (G.S.C., N.S., III, 71S).

KAMOURASKA COUNTY.—Chalcedony is associated with jasper on the *River Ouelle* (G.S.C., N.S., IV, 27T).

Alabaster.

(*Gypsum.*)

(*Hydrous sulphate of calcium.*)

NEW BRUNSWICK.—

ALBERT COUNTY.—This variety of gypsum occurs in abundance at *Hillsborough* (G.S.C., N.S., IV, 15T).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—Alabaster is found in some abundance at *Antigonish harbour* (G.S.C., N.S., II, 123P).

Parts of the gypsum in other localities in this province, may probably also be classed as alabaster.

Albertite.
(Hydrocarbon.)

NEW BRUNSWICK.—

ALBERT COUNTY.—The principal locality for albertite is at the *Albert mines*, from which the mineral receives the name, in the parish of *Hillsborough*. It was first discovered by one John Duffy in 1849 in what proved to be a wedge shaped fissure vein, having a width at the surface of 16 feet; other smaller veins were also found in the immediate neighbourhood varying from a few inches in width down to mere threads. These veins occur mostly in connexion with oil-yielding shales of the Lower Carboniferous system; some of the veins, however, penetrate into the overlying Millstone Grits and the underlying metamorphic rocks. Similar patches have also been found in the gypsum deposits of the district (G.S.C., N.S., IV, 16T).

KINGS COUNTY.—Small quantities of albertite are found near *Norton* (G.S.C., N.S., X, 70M).

WESTMORLAND COUNTY.—*Beliveau* (G.S.C., N.S., X, 70M).

NOVA SCOTIA.—

COLCHESTER COUNTY.—Small quantities of albertite have been noted in the conglomerates and sandstones to the north of *Cobequid mountains* as far west as *Waugh river* (G.S.C., N.S., IV, 24SS).

PICTOU COUNTY.—Albertite has been found in a small lenticular vein of calcite cutting argillaceous limestones and shales on the *Black river*, east branch of the *River John* (G.S.C., N.S., V, 128P); and in sandstones associated with barite on the west branch of the *River John* (G.S.C., N.S., V, 174-5P).

Albite.

(Silicate of aluminum and sodium.)

This feldspar is a constituent of many of the granites found at many localities in Canada.

BRITISH COLUMBIA.—

SKEENA MINING DIVISION.—Albite occurs as a metamorphic product in the schist at the townsite of *Prince Rupert* (Pr. Com. W. J. Sutton).

ONTARIO.—

HASTINGS COUNTY.—Fine crystals of albite have been found in *Wicklow, 2-III* (G.S.C., N.S., XI, 162A).

QUEBEC.—

OTTAWA COUNTY.—Albite has been found in large, cleavable masses at *Lake of Three Mountains* on the *River Rouge* (G.S.C., N.S., IV, 16T); in drusy cavities with apatite, sphene, pyroxene, etc., at a few localities in *Templeton* (G.S.C., 1877-78, 30G); albite is found in the *Gore of Templeton, lot 3* (Mines, Min. Br., 118, 281); in *Villeneuve, 31-I* (*Villeneuve mica mine*).

Allanite.

(*Silicate of aluminum, iron, cerium, didymium, calcium, etc.*)

This mineral has been observed in a number of localities in the Grenville of Ontario and Quebec.

ONTARIO.—

HALIBURTON COUNTY.—Together with quartz, orthoclase, calcite, pyroxene, etc., allanite forms one of the constituents of a series of reticulating veins in an irregular body of magnetic iron ore occurring in gneiss in *Lutterworth, 5-V and VI* (G.S.C., N.S., VI, 8 J).

MUSKOKA DISTRICT.—Allanite occurs in a narrow vein in granitoid rocks on *Hollow lake, Gibson township* (Can. Rec. Sci., N. S., 1864, IX, 103).

NIPISSING DISTRICT.—Allanite is sometimes found in good examples in granite gneiss in this district (G.S.C., N.S., X, 86-I).

RENFREW COUNTY.—Fine masses of pitch-black allanite have been found in *Hagarty, 13-A* (G.S.C., N.S., VIII, 14R).

VICTORIA COUNTY.—Allanite is found with magnetite, chlorite, and pyrite in a coarse granite vein composed of quartz, feldspar, and mica, cutting red orthoclase gneiss in *Dalton, 25-XII* (G.S.C., N.S., VI, 7 J).

QUEBEC.—

CHAMPLAIN COUNTY.—Allanite forms one of the principal constituents of coarse granite, which is found in considerable masses on the east shore of *Lake Bouchard (Lac a Baude)*. Determinations made in the laboratory of the Geological Survey upon a mass of granite weighing seven and a half pounds showed that about 56 per cent of it consisted of allanite. The mineral forms flat tabular crystallizations of a deep brown colour and vitreous lustre, some of the individuals attaining a length of 3 inches and a thickness of three quarters of an inch (G.S.C., N.S., VII, 12, 13R).

CHARLEVOIX COUNTY.—Allanite is found in small crystals in a feldspathic rock at *Bay St. Paul* (G.S.C., N.S., IV, 16T).

CHICOUTIMI COUNTY.—Allanite has been observed in minute crystals in a labradorite-hypersthene rock at *Lake St. John* (G.S.C., N.S., IV, 16T).

Allophane.*(Hydrous silicate of aluminum.)***BRITISH COLUMBIA.—**

SKEENA MINING DIVISION.—Allophane occurs along cleavage cracks in slate at the *Red Bluff claim, Tlances river, Observatory inlet* (Mines, G.S. Br., Sum. Rep., 1911, 49).

YUKON.—

WHITEHORSE MINING DIVISION.—This mineral fills small fissures in andradite at the *Rabbit-foot claim* (G.S.C., N.S., XII, 18-19R).

Almandite.*(Garnet.)**(Silicate of iron and aluminum.)*

This variety of garnet is found in metamorphic schists at many points in Canada, and also in the sands and gravels that have been formed from the erosion of these rocks.

ALBERTA.—

Almandite occurs at a point 6 miles east of *Crownsnest lake* (G.S.C., N.S., XIII, 172A).

BRITISH COLUMBIA

BOUNDARY DISTRICT.—Almandite is a frequent constituent of the veinstones of the district (G.S.C., N.S., XIV, 63A).

SKEENA AND STIKINE MINING DIVISIONS.—Almandite is found in abundance in crystals of varying dimensions in schists along the *Stikine and Skeena rivers*, also loose in the gravels derived from these rocks (G.S.C., N.S., IV, 16T).

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—Fine specimens of almandite have been brought from *Albert harbour* by Capt. J. E. Bernier (Mines, G.S. Br., Sum. Rep., 1908, 166).

NOVA SCOTIA.—

Almandite is found in metamorphosed sedimentary rocks in various parts of Nova Scotia, such as:—

GUYSBOROUGH COUNTY.—*Dover harbour* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—*Sherbrooke lake* (G.S.C., N.S., XVI, 346A); *Dalhousie Road Settlement* (Pr. Com. H. Piers).

YARMOUTH COUNTY.—*Cheggogin point* (G.S.C., N.S., VI, 69A); *Lake George, Brazil lake* (Pr. Com. H. Piers).

SHELburne COUNTY.—East side of *Shelburne* (Pr. Com. H. Piers).

ONTARIO.—

NIPISSING DISTRICT.—*Mattawan township at Les Erable rapids* (G.S.C., N.S., X, 181-I).

QUEBEC.—

CHARLEVOIX COUNTY.—Good specimens of almandite are found at *Lac du Pied des Monts* (G.S.C., N.S., XV, 435A).

NEW QUEBEC TERRITORY.—Fine specimens of almandite occur in schists on the south side of *Whitney bay* (G.S.C., N.S., IX, 14R).

OTTAWA COUNTY.—*Wakefield township* (G.S.C., N.S., XV, 439A).

SAGUENAY COUNTY.—In the mica schists of *Manikouagan river* (G.S.C., N.S., VIII, 119A).

YUKON.—

Almandite occurs associated with gold, awaruite, magnetite, etc., in the gravels of *Hoole canyon*, *Pelly river* (Mines, G.S.Br., Sum. Rep., 1910, 259).

Analysis of almandite from Hoole canyon by Johnston (Mines, G.S. Br., Sum. Rep., 1910, 259).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	MgO	Sp. Gr.
37.7	21.1	2.4	31.9	1.5	5.1—99.7	3.991

Altaite.

(*Telluride of lead.*)

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—Altaite was found in quartz on *Little creek*, *Kaslo river* (G.S.C., N.S., VI, 29R).

FORT STEELE MINING DIVISION.—At the *Payroll claim*, *Little Nigger creek*, 12 miles southwest of *Cranbrook* (G.S.C., N.S., XII, 19R).

GREENWOOD MINING DIVISION.—At the *Lakeview claim*, north side of *Long lake* (G.S.C., VIII, 10, 11R).

Analysis of altaite from Lakeview claim by Johnston (Hoffmann, G.S.C., N.S., VIII, 10-11R).

Te	Pb	Ag	Fe		Sp. Gr
43.01	54.04	2.27	0.68	—100.00	8.081

Alunite.

(*Hydrous sulphate of aluminum and potassium.*)

NEW BRUNSWICK.—

ALBERT COUNTY.—Alunite is found with quartz and specularite at *New Ireland Road*, parish of *Alma* (G.S.C., N.S., IV, 16T).

Alunogen.*(Hydrous sulphate of aluminum.)***BRITISH COLUMBIA.—**

ASHCROFT MINING DIVISION.—Alunogen occurs in pale yellowish to white, cellular, mammillary crusts about 4 miles west of *Savona*; in delicate fibrous masses in greyish, pyritiferous, feldspathic rock near *Spatsum* (G.S.C., N.S., VI, 25R).

CARIBOO MINING DIVISION.—Alunogen forms a coating on chloritic schists on *Grani Brook, Fraser river* (G.S.C., N.S., XI, 33D).

KAMLOOPS MINING DIVISION.—Alunogen has been found in thick, yellowish-white incrustations on weathered, pyritous, quartzo-feldspathic rocks on *Blair creek*, a branch of *Bolean or Sixmile creek, Salmon river, Grande Prairie* (G.S.C., N.S., VII, 13R).

LILLOOET MINING DIVISION.—In pale yellow to white, crystalline, cellular masses at the mouth of *Fountain creek, Fraser river* (G.S.C., N.S., VI, 25R).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—Formed in an old heap of shale at the *Scotia mine, Springhill* (G.S.C., 1878-79, 8H).

Analysis of alunogen from Springhill by Adams (Hoffmann, G.S.C., 1878-79, 8H).

SO ₃	Al ₂ O ₃	Fe ₂ O ₃	FeO	CaO	MgO	K ₂ O	Na ₂ O	Nh ₃	H ₂ O	Insol.
36.935	13.479	2.888	0.157	0.140	0.138	0.087	0.131	undet.	45.109	0.235
										—99.299

Amazonite.*(Feldspar.)**(Silicate of aluminum and potassium.)***ONTARIO.—**

NIPISSING DISTRICT.—*Cameron, 7-B* (G.S.C., N.S., VI, 32AA).

RENFREW COUNTY.—*Sebastopol, 31-X (Smart mine)* (G.S.C., 1882-84, 7L).

QUEBEC.—

OTTAWA COUNTY.—*Hull, 13, 14-A, 6-XII; Villeneuve, 31-I.*

See also Microcline.

Amber.*(Hydrocarbon.)***BRITISH COLUMBIA.—**

NANAIMO MINING DIVISION.—In the coals of the *Nanaimo coal fields* (Quarterly Journ. of the Geol. Soc., 1860, 198).

OMINECA MINING DIVISION.—In little grains on the *Nechako river*, south of *Fort Fraser* (G.S.C., 1876-77, 472).

PEACE RIVER MINING DIVISION.—In nodules in shaly sandstone on *Peace river* (G.S.C., 1876-77, 472).

QUEEN CHARLOTTE MINING DIVISION.—Mineral resin in small drops and patches is of frequent occurrence in some of the Tertiary and Cretaceous coals and a small specimen of true amber was found in the possession of the Indians in the *Queen Charlotte islands* and said to have been derived from the west coast of these islands (Dawson, G.S.C., N.S., III, 111R).

QUESNEL MINING DIVISION.—Amber is found in small spots and drops in lignite beds on the south bank of the *Quesnel river* (G.S.C., 1875-6, 257).

MANITOBA.—

In pieces up to the size of a robin's egg, in gravel and sand along the shore of *Cedar lake*, near the mouth of the *Saskatchewan river*. The amber found here has been named "Chemawinite" by Dr. B. J. Harrington in allusion to a near-by Hudson Bay post (G.S.C., N.S., V, 225E).

SASKATCHEWAN.—

Mineral resin has been noted in the lignites of *Porcupine creek* and *Souris river* (Dawson, Report of Geology and Resources of the Region in the vicinity of the 49th Parallel).

YUKON.—

Amber has been noted in association with a deposit of lignite on the *Frances river* (G.S.C., N.S., III, 103B).

Analysis of "Chemawinite" from Cedar lake by Harrington (Am. Journ. Sci., Ser. 3, Vol. XLII, 332-335, excluding ash 0.09).

C	H	O
80.03	10.47	9.50 — 100.00

Amblygonite.*(Fluo-phosphate of aluminum and lithium.)***NOVA SCOTIA.—**

LUNENBURG COUNTY.—Amblygonite occurs in white or bluish white masses in pegmatite on *John Reeve's farm*, near *Lake Ramsay*, *New Ross* (Mines, G.S.Br., Sum. Rep., 1907, 96).

Amethyst.

(Quartz.)

(Silicon dioxide.)

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Amethysts are found amid the trap rocks of the island of *Grand Manan* (G.S.C., N.S., X, 126M).

RESTIGOUCHE COUNTY.—In the trap rocks in the vicinity of *Dalhousie*, and on the *Upsalquitch river* about 7 miles above the forks (G.S.C., 1879-81, 39D).

NORTH WEST TERRITORIES.—

Amethysts are found in crystals in the trap of *Dubawnt lake* (G.S.C., N.S., VII, 41A).

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Amethysts are found in various places along the shore (G.S.C., N.S., III, 69S).

CUMBERLAND COUNTY.—*Cape Sharp, Partridge island* (G.S.C., N.S., III, 70S).

DIGBY COUNTY.—*Digby neck* (G.S.C., N.S., VI, 21Q).

HALIFAX COUNTY.—In a granite mass near *Sixmile lake, St. Margaret Bay road* (Pr. Com. H. Piers).

KINGS COUNTY.—*Cape Blomidon* (G.S.C., N.S., IV, 17T); *Canada creek, Harbourville* (Pr. Com. H. Piers).

ONTARIO.—

THUNDER BAY DISTRICT.—Along the north shore of *Lake Superior*; *Amethyst harbour* on this shore is particularly celebrated for its fine specimens (G.S.C., N.S., III, 69S); the mouth of the *MacKenzie river* has also furnished good specimens (G.S.C., N.S., IV, 17T); it has also been found at *Lake Nipigon* and elsewhere in this district (G.S.C., N.S., III, 8H).

Amphibole.

(Composition various.)

For occurrences of the different varieties of amphibole see actinolite, antholite, hornblende, nephrite, pargasite, and tremolite.

Analcite.

(Hydrous silicate of aluminum and sodium.)

ALBERTA.—

In a railway cut near *Blairmore* on the Crows Nest branch of the Canadian Pacific railway (Can. Rec. Sci., IX, No. 5, 265-278).

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Analcite has been observed by Daly (Geology of the North American Cordillera at the Forty-ninth Parallel) in the form of sharply polygonal or rounded individuals of microscopic dimensions abundantly developed in a great lava mass outcropping in the ranges to the north of *Midway and Rock Creek*; in one specimen examined by Dr. Daly, the analcite amounted to at least 29.2 per cent, of the whole.

NOVA SCOTIA.—

Fine specimens of analcite are met with at various points in this province.

ANNAPOLIS COUNTY.—*Martials cove*, etc. (N.S. Inst. Nat. Sci., V, 283).

CUMBERLAND COUNTY.—*McKay head* above *Parrsborough harbour* (G.S.C., N.S., XII, 192A); *Cape d'Or*; *Five Islands*; *Partridge island*; *Swan creek*; *Two Islands*; etc. (G.S.C., N.S., V, 55AA).

DIGBY COUNTY.—*Digby Gut*. (G.S.C., N.S., IX, 93A); *Digby Neck*, *Williambrook*, etc. (N.S. Inst., Nat. Sci., V, 283).

KINGS COUNTY.—*Cape Blomidon and Sheffield Vault* (G.S.C., 1882-84, 27L).

ONTARIO.—

MANITOULIN DISTRICT.—Analcite abounds with the native copper of *Michipicoten island* (Geol. Can., 1863, 481).

THUNDER BAY DISTRICT.—In the amygdaloidal traps of the north shore of *Lake Superior* (G.S.C., N.S., IV, 17T).

QUEBEC.—

HOCHELAGA COUNTY.—In dyke cutting Trenton limestone at the *Montreal reservoir extension* (G.S.C., N.S., IV, 17T).

Analysis of analcite from Montreal reservoir extension by Harrington (G.S.C., 1877-78, 45 G).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O	H ₂ O	Sp. Gr.
53.59	23.33	tr.	0.64	tr.	14.54	8.47-100.27	2.255

Andalusite.*(Silicate of aluminum.)***BRITISH COLUMBIA.—**

Andalusite occurs sparingly in the mica schists of the northern coast of British Columbia (Pr. Com. W. J. Sutton).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Andalusite occurs in crystals, sometimes attaining a length of 4 inches and a thickness of half an inch, in fine, clear mica schists at *Moore Mills* in the parish of *St. James* (G.S.C., 1870-71, 240).

NOVA SCOTIA.—

HALIFAX COUNTY.—*Geiser's hill*, to the west of *Halifax city*; *Beaver Dam*, near *Sheet Harbour* (Pr. Com. H. Piers):

QUEENS COUNTY.—In crystalline masses in mica schists on *Broad river*, about $1\frac{1}{2}$ miles up from its mouth (G.S.C., N.S., IX, 52M).

SHELBURNE COUNTY.—Pale pink, prismatic crystals at *Red head* (G.S.C., N.S., IX, 58M); and in the neighbourhood of *Port Latour* especially at *Goose Neck point* (G.S.C., N.S., IX, 148M); *Shelburne Harbour* (Pr. Com. H. Piers).

YARMOUTH COUNTY.—In the schists above *Yarmouth* and *Pubnico* (G.S.C., N.S., VI, 12Q).

QUEBEC.—

BEAUCE COUNTY.—Andalusite occurs in small, flesh-red prisms in micaceous slates at *Lake St. Francis* (G.S.C., N.S., IV, 17T). See also *Chiaistolite*.

Andesite.*(Feldspar, intermediate in composition between albite and anorthite.)*

This feldspar occurs as a constituent of certain granitic rocks in many parts of the Dominion.

QUEBEC.—

ARGENTEUIL COUNTY.—This mineral is found in finely striated, cleavable, lavender-blue to sapphire blue masses at *Lachute* (Geol. Can., 1863, 478).

MONTMORENCY COUNTY.—Andesite occurs in reddish, striated, cleavable masses with hypersthene and ilmenite at *Chateau Richer* and *St. Joachim* (Geol. Can., 1863, 478).

Andradite.*(Garnet.)**(Silicate of iron and calcium.)***ALBERTA.—**

Andradite occurs at a point 6 miles east of *Crowsnest lake* (G.S.C., N.S., XIII, 172A).

BRITISH COLUMBIA.—

Andradite is quite common as a gangue mineral in many of the copper ore occurrences on the coast (Pr. Com. W. J. Sutton).

ALBERNI MINING DIVISION.—Andradite is found associated with ilvaite at the *Monitor mine, Alberni canal*, about 3 miles from *Uchucklesit harbour* (G.S.C., N.S., VIII, 122A).

KAMLOOPS MINING DIVISION.—Three miles west of *Grande Prairie* (G.S.C., N.S., X, 119A).

LILLOOET MINING DIVISION.—*Foster Bar on Fraser river* (G.S.C., N.S., VI, 16R).

NANAIMO MINING DIVISION.—In pale, honey-yellow and brownish-yellow crystals embedded in chalcopyrite, and in yellowish green coloured masses in association with white, fibrous tremolite and dolomite on *Texada island (Malaspina Copper mine)* (G.S.C., N.S., IV, 18T); *Cornell and Marble Bay mines* (Pr. Com. T. L. Walker).

ONTARIO.—

HALIBURTON COUNTY.—Andradite is found in masses or crystals, black in colour, in *Lutterworth, 5-V and VI (Paxton Iron mine)* (Can. Rec. Sci., VI, 479).

HASTINGS COUNTY.—This mineral is found in the nepheline syenite of *Dungannon*, where it occasionally appears in crystalline form, but for the most part occurs in grains (Can. Rec. Sci., VI, 480); good crystallized specimens were found in *Tudor, 6, 7-XII* (Pr. Com. T. L. Walker).

QUEBEC.—

PONTIAC COUNTY.—*Cawood* (G.S.C., N.S., VI, 16R).

Analyses of Andradite.

	1	2	3	4
SiO ₂	34.52	35.68	36.604	36.09
TiO ₂			1.078	
Al ₂ O ₃	4.09	5.88	9.771	12.69
Fe ₂ O ₃	25.82	23.70	15.996	12.33
FeO.....	2.66	3.65	3.852	3.30
MnO.....	0.94	0.81	1.301	0.48
CaO.....	31.49	29.64	29.306	34.46
MgO.....	0.59	0.35	1.384	0.94
H ₂ O.....	0.03	0.28	0.285	0.04
	100.14	99.99	99.577	100.33
Sp. Gr.....	3.706	3.813	3.739	3.690

1. From Foster Bar by Wait (Hoffmann, G.S.C., N.S., VI, 16R).
2. From Lutterworth by Harrington (Can. Rec. Sci., VI, 479).
3. From Dungannon by Harrington (loc. cit., 480).
4. From Cawood by Wait (G.S.C., N.S., VI, 16R).

Anglesite.

(Sulphate of lead.)

BRITISH COLUMBIA.—

SLOCAN MINING DIVISION.—Anglesite occurs in crystals with cerussite and galena at the *Wellington mine*, 2½ miles northeast of *Great Bear lake* (G.S.C., N.S., VI, 27-28R); and with linarite in cavities in an ore body consisting of coarsely crystalline galena and chalcopryrite at the *Beaver Group, Beaver mountain* (Mines, G.S.Br., Sum. Rep., 1910, 260).

Anhydrite.

(Sulphate of calcium.)

BRITISH COLUMBIA.—

ASHCROFT MINING DIVISION.—near *Spatsum* (Pr. Com. W. F. Robertson).

KAMLOOPS MINING DIVISION.—Anhydrite occurs in traces among the gypsum beds of *Salmon river* (G.S.C., N.S., VIII, 38A).

MANITOBA.—

Anhydrite occurs in beds aggregating many feet in thickness in *township 32, range 8*, west of the principal meridian (G.S.C., N.S., XV, 189A); also in beds of gypsum at *Partridge Crop lake* (G.S.C., N.S., V, 229E).

NEW BRUNSWICK.—

Anhydrite is frequently met with in connexion with some of the gypsum deposits of this province.

ALBERT COUNTY.—*Hillsborough* (G.S.C., N.S., X, 92M).

KINGS COUNTY.—*Piccadilly mountain; Smith creek* (Mines, Min. Br., No. 84, 92).

WESTMORLAND COUNTY.—*Pink Rock, Cape Maringouin* (Mines, Min. Br., No. 84, 96).

NOVA SCOTIA.—

Anhydrite is met with in greater or less abundance in connexion with many of the gypsum beds of this province.

COLCHESTER COUNTY.—*Clarke head, Minas basin* (G.S.C., N.S., V, 98P); *Beaver brook, Shubenacadie river* (Mines, Min. Br., No. 84, 65).

CUMBERLAND COUNTY.—*Barkus brook* (G.S.C., N.S., VI, 61A).

HANTS COUNTY.—*Cheverie* (Mines, Min. Br., No. 84, 73); *Hebert river* (Mines, Min. Br., No. 84, 82); *Noel lake* (Mines, Min. Br., No. 84, 71); *Mount Denson* (Mines, Min. Br., No. 84, 77); *Newport, Wentworth* (Mines, Min. Br., No. 84, 81); *Walton* (Pr. Com. T. L. Walker); *Windsor* (Mines, Min. Br., No. 84, 78).

INVERNESS COUNTY.—*Mabou Harbour* (Mines, Min. Br., No. 84, 48); and *Plaster island* (Mines, Min. Br., No. 84, 50).

PICTOU COUNTY.—Six miles south of *Ferrona junction* (Mines, Min. Br., No. 84, 62).

VICTORIA COUNTY.—*Goose cove on St. Ann bay* (Mines, Min. Br., No. 84, 56); *Iona or Washabuck peninsula; Lieutenant pond* (Mines, Min. Br., No. 84, 51); *Port Bevis* and at other points on or near *Great Bras d'Or lake* (Mines, Min. Br., No. 84, 55).

ONTARIO.—

FRONTENAC COUNTY.—*Hinchinbrooke, 29, 30-I (Smith mine)* (Ont. Bur. Min., 1900, 193); *Loughborough, 7-VIII (Foxton mine)* (Can. Rec. Sci., VII, 61).

HURON COUNTY.—Anhydrite occurs in connexion with the salt deposits at *Goderich* (G.S.C., 1876-77, 231).

LANARK COUNTY.—Anhydrite is found in an apatite mine in *North Burgess, 4-III*; in *4-VIII (McLaren's mine)*, where it occurs in cleavable masses of light purple or lilac colour, veined with white gypsum (Can. Rec. Sci. IV, 475).

Animikite.*(Composition doubtful.)**(Antimonide of silver.)*

ONTARIO.—

THUNDER BAY DISTRICT.—This name from Animikie—Thunder, was given by Wurtz (Eng. and Min. Journ., XXVII, 55) to a problematic constituent of the complex silver ore of *Silver islet, Lake Superior*; it is probably related to or identical with dyscrasite. See also Huntelite and Macfarlanite (G.S.C., N.S., IV, 18T).

Ankerite.*(Carbonate of calcium, magnesium, and iron.)*

NEW BRUNSWICK.—

QUEENS COUNTY.—Ankerite occurs in veins and small masses in slaty conglomerate about a mile below *Golding landing* (G.S.C., 1872-73, 72).

NORTH WEST TERRITORIES.—

Ankerite is found on the *Nastapoka islands* on the east coast of *Hudson bay*, where it fills partings between beds of chert (G.S.C., N.S., XIII, 9 and 30 DD).

NOVA SCOTIA.—

COLCHESTER COUNTY.—Ankerite is a characteristic mineral in much of the iron ore of the southern slope of the *Cobequid mountains, Londonderry* (G.S.C., N.S., IV, 18T).

CUMBERLAND COUNTY.—*Clarke head* (G.S.C., N.S., V, 101P); *Mc-Gahey brook* (G.S.C., N.S., VI, 61A).

GUYSBOROUGH COUNTY.—Ankerite is found with specularite in minute veins traversing sandstone in *Big Meadow brook* (G.S.C., N.S., II, 77P); and *Fitzgerald lake* (G.S.C., N.S., II, 57P).

PICOU COUNTY.—*Glencoe* (G.S.C., N.S., V, 10P); and *Ogg brook* (G.S.C., N.S., V, 35P).

ONTARIO.—

ALGOMA DISTRICT.—Ankerite is found with chalcopyrite in quartz veins at the *Bruce mines* (G.S.C., N.S., XV, 251A).

NIPISSING DISTRICT.—This mineral is found with copper pyrites and iron pyrites in a quartz vein on *Matthias island, Lake Timagami* (G.S.C., N.S., X, 145-I).

TIMISKAMING DISTRICT.—*Porcupine Gold Area, Ogden (Gray claim); Powell; West Dome (east Foster claim)* (Ont. Bur. Min., Pt. 1, 1912, 215); *Larder lake, Swastika* (Pr. Com. W. G. Miller).

QUEBEC.—

NEW QUEBEC TERRITORY.—Ankerite is found below *Shale chute* on the *Koksoak river*, where it occurs in cherty limestone overlying jaspery magnetite (G.S.C., N.S., VII, 18R); *Ungava river* (G.S.C., N.S., VII, 99A).

Analyses of Ankerite.

	1	2	3	4	5	6	7	8	9	10
CaCO ₃	53.64	49.32	54.96	53.75	54.0	43.80	49.20	51.61	46.63	42.76
FeCO ₃	23.29	23.11	21.92	22.70	23.2	23.45	20.30	19.59	5.39	12.01
MnCO ₃	0.77	0.68	1.29	0.80	.....	0.80	.....	.....	.....	.....
MgCO ₃	21.48	26.29	21.42	22.75	22.0	30.80	30.20	28.67	28.77	19.86
Fe ₂ O ₃	tr.	.....	1.05	.....	.....	.....	.....	.....	.....	.....
Insol	0.57	0.12	0.19	.....	0.5	0.10	.....	0.13	11.42	.....
	99.75	99.52	100.83	100.00	99.7	98.95	99.70	100.00	92.21	74.63
Sp. Gr.	2.998									

- 1, 2, 3. From Londonderry by Louis (N.S. Inst. Nat. Sci., Vol. V, 1879-82, 47-50).
4. Average of a number of analyses by Louis.
5. From Londonderry by Dawson.
6. and 7. From Londonderry by Jackson.
8. From Londonderry by How (Quoted by Selwyn, G.S.C., 1872-3, 27).
9. From West Dome (East Foster claim) (Ont. Bur. Min., 1912, pt. 1, 215).
10. From Ogden township (Gray claim) (loc. cit).

Annabergite.

(*Hydrous arsenate of nickel.*)

ONTARIO.—

HASTINGS COUNTY.—Annabergite occurs as a stain on quartzite carrying mispickel, in *Limerick, 1-I*.

SUDBURY DISTRICT.—Annabergite has been noted in *Denison, 12-III* (*Gersdorffite mine*) (G.S.C., N.S., XIV, 103-104H).

THUNDER BAY DISTRICT.—This mineral has been noted on *Silver islet* (G.S.C., N.S., III, 28H).

TIMISKAMING DISTRICT.—*Coleman* and the neighbouring townships where it is common amongst the nickel, cobalt silver ores (Ont. Bur. Min., 1904, 98); it is also found at some of the mines of *Gowanda*.

Anorthite.*(Silicate of aluminum and calcium.)***QUEBEC.—**

YAMASKA COUNTY.—Anorthite forms one of the constituents of the diorites of *Yamaska mountain* (Geol. Can., 1863, 479).

Antholite.*(Amphibole.)***ONTARIO.—**

HASTINGS COUNTY.—Antholite is found in irregular bundles of strong fibres associated with altered enstatite, calcite, dolomite, etc., in *Elzevir*, 7, 8-XI (Ont. Bur. Min., 1893, 97 and 98).

Analysis of Antholite from *Elzevir* by Coleman (Am. Journ. Sci., Ser. 3, Vol. XLVIII, 281-283).

SiO ₂	MgO	H ₂ O
39.58	31.48	4.53

Anthophyllite.*(Silicate of magnesium and iron.)***QUEBEC.—**

ABITIBI DISTRICT.—From west side of southern end of *Gull lake* to the east of *Old Gull lake* (Pr. Com. J. A. Bancroft).

See also Antholite and Gedrite.

Anthracite.*(See Coal.)**(Hydrocarbon.)***Anthraxolite.***(Hydrocarbon.)*

“This name was given by Professor E. J. Chapman to the black, combustible, coal-like matter which is met with, not infrequently, in various formations in different parts of the Dominion. Its general appearance resembles anthracite, having the black, lustrous character of that variety of coal. It is very brittle and has a hardness between 2.25 and 2.50. Its specific gravity varies from 1.35 to 1.55. Its composition is essentially carbon with from 3 to 25 per cent of volatile matter including a small amount of moisture and ash content of from nothing to eleven per cent. Under the microscope it shows no traces of organic structure and was regarded by the late Dr. T. S. Hunt as having without doubt

resulted from the slow alteration of liquid bitumen in the fissures of the strata. This would explain the great variability in the volatile matter, exclusive of moisture, which is observed in specimens from different localities, the amount of alteration having in some instances proceeded further than in others. It never occurs in true beds like coal, but is found either lining fissures or filling veins and fissures, sometimes several inches in diameter in the limestone strata and even in the trap rocks which traverse these. Sometimes it occurs in buttons or drops forming botryoidal masses" (G.S.C., N.S., IV, 18T).

BRITISH COLUMBIA.—

PORTLAND CANAL MINING DIVISION.—Anthraxolite occurs in small quantities in white calcite associated with white quartz on *Bear river*, *Portland canal* (Pr. Com. R. G. McConnell).

ONTARIO.—

FRONTENAC COUNTY.—*Kingston*, 16, 17-IV; 15, 16-V (G.S.C., N.S., XIV, 181A). Anthraxolite is found at the *Baby mine*, *Loughborough*, 1-X (Mines, Min. Br., 118, 281).

SUDBURY DISTRICT.—In a vein 6 to 9 feet thick cutting black, fissile slates in *Balfour*, 10-I (Ont. Bur. Min., 1901, 51). *Fairbank*, 9-VI (G.S.C., N.S., X, 124A).

THUNDER BAY DISTRICT.—Anthraxolite occurs in a cherty vein walled in by colourless quartz on the north side of *Thunder bay* (Can. Journ., X, 410).

QUEBEC.—

BAGOT COUNTY.—*Acton* (G.S.C., N.S., IV, 19T).

DRUMMOND COUNTY.—*Drummondville* (G.S.C., N.S., IV, 19T).

GASPE COUNTY.—*Chatte river* and elsewhere in this county (G.S.C., N.S., IV, 19T).

LEVIS COUNTY.—*Point Levis: St. Nicholas* (G.S.C., N.S., IV, 19T).

LOTBINIERE COUNTY.—*Lotbiniere* (G.S.C., N.S., IV, 19T): *St. Flavien* (Geol. Can., 1863, 526).

MISTASSINI DISTRICT.—Anthraxolite occurs in irregular globules and veins within veins of quartz and calcite cutting Cambrian limestone at *Lake Mistassini* (G.S.C., N.S., VIII, 287L).

MONTMORENCY COUNTY.—*Island of Orleans* (G.S.C., N.S., IV, 19T).

NEW QUEBEC TERRITORY.—*Petitsikapau* and *Menihék lakes* on the *Hamilton river* (G.S.C., N.S., VIII, 287-288L).

QUEBEC COUNTY.—*Quebec* and *Sillery* (G.S.C., N.S., IV, 19T).

Analyses of Anthraxolite.

	1	2	3	4	5	6	7	8	9	10	11
C	94.36	94.15	74.20	90.10	94.92	90.25	.....	.....	.....	.....	86.83
H	.....	.....	.....	.....	0.52	4.16	.....	.....	.....	.....	.....
N	.....	.....	.....	.....	1.04	0.52	.....	.....	.....	.....	.....
S	.....	.....	.....	.....	0.31	0.66	.....	.....	.....	.....	.....
O	.....	.....	.....	.....	1.69	3.69	.....	.....	.....	.....	.....
Ash	0.00	0.00	20.50	4.10	1.52	0.72	.....	.....	.....	.....	7.13
H ₂ O	2.08	2.23	4.00	4.00	2.48	.....	.....	.....	.....	.....	3.56
Vol.	3.36	3.62	1.30	1.80	.....	*.....	19.5	21.0	15.8	24.5	2.48
Sp.gr.	1.43	.....	.....	.....	1.865	1.365	.....	.....	.....	.....	.....

*Loss on drying—0.96%.

NOTE.—1 to 4 proximate in which H₂O represents that driven off up to 115°C and the vol. the additional matter driven off by ignition in a closed vessel.

- 1 and 2. From Thunder Bay by Chapman (Can. Journ., Sci., X, 411).
3. Average sample.
4. Selected sample from Balfour, Ont., by Ellis and Lawson (Proc. Can. Inst., Feb. 27, 1897, p. 67.)
5. From Balfour by Mickle (Proc. Can. Inst, April 27, 1897).
6. From Kingston district, Ont., by Ellis and Lawson (Proc. Can. Inst., Feb. 27, 1897).
7. From Mountain hill, Quebec.
8. From Island of Orleans, Quebec.
- 9 and 10. From near St. Flavien, Que., by Hunt (Geol. Can., 1863, 526.
11. From Lake Petitsikapau, Hamilton river, Ungava district, Que., by Hoffmann (G.S.C., N.S., VII, 66R).

Antimony, Native.**BRITISH COLUMBIA.—**

SLOCAN MINING DIVISION.—Native antimony is occasionally found associated with tetrahedrite in the mines of this division (Can. Rec. Sci., VI, 494-498).

NEW BRUNSWICK.—

YORK COUNTY.—Native antimony is found, sometimes in large masses, associated with stibnite and kermesite in quartz veins near *Lake George, Prince William* (G.S.C., N.S., X, 30M).

NOVA SCOTIA.—

HANTS COUNTY.—With stibnite and kermesite in a quartz fissure vein at *West Gore* (G.S.C., N.S., VI, 58A).

ONTARIO.—

HASTINGS COUNTY.—Native antimony has been found in small quantities in *Madoc, 18-I (Dufferin Iron mine)* (G.S.C., N.S., XIV, 238A).

QUEBEC.—

WOLFE COUNTY.—In veins of argillite in *Ham, 56-I* (Geol. Can., 1863, 876).

Analysis of antimony from Madoc by Johnston (Hoffmann, G.S.C., N.S., XIII, 13R).

Sb	As	Fe
99.89	0.02	tr.—99.91

Apatite.

(Fluo-phosphate of calcium.)

Fluor apatite is of common occurrence in portions of the Grenville series of some of the central counties of Ontario and of Ottawa and adjoining counties in the province of Quebec. The largest deposits are in the form of irregular veins or in basic intrusives cutting the older gneisses: it is also found, but usually in small scattered crystals, in pegmatite dykes cutting the same rocks. There is voluminous literature on the subject and for a full elucidation of it the reader is referred to the various Annual Reports of the Canadian Geological Survey and also the Mineral Resources Bulletin, No. 881 of the same Survey, from which concise information may be had; also to some of the Reports of the Ontario Bureau of Mines.

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—*Frobisher bay* (G.S.C., N.S., XI, 27M).

Rae river, which flows into *Coronation gulf* (G.S.C., N.S., II, 31R)

NOVA SCOTIA.—

CUMBERLAND COUNTY.—The variety called "Asparagus stone" is mentioned by Jackson and Alger as occurring on *Partridge island* (Mem. Amer. Acad. IX, Aug. 1831).

ONTARIO.—

ALGOMA DISTRICT.—*Cobden*, east of *Davis lock* (G.S.C., N.S., XI, 164A).

CARLETON COUNTY.—*Huntley township* (Pr. Com. T. L. Walker).

FRONTENAC COUNTY.—*Bedford, 4-II; 6-IV; 7, 32, 33, 34-VII; 28-VIII; 3-XII; 4, 6-XIII; 1-XVII: Hinchinbrooke, 29, 30-I* (G.S.C., M.R.C., 881, 30): *Loughborough, 2-VII* (G.S.C., N.S., XIV, 182A); *11, 12, 14, 16-VIII; 4, 10, 11, 12, 13, 15, 17-IX; 7, 8, 10, 13, 19, 24-X; 8, 9, 10, 15-XI; 19, 22, 24-XII; 24, 25-XIII: Oso, 6-I; 1, 2-V; 14-VI; 4-VIII: Storrington, 8, 23-XV* (G.S.C., M.R.C., 881, 30).

HALIBURTON COUNTY.—*Cardiff*, 22-XIV (G.S.C., N.S., IX, 52A); 8-XII (G.S.C., Mem. 6, 199); 8-XVI; 22-XIX (G.S.C., Mem. 6, 199); 7-XXII (G.S.C., Mem. 6, 88); *Dudley*, 4-III (G.S.C., N.S., IX, 52A); *Dysart*, 28-I (G.S.C., Mem. 6, 199); 11-V (G.S.C., N.S., IX, 52A); *Harcourt*, 21-XI (G.S.C., N.S., IX, 52A); *Monmouth*, 3-X (G.S.C., Mem. 6, 200); 12-XI (G.S.C., N.S., IX, 52A); 13-XI; 14, 15, 17-XI (G.S.C., N.S., IX, 52A).

HASTINGS COUNTY.—*Faraday*, 5 miles south of *Bancroft* (G.S.C., N.S., IX, 52A); *Monteagle*, 26-VI (G.S.C., N.S., IX, 52A).

LANARK COUNTY.—*Baihurst*, 10-VIII (G.S.C., 1873-74, 199); 20-IX (G.S.C., 1882-84, 15L); 8-IX (G.S.C., 1873-74, 199); *North Burgess*, 15, 16-III (G.S.C., 1871-72, 124); 11-IV (G.S.C., 1871-72, 124); 4, 7, 8, 9, 10-V (Geol. Can., 1863, 761); 16, 18, 19-V (G.S.C., 1871-72, 124); 20, 21-V (G.S.C., M.R.C., 881, 29); 10, W $\frac{1}{2}$ 13, E $\frac{1}{2}$ 13, 14, 15, 16, 18, 19-VI (G.S.C., 1870-71, 124); 5, 6-VII (G.S.C., 1882-84, 7 L); 1, 2, 3, 4, 5, 6-VIII (G.S.C., 1873-74, 110-128); 5-IX (G.S.C., 1882-84, 7 L); *North Elmsley*, 30-VI; 24, 25, 26, 27-VIII (G.S.C., M.R.C., 881, 29); *South Sherbrooke*, 11-VII (G.S.C., N.S., XIV, 71J).

LEEDS COUNTY.—*South Crosby*, 12-VI (G.S.C., 1871-2, 124); 15-VII (G.S.C., N.S., XIV, 182A); *North Crosby*, 19-II; 20-III; 29-IX; 21-X (G.S.C., M.R.C., 881, 30).

PETERBOROUGH COUNTY.—*Anstruther*, 39-XVII (G.S.C., Mem. 6, 199).

RENFREW COUNTY.—*Sebastopol*, 32-VII (Pr. Com. T. L. Walker); 31-X and XI; 32-XII; also on island in *Lake Clear* (G.S.C. 1882-84, 6, 7L); *Ross*, 7-I; 13-VI; 7-IX (G.S.C., 1882-84, 5, 6, 8L).

QUEBEC.—

BERTHIER COUNTY.—*Milieu river* (G.S.C., N.S., XI, 30J).

JOLIETTE COUNTY.—*Cartier*, 33-I (G.S.C., N.S., VIII, 149J).

OTTAWA COUNTY.—*Bowman*, 1, 2, 3, 4-IV (G.S.C., M.R.C., 881, 16); *Buckingham*, 26-XI; 17, 18, 19, 26-XII (G.S.C., N.S., IV, 108 and 109K); *Hull*, 18, 19-VII; 15, 17-X; 9, 14-XI; 9, 10, 14-XII; 1-XIII; 10, S $\frac{1}{2}$ 10-XIV; 12-XV; 13, 16-XVI (G.S.C., M.R.C., 881, 26, 27); *Portland*, 9-VIII (G.S.C., N.S., IV, 108K); *Templeton*, S $\frac{1}{2}$ 3, and 4, N $\frac{1}{2}$ 4, 5, and 6, S $\frac{1}{2}$ 7-VII; 16-IX; 7, E $\frac{1}{2}$ 9, W $\frac{1}{2}$ 9, S $\frac{1}{2}$ 10-X; 6, 7, 8, 9, 10, 11-XI; S $\frac{1}{2}$ 2, 8-XII; 6, 7-XIII (G.S.C., M.R.C., 881, 25); 22-XIII; *Villeneuve*, 31-I (Mines, Min. Br., 118, 197); *Wakefield*, 12, 17-I; 17, 18-II; 22, 23, 24-V; 30-IX (G.S.C., M.R.C., 881, 26).

PONTIAC COUNTY.—*Litchfield*—*Calumet Falls*; *Calumet*—west end of *Calumet* island (G.S.C., N.S., IV, 20T).

Analyses of *Apatite*.

	Ca ₃ F ₂ O ₈		CaF ₂		CaCl ₂		Insol.			
	2	3	4	5	6	7	8	9	10	11
1.	91.20		7.60		0.78		0.90—100.48			
P ₂ O ₅	39.046	40.868	40.373	41.00	41.50	41.64	40.812	34.032	41.139	40.518
F.....	3.791	3.731	3.311	2.26	1.26	1.17	3.554	2.855	3.863	3.377
Cl.....	0.476	0.428	0.438	0.28	0.37	0.42	0.040	0.101	0.229	0.086
CO ₂	0.096	0.105	0.026	1.50	2.30	2.31	0.518	2.848	0.223	0.855
CaO.....	46.327	48.475	47.828	50.84	52.90	52.90	49.102	44.198	49.335	49.041
Ca.....	4.258	4.168	3.732	.....	.....	.....	3.763	3.062	4.195	3.603
MgO.....	0.548	0.158	0.151	tr.	tr.	tr.	0.620	0.422	0.180	0.205
FeO.....	.....	.....	.....	.....	1.30	1.20	.....	.....	.....	.....
Al ₂ O ₃	1.190	0.835	0.609	.....	.....	.....	0.565	1.979	0.566	0.267
Fe ₂ O ₃	1.290	0.905	0.151	4.59	0.22	0.30	0.125	0.120	0.094	0.083
Insol.....	3.490	1.150	3.890	0.55	0.30	0.37	0.630	2.050	0.060	1.630
Fe and S.....	.....	.....	.....	.....	.....	.....	.....	8.877	.....	.....
.....	100.512	100.823	100.509	101.00	100.15	100.31	99.729	100.544	99.884	99.665
Sp. Gr.....	3.1603	3.1641	3.1593	.....	.....	.....	3.1750	3.2441	3.1884	3.1676

1. From North Burgess, 4-V, by Hunt (Geol. Can., 1863, 761).
2. From North Burgess, 16-III, by Hoffmann (G.S.C., 1877-78, 4 H).
3. From Loughborough, 10-X, by Hoffmann (loc. cit. 6 H).
4. From Storrington, 14-VI, by Hoffmann (loc. cit. 2 H).
5. From Renfrew county by Carnot (Bull. Sec. Min. Fr. tome, XI, 143).
6 and 7. Internal and external portions respectively of a crystal from Templeton by Carnot (Bull. Soc. Min. Fr. tome, XIX, 1896, 143).
8. From Templeton, 12-XII, by Hoffmann (G.S.C., 1877-78, 8 H).
9. From Buckingham, 18-XII, *ibid.* (loc. cit., 7 H).
10. From Portland, 7-VII, *ibid.* (loc. cit., 5 H).
11. From Portland, 6-I, *ibid.* (loc. cit., 6 H).

Aphrodite.*(Hydrous silicate of magnesium.)*

QUEBEC.—

ARGENTEUIL COUNTY.—Yellowish-white aphrodite has been found filling fissures in pyralolite in *Grenville township* (Geol. Can., 1863, 473).

Analysis by Hunt (Geol. Can., 1863, 473).

SiO ₂	MgO (diff.)	FeO	Loss (ign.)
46.66	38.05	1.33	13.96 —100.00

Apophyllite.*(Hydrous silicate of potassium and calcium.)*

BRITISH COLUMBIA.—

TRAIL CREEK MINING DIVISION.—In fine specimens of a beautiful pink colour at the *LeRoi*, *Centre Star*, and other mines in the *Rossland area* (Pr. Com. R. W. Brock).

NOVA SCOTIA.—

Apophyllite occurs in green and white crystals in various parts of the province.

ANNAPOLIS COUNTY.—*Chute Cove*; *Hampton*; *Margaretville* (G.S.C., 1882-84, 24, 25L); *Port George* (Pr. Com. H. Piers).

CUMBERLAND COUNTY.—*Bennett brook* (Pr. Com. T. L. Walker); *Cape d'Or* (G.S.C., N.S., IV, 20T); *Isle Haute* (Pr. Com. H. Piers); *Swan creek*, *Two Islands* (G.S.C., 1882-84, 28L).

KINGS COUNTY.—*Blomidon*, *Scott Bay*, and the *Race* near *Hall harbour* (G.S.C., 1882-84, 26-27L).

ONTARIO.—

THUNDER BAY DISTRICT.—In foliated masses or plates, often of a red colour, in association with calcite at the *Prince Location*, *Spar island*, *Lake Superior* (G.S.C., N.S., IV, 20T).

Aragonite.*(Carbonate of calcium.)*

BRITISH COLUMBIA.—

NELSON MINING DIVISION.—A large body of aragonite occurs about a mile north of South fork of Salmon river, on south slope of *Stag-horn mountain* (Pr. Com. W. F. Robertson, and Wm. Thomlinson).

QUESNEL MINING DIVISION.—Aragonite has been observed filling amygdaloidal cavities in dark, greenish-grey basalt on *Horsefly river* (G.S.C., N.S., VII, 13R).

SLOCAN MINING DIVISION.—Aragonite is found lining a large vug or cavity over No. 3 level, *Standard mine* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

TROUT LAKE MINING DIVISION.—In translucent, radiating concentric masses up to a foot in thickness in the lime rocks of *Gainer creek* (G.S.C., N.S., XV, 51AA).

NOVA SCOTIA.—

COLCHESTER COUNTY.—In acicular crystals lining fissures or cavities in ankerite or implanted upon barite or calcite at *Londonderry* (G.S.C., N.S., IV, 21T).

ONTARIO.—

THUNDER BAY DISTRICT.—Aragonite has been observed in the traps of *Lake Superior* (G.S.C., N.S., IV, 21T).

TIMISKAMING DISTRICT.—*Coleman township*, at the *O'Brien mine* and other mines in the *Cobalt area*.

QUEBEC.—

BEAUCE COUNTY.—Aragonite has been observed in the form of stalactites and fibrous masses in a calcareous rock in the township of *Tring* (G.S.C., N.S., IV, 21T).

JACQUES CARTIER COUNTY.—This mineral also occurs in limestone at *Lachine* (Geol. Can., 1863, 456).

Argentite.

(Sulphide of silver.)

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—*Skyline mine* (G.S.C., N.S., VIII, 34A).

GREENWOOD MINING DIVISION.—With gold and silver at the *Jewel* and other mines (G.S.C., N.S., XV, 127A).

NELSON MINING DIVISION.—The *Silver King mine*, *Toad mountain* (G.S.C., N.S., IX, 27A).

SLOCAN CITY MINING DIVISION.—Argentite is found at the *Hampton mine* on *Springer creek* and the *Crusader mine* on *Lemon creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—West of *Kaslo* (G.S.C., N.S., VI, 77A).

ONTARIO.—

THUNDER BAY DISTRICT.—Argentite has been noted at a number of silver mines in this district (*Gillies Porcupine mine*) (G.S.C., N.S., IV, 20T); (*Badger mine*) (Pr. Com. T. L. Walker); *Jarvis island* (G.S.C., N.S., IV, 20T); *Lybster (Silver Mountain mine)* (Ont. Bur. Min., 1900, 194); *McKellar island*; *O'Connor (Beaver mine)*; *Paipoonge (Rabbit Mountain mine)*; *Silver Islet*; *Spar island (Prince Location)*, etc. (G.S.C., N.S., IV, 20T).

TIMISKAMING DISTRICT.—*Coleman*, argentite has been observed in the silver-nickel-cobalt mines in the *Cobalt area* (G.S.C., N.S., XVI, 201A); *Haultain*, *Miller*, and other townships in the *Gowanda area*; *James* and other townships near *Elk lake*, in small quantities in calcite veins; in *Langmuir township*, along with native silver in barite veins (Pr. Com. W. G. Miller).

Analysis of argentite from Thunder Bay by Chapman (Min. and Geol., p. 67).

S	Ag	Cu		Sp. Gr.
13.37	86.44	tr.	— 99.81	7.31

Argyropyrite.

(Sulphide of silver and iron.)

ONTARIO.—

TIMISKAMING DISTRICT.—*Coleman*, in small quantities at *Foster mine* (Mines, G.S.Br., Sum. Rep., 1907, 96).

Arquerite.

(Amalgam.)

(Alloy of silver and mercury.)

BRITISH COLUMBIA.—

OMINECA MINING DIVISION.—In grains and small nuggets in gold washings in *Vital* and *Silver creeks*. Much of the so-called native silver, which has been found in connexion with the gold washings of many of the streams of the province is probably referable to this species (G.S.C., N.S., III, 42R).

YUKON.—

KLUANE RIVER.—Small quantities of arquerite have been found on *Burwash creek* (G.S.C., Sec. Chem. Min., 1906, 11).

Analysis of arquerite from Omineca by Riotte and Leckhardt (Dawson, G.S.C., N.S., VI, 26R).

Ag	Hg	Pb	Cu	Au	Pt	Fe
83.30	11.00	0.40	0.20	tr.	tr.	tr.

Arsenic, Native.

BRITISH COLUMBIA.—

ALBERNI MINING DIVISION.—Native arsenic has been found at *Port Alberni*.

CLINTON MINING DIVISION.—Native arsenic occurs in veins on *Watson Bar creek*, about 7 miles from its junction with the *Fraser river* (G.S.C., N.S., II, 9T).

QUEEN CHARLOTTE MINING DIVISION.—*Alden island, Queen Charlotte islands* (Pr. Com. T. L. Walker).

SLOCAN MINING DIVISION.—In nodules with arsenopyrite, pyrrhotite, etc. on *Eightmile creek* (G.S.C., N.S., XI, 14R).

VICTORIA MINING DIVISION.—Occurs in small veins on *Koksilah river, Shawnigan district* (Pr. Com. W. J. Sutton).

ONTARIO.—

SUDBURY DISTRICT.—Crystalline native arsenic has been noted at the *Long Lake Gold mine, township 69*.

THUNDER BAY DISTRICT.—*Edward island, Lake Superior* (Can. Rec. Sci., IV, 472).

QUEBEC.—

JACQUES CARTIER COUNTY.—Native arsenic is found in the nepheline syenite of *Outremont* (G.S.C., N.S., XIV, 23-0).

Analysis of native arsenic from Outremont by Evans (Am. Journ. Sci., Ser. 4, Vol. XIV, p. 397 and vol. XV, p. 92).

As	Sb	S	Insol.	—	Sp. Gr.
98.14	1.65	0.16	0.15	100.10	5.73-5.75

Arsenolite.

(*Arsenic trioxide.*)

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Arsenolite has been noted as an incrustation on the native arsenic of *Watson Bar creek* (G.S.C., N.S., VI, 30R).

ONTARIO.—

HASTINGS COUNTY.—Arsenolite occurs as an incrustation on arsenopyrite in *Marmora* and other townships in this county (Ont. Bur. Min., 1900, 195).

SUDBURY DISTRICT.—Arsenolite has been noted in thick incrustations on a specimen from *Street township*.

TIMISKAMING DISTRICT.—Arsenolite has been noted in the silver-bearing veins of the *Cobalt area* (G.S.C., N.S., VI, 30R).

Arsenopyrite.

(*Sulph-arsenide of iron.*)

BRITISH COLUMBIA.—

KAMLOOPS MINING DIVISION.—*Barrett creek* (G.S.C., N.S., X, 61S).

TROUT LAKE MINING DIVISION.—In a iriferous diabase schists at the *Poplar Creek mines* (G.S.C., N.S., XVI, 89A).

OSEOYOS MINING DIVISION.—Arsenopyrite is common in both the metamorphic sediments and in the igneous intrusives of *Hedley Camp* (Mines, G.S.Br., Sum. Rep., 1907, 28-31).

SLOCAN MINING DIVISION.—*Eightmile Camp* (G.S.C., N.S., VIII, 26A).

TRAIL CREEK MINING DIVISION.—Arsenopyrite is common in the mines of the *Rosslund area*; the variety *danaite* is found on *Monte Christo mountain* (G.S.C., N.S., IX, 26A).

YALE MINING DIVISION.—Near *Hope* (G.S.C., N.S., XVI, 338A).

MANITOBA.—

Arsenopyrite occurs in small quantities associated with gold at the *Penniac claim, Star lake* (Pr. Com. R. C. Wallace); also at *Pipestone lake* on the *Nelson River, Grass River region* (G.S.C., N.S., XIII, 16 FF).

NOVA SCOTIA.—

Arsenopyrite is commonly found in the quartz veins of the goldbearing series of this province.

CUMBERLAND COUNTY.—Near *Farmington* (Pr. Com. H. Piers).

HALIFAX COUNTY.—*Montagu* (G.S.C., N.S., 1870-71, 279); *Waverley* (Pr. Com. H. Piers).

HANTS COUNTY.—*Mount Uniacke* (Pr. Com. H. Piers).

QUEENS COUNTY.—*Caledonia*.

ONTARIO.—

ADDINGTON COUNTY.—The variety *danaite* occurs in *Effingham, 14-XII*; ordinary arsenopyrite in *Anglesea, 7-V* (Ont. Bur. Min., 1902, 105).

ALGOMA DISTRICT.—*Danaite* occurs in *Graham, 6-III* (G.S.C., N.S., V, 19R).

FRONTENAC COUNTY.—*Clarendon (Cook mine)* (Ont. Bur. Min., 1902, 105).

HASTINGS COUNTY.—*Madoc, 14, 15-X* (Ont. Bur. Min., 1902, 102); *Marmora, 23-V, 18-VI*; *4, 5-VIII* (Ont. Bur. Min., 1902, 105); *6-VIII* (Ont. Bur. Min., 1902, 102); *5-IX* (Ont. Bur. Min., 1902, 105); *8, 10, 18-IX*; *9-X, 10, 11, 12-X* (Ont. Bur. Min., 1902, 103, 104); *17-XI* (Ont. Bur. Min., 1902, 102); *Elzevir, 1, 2-III* (Ont. Bur. Min., 1902, 105); in the *James and Clapp properties in IV* (Ont. Bur. Min., 1902, 102); *Rawdon (Emily mine)*; *Tudor (Golding mine)* (Ont. Bur. Min., 1902, 105); *Wollaston, 16-XIV* (Ont. Bur. Min., 1902, 104).

LANARK COUNTY.—*Lavant, the Joe Lake mine in IV* (Ont. Bur. Min., 1902, 105).

LENOX COUNTY.—Arsenopyrite occurs in *Kaladar, 2, 3-V* (Ont. Bur. Min., 1902, 105).

SUDBURY DISTRICT.—Good, crystallized specimens from *Wanapitei lake* (Pr. Com. T. L. Walker).

TIMISKAMING DISTRICT.—In *Bristol township* in a quartz vein with pyrite and some native gold: in small quantities at the *Buffalo mine* (Pr. Com. W. G. Miller): associated with other ores at *Cobalt—Townsite mine*, etc. (Pr. Com. F. D. Adams); near *Timagami* at *Arsenic lake*, along with copper pyrites (Pr. Com. W. G. Miller).

QUEBEC.—

BEAUCO COUNTY.—Arsenopyrite occurs with argentiferous galena in a quartz vein on the *River Chaudiere, St. Francis* (G.S.C., N.S., IV, 21T).

PONTIAC COUNTY.—Danaite is found with pyrrhotite in *Calumet, 12-IX* (G.S.C., N.S., XII, 19-20R).

SHERBROOKE COUNTY.—Arsenopyrite occurs in a quartz vein carrying galena at *Moulton hill* (G.S.C., N.S., IV, 21T): *Ascot, 4-VIII* (Pr. Com. T. L. Walker).

YUKON.—

STEWART RIVER.—In a quartz ledge between *Twentyup* and *Fortyup* streams, *Dublin gulch; Haggart creek* (G.S.C., N.S., XVI, 38, 39A).

Analyses of Arsenopyrite.

	1	1a	2	2a
As.....	46.41	47.60	40.16	42.22
S.....	19.21	19.70	17.92	18.84
Fe.....	28.91	29.65	31.69	33.32
Co.....	2.97	3.05	3.89	4.09
Ni.....			0.88	0.93
Sb.....			0.57	0.60
Au.....			tr.	tr.
Insol.....	3.86		4.77	
	101.36	100.00	99.88	100.00
Sp. Gr.....	6.166		5.988	

1. Danaite from the Evening Star mine, Monte Christo mountain, by Johnston (Hoffmann, G.S.C., N.S., Vol. VIII, 13R).
- 1a. Centesimal composition of the mineral after deducting the siliceous impurities.
2. Danaite from Graham, 6-III, by Johnston (Hoffmann, G.S.C., N.S., Vol. V, 19R).
- 2a. Centesimal composition of the mineral after deducting the siliceous impurities.

Asbestos.*(See Actinolite, Chrysotile, and Tremolite.)***Asbolite.***(Mixed oxides of manganese and cobalt.)*

ONTARIO.—

TIMISKAMING DISTRICT.—Asbolite has been found associated with the silver ores of *Coleman*, and the neighbouring townships (G.S.C. N.S., XIV, 158H).

Asparagus Stone.*(See Apatite.)**(Fluo-phosphate of calcium.)***Asphaltum.***(Hydrocarbon.)*

ALBERTA AND NORTH WEST TERRITORIES.—

Extensive beds of what are known as tar sands occur over a wide area of country along the *Athabaska river* and about *Great Slave lake* (G.S.C., N.S., IV, 47T).

NOVA SCOTIA.—

INVERNESS COUNTY.—Asphaltum has been observed in calcite near *Grand Anse, Pleasant bay* (G.S.C., 1882-84, 93H).

ONTARIO.—

LAMBTON COUNTY.—Asphaltum occurs in small quantities in the so-called "gum" beds of *Oil creek* and *Petrolia, Enniskillen* (G.S.C., N.S., IV, 21T).

QUEBEC.—

GASPE COUNTY.—In small quantities in the township of *York* (G.S.C., N.S., IX, 112A).

Augite.*(Pyroxene.)**(Silicate of calcium, magnesium, and aluminum.)*

This mineral is common in many of the basic, igneous rocks, such as diabases, gabbros, and the like.

ONTARIO.—

FRONTENAC COUNTY.—*Mississippi* (Pr. Com. T. L. Walker).

RAINY RIVER DISTRICT.—South shore of *North-West bay, Rainy lake* (G.S.C., N.S., III, 160F).

RENFREW COUNTY.—*Sebastopol, 30-X* (Pr. Com. T. L. Walker).

QUEBEC.—

CHAMBLY COUNTY.—Augite occurs in the dolerites of *Montarville mountains* (G.S.C., N.S., IV, 22T).

GASPE COUNTY.—*Ste. Anne des Monts* (Pr. Com. T. L. Walker).

HOCHELAGA COUNTY.—In the dolerites of Montreal (G.S.C., N.S., IV, 22T).

OTTAWA COUNTY.—*Hull, 14-XI; 10-XII; Portland West, 21-II; Templeton* (Pr. Com. T. L. Walker).

ROUVILLE COUNTY.—*Rougemont* (G.S.C., N.S., IV, 22T).

SHERBROOKE COUNTY.—*Orford, 6-XII* (Pr. Com. T. L. Walker).

YUKON.—

Augite occurs with iron ore in a pyroxenite on the *Dezadeash river, St. Elias mountain* (G.S.C., N.S., XVI, 7, 8A).

Analysis of augite from Montreal by Hunt (Geol. Can., 1863, 468).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	(NaK) ₂ O	Vol.
49.40	6.70	7.83	21.88	13.06	0.74	0.50—100.11

Awaruite.

(An alloy of nickel and iron.)

BRITISH COLUMBIA.—

LILLOOET MINING DIVISION.—The name "Souesite" was given by Hoffmann to a nickel-iron alloy found associated with platinum, iridosmine, gold, magnetite, quartz, and garnet in the river gravels about 2 miles below *Lillooet* on the *Fraser river* (G.S.C., Sec. Chem. Min. 1906, 9-11).

YUKON.—

PELLY RIVER.—Awaruite has been observed in the concentrates from alluvial gold washings of *Hoole canyon* (Mines, G.S.Br., Sum. Rep., 1910, 257).

Analyses of Awaruite.

	1	1a	2	2a
Ni.....	75.50	76.48	74.34	76.16
Fe.....	22.02	22.30	21.35	21.87
Co.....			1.34	1.37
Cu.....	1.20	1.22	0.48	0.49
P.....			0.08	0.08
S.....			0.03	0.03
Insol.....	1.16		1.72	.....
	99.88	100.00	99.34	100.00
Sp. Gr.....	8.215	.....	7.746	.....

1. Souesite from Lillooet by Wait (Hoffmann, G.S.C., Sec. Chem. and Min., 1906, p. 11).

1a. Centesimal composition of the pure mineral after deducting insoluble matter.

2. From Hoole canyon by Johnston (Mines, G.S. Br., Sum. Rep., 1910, 258).

2a. Centesimal composition of the mineral after deducting insoluble matter.

Axinite.

(Boro-silicate of aluminum, iron, manganese, and calcium.)

BRITISH COLUMBIA.—

OSOYOOS MINING DIVISION.—Axinite is found in fine, hair-brown crystals and crystalline masses at the contact between monzonite and sedimentary rocks on the western slope of *Nickel Plate mountain* (Mines, G.S. Br., Sum. Rep., 1908, 168).

ONTARIO.—

PRESCOTT COUNTY.—It is stated on the authority of Dr. Bigsby to have been found in fine crystals lining a cavity in a primitive boulder found at *Hawkesbury* (G.S.C., N.S., IV, 22T).

QUEBEC.—

NEW QUEBEC TERRITORY.—Axinite has been found as an associate of epidote embedded in calcite and quartz about $1\frac{1}{2}$ miles south of the mouth of *Little Whale river* (G.S.C., N.S., IV, 22T); *Mani-tounuck sound* (G.S.C., N.S., XII, 193A).

TIMISKAMING DISTRICT.—In grey, crystalline aggregates and scattered crystals in a quartz-calcite veinstone traversing diabase in *Fabre*, 7-VI N.

Analysis of axinite from Nickel Plate mountain by Johnston (Mines, G.S. Br., Sum. Rep., 1910, 259).

SiO ₂	B ₂ O ₃	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	ZnO	CaO	MgO	H ₂ O	Sp. Gr.
42.18	5.22	18.12	0.98	7.20	3.89	0.09	19.91	1.43	0.35	—99.37 3.296

Azurite.

(Basic carbonate of copper.)

Very few characteristic specimens of this mineral have so far been found in Canada. It occurs occasionally in druses amongst copper ores or copper-bearing rocks, but more often as a stain, coating, or incrustation upon these same materials.

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—*Kaslo river* (G.S.C., N.S., VI, 77A).

FORT STEELE MINING DIVISION.—Near *Steele*.

GREENWOOD MINING DIVISION.—*King Solomon mine* (G.S.C., N.S., XIII, 20R).

NELSON MINING DIVISION.—Azurite is found with copper ore in the *Eureka mine* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW BRUNSWICK.—

WESTMORLAND COUNTY.—*International Copper Company's property* near *Dorchester* (G.S.C., N.S., XVI, 284A).

ONTARIO.—

THUNDER BAY DISTRICT.—*Batchewanung bay* and the *Prince Location* on *Spar island, Lake Superior* (G.S.C., N.S., IV, 22T).

QUEBEC.—

BAGOT COUNTY.—*Upton (Prince of Wales mine)* (G.S.C., N.S., IV, 22T).

LOTBINIERE COUNTY.—In druses in calcite carrying copper sulphides at the *Black River mine, St. Flavien* (G.S.C., N.S., IV, 22T).

Babingtonite.

(Silicate of calcium, iron, and manganese.)

QUEBEC.—

OTTAWA COUNTY.—According to Mr. M. E. Wilson, babingtonite forms one of the principal constituents of a rock in *Buckingham, 6-IV*.

Baddeckite.*(Muscovite.)**(Hydrous silicate of aluminum, iron, etc.)*

NOVA SCOTIA.—

VICTORIA COUNTY.—Baddeckite occurs in fine, copper-red scales, scaly aggregates, and scaly layers distributed through plastic clay, which occurs about half a mile from the town of *Baddeck* (G.S.C., N.S., IX, 11R).

Analysis by Johnston (Hoffmann, G.S.C., N.S., IX, 11R).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	K ₂ O	Na ₂ O	H ₂ O	Sp. Gr.
48.96	13.85	25.82	1.17	2.65	3.47	0.22	3.78—99.92	3.252

Barite.*(Sulphate of barium.)*

BRITISH COLUMBIA.—

KAMLOOPS MINING DIVISION.—Barite occurs associated with galena in a bedded rock at *Adams lake* (G.S.C., N.S., VII, 21A).

QUESNEL MINING DIVISION.—This mineral occurs in lignite on *Horsefly river* (G.S.C., N.S., VII, 99A).

SLOCAN CITY MINING DIVISION.—Barite is found at the *Ottawa mine* and at *Calumet, Hekla, and Myrtle claims* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—*Robin mining claim* near *Standard river* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

VANCOUVER ISLAND.—Barite occurs in a vein to the north of *Cowichan lake*; and is the gangue mineral in the *Mount Sicker Copper mine* (Pr. Com. W. J. Sutton).

VICTORIA MINING DIVISION.—Barite is found at the *Tyee mine, Mt. Sicker* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

MANITOBA.—

LAKE WINNIPEG.—In veins in serpentine on *Pipestone island* (G.S.C., N.S., XI, 54G).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—In small veins about the northern head of the island of *Grand Manan* (G.S.C., N.S., X, 125M).

WESTMORLAND COUNTY.—In connexion with rubbly shales at *Gouldville* about 1½ miles east of *Memramcook* (G.S.C., N.S., X, 125M).

NOVA SCOTIA.—

- COLCHESTER COUNTY.—In white to pink or flesh coloured, tabular crystals in the ankerite veins of *Londonderry mines* (N.S. Inst. Nat. Sci., Vol. V, 47-57): in handsome, crystalline masses and in irregular veins in the slates exposed along the banks of the *Bass* and *East rivers* (G.S.C., N.S., V, 192P): 2 miles west of *Middle Stewiacke* (Pr. Com. H. Piers).
- CUMBERLAND COUNTY.—In crystalline aggregations in conglomerate of *Atkinson* (G.S.C., N.S., XV, 166AA); small vein on south branch of *Black brook*, near *Springhill* (Pr. Com. H. Piers): fine specimens have been found at *Five Islands* (G.S.C., N.S., V, 192P). *Two islands* (Pr. Com. T. L. Walker).
- HANTS COUNTY.—*Pembroke*, *Walton* (G.S.C., N.S., VI, 66AA).
- INVERNESS COUNTY.—East side of *Ainslie lake* (G.S.C., N.S., X, 135S); near *Cap Rouge*; *Judique* (Pr. Com. H. Piers).
- PICTOU COUNTY.—*Bridgeville* (G.S.C., N.S., VIII, 121A); *Hodson*, 5 miles east of *River John* (Pr. Com. H. Piers).
- RICHMOND COUNTY.—*Loch Lomond* (G.S.C., MR. C., 935, 14); *L'Archeveque* (Pr. Com. H. Piers).

ONTARIO.—

- CARLETON COUNTY.—In *March*, 21-IV: in coarse crystalline and massive forms in Trenton limestone in *Hunlley*, 27-VII (G.S.C., N.S., XII, 19R).
- FRONTENAC COUNTY.—*Dog lake*, *Storrington* (G.S.C., N.S., XII, 76-77-I); and in fissured veins with anthraxolite in *Kingston*, 16, 17-IV; 15, 16-V (G.S.C., N.S., XIV, 181A).
- HASTINGS COUNTY.—*Madoc*, 15-VI (G.S.C., N.S., X, 136S).
- LANARK COUNTY.—*North Burgess*, 2-VIII (Mines, Min. Br., 118, 283) 4-IX; *Lavani*, 22-I (G.S.C., N.S., 136S); *Ramsay*, IV (Ont. Bur. Min., 1900, 195); *Pakenham*, 3-XI (G.S.C., N.S., II, 59A).
- LEEDS COUNTY.—*Bastard*, 24-X (G.S.C., N.S., XIII, 138A).
- NIPISSING DISTRICT.—In red crystals on *Iron island*, *Lake Nipissing* (G.S.C., N.S., IV, 23T).
- PETERBOROUGH COUNTY.—In *Dummer* and *Galway* (G.S.C., N.S., IV, 22T).
- THUNDER BAY DISTRICT.—Barite is abundant in many of the veins in the township of *Neebing*; also constitutes large veins on *Jarvis*, *McKellar*, and *Pic islands*, *Lake Superior* (G.S.C., N.S., IV, 22-23T).
- TIMISKAMING DISTRICT.—*Elk lake* (Eng. and Min. Journ., Sept. 30, 1911, 647); barite occurs in considerable quantity in veins on mining claim R.S.C., 216, *Langmuir township* (Pr. Com. W. G. Miller): *Porcupine mountain*.
- VICTORIA COUNTY.—Barite has been noted in small quantities in *Somerville township* (G.S.C., N.S., IV, 22T).

QUEBEC.—

BONAVENTURE COUNTY.—*Port Daniel* and along the streams flowing into *Gaspé basin* (G.S.C., N.S., IV, 115K).

OTTAWA COUNTY.—Barite occurs in a vein 6 to 14 inches in width in *Buckingham, 21-IV* (G.S.C., N.S., X, 135S); with purple fluorite in irregular veins 1 to 2 inches in width in *Hull, 7-X, 3-XI* (G.S.C., N.S., XII, 135J); *4-XII* (G.S.C., N.S., XII, 43G); *Templeton, 11-VI, 28-VI* (G.S.C., 1873-74, 220).

Barnhardite.

(*A very pale bornite.*)

BRITISH COLUMBIA.—

OMINECA MINING DIVISION.—Barnhardite is found with chalcopyrite at *Rocher-de-Boule mine* (Pr. Com. E. F. Robertson and Wm. Thomlinson).

Barytocelestite.

(*Sulphate of barium and strontium.*)

ONTARIO.—

FRONTENAC COUNTY.—A very considerable deposit of this mineral occurs in *Loughborough, 5-XII* (Mines, G.S.Br., Sum. Rep., 1907, 97).

Berthierite.

(*Sulphantimonite of iron.*)

NEW BRUNSWICK.—

YORK COUNTY.—The *Antimony mine* at *Lake George, Prince William* (G.S.C., N.S., IV, 23T).

Beryl.

(*Silicate of aluminum and beryllium.*)

BRITISH COLUMBIA.—

CARIBOO MINING DIVISION.—At the *Tête Jaune Cache mica deposits* (G.S.C., N.S., VIII, 124A).

NOVA SCOTIA.—

LUNENBURG COUNTY.—Beryl is reported to have been found at *Lake Ramsay* (Pr. Com. H. Piers).

ONTARIO.—

HASTINGS COUNTY.—A small crystal of beryl was found in *Madoc, 1-IV*.

NIPISSING DISTRICT.—*Calvin, 13-IV*, where it occurs in coarse crystals of a yellow colour, many with pyramidal edges rounded to such an extent that they present conical terminations (G.S.C., N.S., XI, 14, 15R).

RAINY RIVER DISTRICT.—*Rainy lake* (G.S.C., N.S., III, 66S).

RENFREW COUNTY.—Large crystals of beryl have been found associated with bismuthinite in a coarse granite vein in *Lyndoch, 23-XV* (G.S.C., N.S., VIII, 14R).

QUEBEC.—

BERTHIER COUNTY.—*Brassard township* (G.S.C., N.S., IV, 23T); *De Maisonneuve* (G.S.C., N.S., VI, 70AA).

CHICOUTIMI COUNTY.—*Jonquiere* (G.S.C., N.S., IV, 23T).

TIMISKAMING DISTRICT.—*Preissac township, Height of Land mine, Kewagama river* (Min. Oper. in Quebec, 1911, 189); *St. Maurice Syndicate mine* (Pr. Com. T. C. Denis); also at the southern end of *Long lake, south of Lake Kienawisik* (Pr. Com. F. D. Adams).

Biotite.

(*Silicate of aluminum, iron, magnesium, potassium, etc.*)

ONTARIO.—

Biotite is commonly found in the syenites and also in some of the crystalline limestones of this province.

HALIBURTON COUNTY.—*Cardiff* (G.S.C., N.S., XII, 192A) and *Harcourt* (G.S.C., Mem. 6, 207).

HASTINGS COUNTY.—*Herschell* (G.S.C., N.S., IX, 107A); and *Dunganon* (G.S.C., N.S., X, 118A).

PETERBOROUGH COUNTY.—*Anstruther* (G.S.C., N.S., Mem. 6, 207).

RENFREW COUNTY.—*Sebastopol, 32-XII* (Pr. Com. T. L. Walker); *Ross, 13-VI* (G.S.C., N.S., 1882-84, 6L).

Bismite.

(*Bismuth trioxide.*)

ONTARIO:—

RENFREW COUNTY.—Bismite has been noted as an alteration product of bismuthinite in *Lyndoch, 23-XV* (G.S.C., N.S., VIII, 14R).

Bismuth.

NOVA SCOTIA.—

INVERNESS COUNTY.—Native bismuth has been reported as occurring in water-worn nuggets from the size of a wheat grain to that of a pigeon's egg, at *Wagamatcook* (How, Mineralogy of Nova Scotia, p. 63).

ONTARIO.—

ALGOMA DISTRICT.—Native bismuth was discovered by Professor Chapman in pieces of rolled quartz near *Echo lake* (G.S.C., N.S., IV, 23T): bismuth occurs in quartz veins in *Otter*, SE. $\frac{1}{4}$ of S. $\frac{1}{2}$ of 1-IV (Pr. Com. W. G. Miller).

HASTINGS COUNTY.—Small quantities of native bismuth have been noted in association with bismuthinite in a quartzose veinstone in *Tudor*, 34-III (G.S.C., 1866-69, 171).

THUNDER BAY DISTRICT.—*Pierre Plat* (Pr. Com. T. L. Walker).

TIMISKAMING DISTRICT.—*Coleman township*, some of the mines in the *Cobalt area*, notably the *Foster*, the *Nipissing*, the *O'Brien mines* (G.S.Br., Sum. Rep., 1907, 97) and the *Provincial* have yielded fine specimens of native bismuth: at *Elk lake* and *Gowganda* it occurs in some silver-bearing calcite veins (Pr. Com. W. G. Miller).

QUEBEC.—

TIMISKAMING COUNTY.—*Height of Land mine* (Mines, G.S.Br., Sum. Rep., 1910, 207); *St. Maurice Mining Syndicate* (Pr. Com. T. C. Denis).

YUKON.—

DUNCAN CREEK MINING DIVISION.—Native bismuth has been found with native gold, scheelite, etc., in the gold washings of *Highet creek* (G.S.C., N.S., XVI, 38A).

Analysis of native bismuth from Cobalt by Burrows (Miller, Ont. Bur. Min., 1905, pt. 2, 22).

Bi	Co	Ni	Fe	Ag	As	Sb	
99.20	dist. tr.	tr.	0.40	tr.	tr.	none	—99.60

Bismuthinite.

(*Sulphide of bismuth.*)

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—In association with magnetite, chalcopyrite, pyrite, and other minerals at the *Bluebell mine*, *Summit Camp*, *Kettle river* (G. S.C., N.S., XV, 106A).

KAMLOOPS MINING DIVISION.—In slender prisms in quartz near the head of *Little Shuswap lake* (G.S.C., N.S., III, 161R).

ONTARIO.—

FRONTENAC COUNTY.—In *Clarendon*, -33- southwest range; *Miller*, in a lot north of *Buckshot lake* (G.S.C., N.S., XIV, 75J).

HASTINGS COUNTY.—*Tudor*, 34-III (G.S.C., N.S., VIII, 119A); 34-IV (G.S.C., N.S., X, 118A).

RAINY RIVER DISTRICT.—The *Mikado mine*, south shore of *Bag bay*, *Shoal lake* (Ont. Bur. Min., 1911, 164).

RENFREW COUNTY.—In lamellar masses with beryl in a coarse granite vein in *Lyndoch*, 23-V (G.S.C., N.S., VIII, 14R).

TIMISKAMING DISTRICT.—Bismuthinite occurs in small quantities in a quartz-ankerite deposit in *Deloro township* (Pr. Com. W. G. Miller); also in *East Shiningtree*.

QUEBEC.—

CHICOUTIMI COUNTY.—*Jonquiere*, in foliated masses in a gangue of perthite, quartz, and muscovite along with tourmaline and spessartite on *lot 21* of the *north range* of the road leading to *Kaskouia* (G.S.C., N.S., VI, 19R).

TIMISKAMING COUNTY.—*Preissac township*.—Associated with molybdenite; abundant both on *Indian peninsula* in *Kewagama lake* and on property of the *Height of Land Mining Company*, *Kewagama river* (Pr. Com. F. D. Adams); and the *St. Maurice Mining Syndicate* (Pr. Com. T. C. Denis).

Analysis of bismuthinite from *Jonquiere* by Johnston (Hoffmann, G.S.C., N.S., VI, 19, 20R).

S	Bi	Pb	Cu	Fe		Sp. Gr.
18.46	79.28	1.68	0.48	0.74	—100.64	6.781

Bismutite.

(*Hydrous carbonate of bismuth.*)

ONTARIO.—

HASTINGS COUNTY.—Bismutite has been observed with other bismuth minerals in *Tudor*, 34-III (G.S.C., 1866-69, 171); 34-IV.

RENFREW COUNTY.—In *Lyndoch*, 23-XV.

Bituminous Coal.

(*See Coal.*)

(*Hydrocarbon.*)

Blueite.

(*Sulphide of iron and nickel.*)

ONTARIO.—

SUDBURY DISTRICT.—This name has been applied by Dr. S. H. Emmons (Journal of the American Chemical Society, Vol. XIV, No. 7) to one of the several nickeliferous iron sulphides found in this district. It is now regarded as a nickeliferous variety of *marcasite*. The principal localities are *Denison*, 12-III; *Drury*, 1, 2-II (G.S.C., N.S., XIV, 97H). See also *folgerite* and *whartonite*.

Bog Iron Ore.*(Limonite.)**(Hydrated oxide of iron.)***BRITISH COLUMBIA.—**

NANAIMO MINING DIVISION.—*Mount Lehman* (G.S.C., N.S., IX, 112A); *Campbell river* (G.S.C., N.S., VIII, 122A).

QUATSINO MINING DIVISION.—*Quatsino sound* (Pr. Com. W. J. Sutton).

MANITOBA.—

Brandon hills (G.S.C., 1882-84, 17 MM).

NEW BRUNSWICK.—

KENT COUNTY.—*Kouchibouguac river*, west side of *Buctouche harbour*; *Richibucto head* (G.S.C., N.S., V, 51AA); and *Liverpool* (G.S.C., N.S., X, 18M).

KINGS COUNTY.—*Sussex vale* and *Bull Moose hill* (G.S.C., N.S., X, 18 M).

NORTHUMBERLAND COUNTY.—*Rogerville* (G.S.C., N.S., XII, 194A).

QUEENS COUNTY.—*Chipman* (G.S.C., N.S., XIII, 168A).

SUNBURY COUNTY.—*Burton* and *Maugerville* (G.S.C., N.S., X, 18M).

YORK COUNTY.—*Beaver Dam Settlement* and *Queensbury* (G.S.C., N.S., X, 18M).

Bog iron ore is also found at other points in the neighbourhood of the localities mentioned.

NOVA SCOTIA.—

Bog iron ore occurs in many localities in this province; some of the most important are:—

ANNAPOLIS COUNTY.—*Wilmot*.

COLCHESTER COUNTY.—*Brookfield* (G.S.C., N.S., IV, 49A).

CUMBERLAND COUNTY.—*Wentworth Centre* (G.S.C., N.S., XV, 167AA).

HALIFAX COUNTY.—*Black brook*; *Newcomb Corner* (G.S.C., N.S., XV, 185AA); *Preston Road*, near *Dartmouth* (Pr. Com. H. Piers); *Ship Harbour Road* (G.S.C., N.S., XV, 185AA).

KINGS COUNTY.—South of *Coldbrook Station* (G.S.C., N.S., XIV, 213A).

PICTOU COUNTY.—*Bridgeville*, *Springville* (G.S.C., N.S., C, 175P); *East river*, *French river* (G.S.C., N.S., III, 38A).

ONTARIO.—

CARLETON COUNTY.—*Marlborough* (G.S.C., N.S., XI, 163A); *Fitzroy* (Geol. Can., 1863, 683); *March* (G.S.C., N.S., IV, 24K).

HASTINGS COUNTY.—*Thurlow, 16-IX* (G.S.C., 1878-79, 15H).

KENT COUNTY.—*Camden* (G.S.C., N.S., IV, 24T).

LANARK COUNTY.—*Dalhousie*, 19-VII.

LEEDS COUNTY.—*Bastard*, 21-VII (G.S.C., N.S., XIII, 138A).

MANITOULIN DISTRICT.—*Michipicoten* (Pr. Com. W. G. Miller).

NORFOLK COUNTY.—*Charlotteville*, *Middleton*, and *Windham* (G.S.C., N.S., IV, 24T).

STORMONT COUNTY.—*Roxborough*, 2-VI (G.S.C., N.S., VIII, 74A).

QUEBEC.—

Bog iron ore is widely distributed throughout this province; some of the more important localities are as follows:—

ARTHABASKA COUNTY.—*Stanford*, 18, 19-VIII (G.S.C., N.S., XVI, 268A).

BELLECHASSE COUNTY.—*St. Valier* (G.S.C., N.S., IV, 25K).

BROME COUNTY.—*Potton*, 28-IX (G.S.C., N.S., IV, 34A).

CHAMPLAIN COUNTY.—*Lac Tortue* (G.S.C., N.S., 47AA) and along the *Batiscan river* (G.S.C., N.S., IV, 23K).

DRUMMOND COUNTY.—*Drummondville* (G.S.C., N.S., IV, 26K).

KAMOURASKA COUNTY.—*St. Paschal* and *Riviere aux Vaches* (G.S.C., N.S., IV, 26K).

MEGANTIC COUNTY.—*Inverness*, 22-XI (G.S.C., N.S., XVI, 268A).

NICOLET COUNTY.—*Gentilly* (G.S.C., N.S., V, 48AA).

OTTAWA COUNTY.—Small deposits in *Eardley*, *Hull*, 14-XVII and *Templeton* (G.S.C., N.S., IV, 24K).

PORTNEUF COUNTY.—*Portneuf* and *St. Basil* (G.S.C., N.S., IV, 25K).

ST. MAURICE COUNTY.—Extensive deposits occur north of *Three Rivers* (G.S.C., N.S., IV, 24T).

TERREBONNE COUNTY.—*Ste. Anne des Plaines* (G.S.C., N.S., IV, 25K).

VAUDREUIL COUNTY.—*Petit Cote* and *Cote St. Charles* (G.S.C., N.S., IV, 27K).

Bog Manganese.

(Wad.)

(Hydrated oxide of manganese, usually impure.)

NEW BRUNSWICK.

ALBERT COUNTY.—The most extensive beds of bog manganese so far observed in the province of New Brunswick occur near *Dawson Settlement* and on *Meldona* (G.S.C., N.S., V, 51AA) and *Sawmill creeks* (G.S.C., N.S., X, 57M).

CARLETON COUNTY.—In small quantities near *Woodstock* (G.S.C., N.S., X, 57M).

CHARLOTTE COUNTY.—*Lyndfield* (G.S.C., N.S., X, 120M); and *Moore Mills* (G.S.C., N.S., X, 120M).

KENT COUNTY.—*Richibucto* (G.S.C., N.S., X, 57M).

KINGS COUNTY.—*Bull Moose hills* (G.S.C., N.S., X, 57M).

YORK COUNTY.—*Queensbury* (G.S.C., N.S., X, 57M).

NOVA SCOTIA.—

Bog manganese is of common occurrence at many points in Nova Scotia

Amongst the localities where it is found are the following:—

ANTIGONISH COUNTY.—*Pomquet river* and *Afton* (G.S.C., N.S., II, 118P).

CAPE BRETON COUNTY.—South side of *Grand Mira* (Pr. Com. H. Piers).

COLCHESTER COUNTY.—*Londonderry* (G.S.C., N.S., IV, 64T).

CUMBERLAND COUNTY.—*Parrsboro* (G.S.C., N.S., IV, 64T); *River Hebert*; near *Westchester* (Pr. Com. H. Piers).

HALIFAX COUNTY.—*Watt section of Sheet Harbour* and in small scattered deposits throughout this county (Pr. Com. H. Piers).

PICTOU COUNTY.—*Middle river*, *Bridgeville* (G.S.C., N.S., V, 183P); *Piedmont* (G.S.C., N.S., II, 118P).

QUEBEC.—

So far as is known the deposits of this mineral in this province are of very limited extent and are of small value.

BEAUCE COUNTY.—*Aubert-Gallion*; *Tring and Ste. Marie* (G.S.C., N.S., IV, 64T).

BROME COUNTY.—*Bolton, 20-XII* (G.S.C., N.S., IV, 113K).

QUEBEC COUNTY.—On the *St. Louis road*, 4½ miles from *Quebec city* (G.S.C., N.S., V, 68L).

RICHMOND COUNTY.—*Cleveland, 16-XIII* (G.S.C., N.S., IV, 113K).

STANSTEAD COUNTY.—*Stanstead, 9-X* (G.S.C., N.S., IV, 113K).

TEMISCOUATA COUNTY.—*Cacouna* (G.S.C., N.S., IV, 113K).

Bornite.

(*Sulphide of copper and iron.*)

ALBERTA.—

RED DEER DISTRICT.—At the head of *Panther creek*, *Rocky Mountain park* (G.S.C., N.S., XI, 165A); *Copper mountain*, *Bow river* (G.S.C., N.S., I, 136B).

BRITISH COLUMBIA.—

BELLAKULA MINING DIVISION.—In veins in granitic rocks at the head of *Salmon arm*, *Dean canal* (G.S.C., N.S., III, 152R).

CLAYOQUOT MINING DIVISION.—*Deer creek*, head of *Tafino inlet*; the *Dewdney claims*, *Sidney inlet*, west coast of *Vancouver island* (Pr. Com. W. J. Sutton).

GREENWOOD MINING DIVISION.—*Boundary Creek mines* (G.S.C., N.S., XVI, 126A).

KAMLOOPS MINING DIVISION.—*Copper creek* (G.S.C., N.S., VII, 16A).

NANAIMO MINING DIVISION.—*Homathco river*, at the head of *Bute inlet* (G.S.C., N.S., III, 153R); *Van Anda mine* on *Texada island* (G.S.C., N.S., X, 62S).

NELSON MINING DIVISION.—Fine specimens have been taken from some of the mines in the *Toad Mountain area* and elsewhere in this division (G.S.C., N.S., IX, 27A).

NICOLA MINING DIVISION.—*Aspen Grove* (G.S.C., N.S., XVI, 76A).

OMINECA MINING DIVISION.—Bornite is found at the *Whiteheader group*, *Hudson Bay mountains*. It is also found on properties near *Telkwa* and on *Thorkelson's claims*, *Driftwood river* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

REVELSTOKE MINING DIVISION.—*Illecillewaet* (G.S.C., N.S., VII, 167S).

STIKINE MINING DIVISION.—On the *Stikine river* about 9 miles above *Telegraph creek* (G.S.C., N.S., XI, 55A).

VANCOUVER MINING DIVISION.—In veins in granitic rocks between *Jervis inlet* and *Howe sound* (G.S.C., N.S., IV, 24T).

NEW BRUNSWICK.—

Bornite has been noted in small quantities in the southern counties of this province.

ALBERT COUNTY.—*Alma* (G.S.C., N.S., XVI, 285A); and *Elgin* (G.S.C., N.S., X, 121A).

ST. JOHN COUNTY.—*Goose creek* (G.S.C., N.S., X, 22M).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—*Polson lake* near *Lochaber* (G.S.C., N.S., II, 119P); *Upper South river* (Pr. Com. H. Piers).

GUYSBOROUGH COUNTY.—On the *Canso road* near its junction with the *Whitehaven road* (G.S.C., N.S., II, 162P).

RICHMOND COUNTY.—*Campbell point*, *St. George channel* (Pr. Com. H. Piers).

ONTARIO.—

ALGOMA DISTRICT.—*Coffin, 2, 3, 4, 5, 6-I; Plummer, 2-VI, 3-VI: Bruce mines, Rock Lake mines* (G.S.C., N.S., XV, 246-247A).

THUNDER BAY DISTRICT.—*Sand bay and Pancake Bay mines, Lake Superior* (G.S.C., N.S., VIII, 124A).

TIMISKAMING DISTRICT.—*Coleman township*, in many of the silver mines, particularly at the *Silver Queen* and *Foster* (Pr. Com. T. L. Walker); this mineral occurs in many of the calcite veins at *Elk lake* and *Gowganda* (Pr. Com. W. G. Miller).

QUEBEC.—

Bornite occurs in greater or less quantities with other copper-bearing minerals, pyrite, etc., at many of the localities in the eastern townships of this province.

ARTHABASKA COUNTY.—In *Chester*, 11-XIV; *Craig Road Range* (G.S.C., N.S., IV, 41K).

BAGOT COUNTY.—In *Acton*, 31, 32-III; 29-VI and elsewhere (G.S.C., N.S., IV, 36K).

BROME COUNTY.—*Brome*, 5-V; 18, 19-VIII; *Sutton*, 8, 9-X (G.S.C., N.S., IV, 37, 38, 39K).

DRUMMOND COUNTY.—*Durham*, 21-VII (G.S.C., N.S., IV, 36K); *Wickham*, 14-X; 3-XI (G.S.C., N.S., IV, 36K).

LOTBINIERE COUNTY.—*St. Sylvestre* (G.S.C., N.S., IV, 42K) and *St. Giles* (G.S.C., N.S., IV, 41K).

MEGANTIC COUNTY.—*Leeds*, 9, 10, 11-IX (G.S.C., N.S., XVI, 265A); 15-XIV (G.S.C., N.S., IV, 41K); 17-XV (*Harvey Hill mine*) (G.S.C., N.S., IV, 42K); 18-XV (Mines, G.S. Br., Sum. Rep., 1907, 101).

RICHMOND COUNTY.—*Brompton*, 28, 29-II (G.S.C., N.S., IV, 49K); *Cleveland*, 25-XII; *Halifax*, 10-III; *Melbourne*, 8-I, 2, 6-II, 2-IV (G.S.C., N.S., IV, 39-40K).

SHEFFORD COUNTY.—*Roxton* and *Ely* (G.S.C., N.S., IV, 33K); *Stukely*, 9-IV, VI (Geol. Can., 1863, 730; 21-VII).

SHERBROOKE COUNTY.—*Orford*, 3-XIII (G.S.C., N.S., IV, 48K).

YUKON.—

WHITEHORSE MINING DIVISION.—Bornite occurs in scattered veins, patches, and veinlets along with other copper minerals, garnet, epidote, etc., at several claims in this division (G.S.C., N.S., XIII, 51A).

Bournonite.

(*Sulphatimonite of lead and copper.*)

ONTARIO.—

HASTINGS COUNTY.—With quartz in *Madoc*, 17-V (G.S.C., N.S., IV, 34R); *Marmora*, 18-VIII (G.S.C., N.S., IV, 66T).

LANARK COUNTY.—*Darling* 22-III (G.S.C., N.S., IV, 66T); 21-IV; 22-IV (G.S.C., N.S., IV, 66T).

RENFREW COUNTY.—With pyrite and dolomite in *Bagot*, 14-XII (G.S.C., N.S., VII, 13R).

Breithauptite.

(*Antimonide of iron.*)

ONTARIO.—

TIMISKAMING DISTRICT.—Coleman township—breithauptite has been found at the *Hudson Bay* mine (Pr. Com. T. L. Walker) and *O'Brien mine* (Mines, G.S.Br., Sum. Rep., 1907, 97).

Breunerite*(See Magnesite.)**(Carbonate of magnesium.)***Bytownite.**

This name was given by Dr. Thomson to a greenish-white substance found in a boulder near Bytown, now Ottawa. The name was applied later by Tschermak to include all those feldspars which lie between labradorite proper and anorthite; Zirkel has shown that the original bytownite is a mixture (G.S.C., N.S., IV, 24, 25T).

Cacholong.*(Opal.)**(Hydrous silicon dioxide.)*

NOVA SCOTIA.—

KINGS COUNTY.—Fine specimens of cacholong have been found at *Capes Split* and *Blomidon* (G.S.C., N.S., IV, 25T).

Cacoclasite.*(Silicate of uncertain composition.)*

QUEBEC.—

OTTAWA COUNTY.—This name was given by Dr. H. C. Lewis (Proc. Acad. Phila. Nov. 26, 1883) to a pseudomorphous mineral found with spinel, graphite, pyrrhotite, etc., embedded in calcite in the township of *Wakefield*. Dr. Genth (Am. Journ. Sci., Ser. 3, Vol. XXXVIII, p. 200) shows that it is a mixture and not a good species.

Cacoxenite.*(Hydrated phosphate of iron.)*

ONTARIO.—

LEEDS COUNTY.—*Elizabethtown, 19-II*, where it was observed by Dr. B. J. Harrington in the form of beautiful yellow tufts on the walls of cavities in the calcite occurring in the pyrite deposit (G.S.C., N.S., IV, 25T).

Calamine.*(Hydrous silicate of zinc.)*

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—Small quantities at the *Skyline claim* and elsewhere in this division (G.S.C., N.S., VI, 28R).

NELSON MINING DIVISION.—The *Hudson Bay mine, Sheep creek* (Mines, G.S.Br., Sum. Rep., 1911, 363).

Calcareous Tufa.*(See Travertine.)**(Carbonate of calcium.)***Calcite.***(Carbonate of calcium.)*

This mineral in one form or another is found in all the provinces and territories of the Dominion.

ALBERTA.—

BELLY RIVER.—Nail-head-spar has been found near this stream.

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—*Crystal cove, Mount Stephen* (G.S.C., N.S., VII, 97A).

GRAND FORKS MINING DIVISION.—Good crystals are found at *Granby* and other mines (Mines, G.S. Br., Sum. Rep., 1908, 168).

LARDEAU MINING DIVISION.—A cleavage piece of Iceland spar was picked up by Mr. Brock on a dump at the *You-know-me claim at Whiskey point, Upper Arrow lake* (G.S.C., N.S., XV, 80AA).

SIMILKAMEEN MINING DIVISION.—Calcite is found on *Ashnola river* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—*Wilson creek* (G.S.C., N.S., X, 124A).

Good specimens are also sometimes found in connexion with the various copper deposits of the province.

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—On *St. Andrews peninsula*, calcite occurs in small crystal groups in some of the trap dykes cutting the Perry conglomerate (G.S.C., N.S., XV, 152AA).

GLOUCESTER COUNTY.—Iceland-spar was at one time found at *Belledune* (G.S.C., N.S., X, 125M).

NOVA SCOTIA.—

COLCHESTER COUNTY.—*Londonderry* (N.S. Inst. Nat. Sci., V, 53).

CUMBERLAND COUNTY.—Good specimens of calcite have been found at *Two Islands, Partridge Island* (G.S.C., N.S., IV, 31T); and *Swan creek*.

DIGBY COUNTY.—Iceland-spar and Dog-tooth-spar have been reported by Dr. Bailey from *St. Mary bay* (G.S.C., N.S., IX, 125M).

HANTS COUNTY.—*Tennycap* (G.S.C., N.S., IV, 31T).

KINGS COUNTY.—*Black Rock* (G.S.C., N.S., IV, 31T).

ONTARIO.—

- ALGOMA DISTRICT.—Good specimens of dog-tooth-spar have been found at *Bruce Mines* (G.S.C., N.S., IV, 31T).
- CARLETON COUNTY.—Fine cleavages of transparent calcite are found in *March, 6-II* (G.S.C., N.S., XI, 15R).
- ESSEX COUNTY.—Bed of the *Detroit river* (Pr. Com. T. L. Walker).
- FRONTENAC COUNTY.—Calcite is found in the apatite-mica deposits of *Bedford* (G.S.C., N.S., XIV, 181-2A); *Loughborough 13-VIII* (Mines, Min. Br., 118, 283); *Storrington, etc.*, (G.S.C., N.S., XIV, 181-182A).
- LANARK COUNTY.—*North Burgess, 13, 14-V*, here a blue cleavable calcite occurs. Crystals of calcite are found in *North Burgess, 2-VII* (Mines, Min. Br., 118, 283).
- LEEDS COUNTY.—*South Burgess* and *South Crosby* (G.S.C., N.S., XIV, 181A).
- PETERBOROUGH COUNTY.—*Galway* (G.S.C., N.S., IV, 39T).
- RENFREW COUNTY.—*Sebastopol, 31-XI* (G.S.C., 1882-84, 6L); and a pink, cleavable variety on *Turner island, Lake Clear* (G.S.C., 1882-84, 7L).
- THUNDER BAY DISTRICT.—Dog-tooth-spar is common in the silver-bearing veins of *Silver islet* (G.S.C., N.S., IV, 31T); Iceland-spar has been noted in fine, transparent, cleavable masses at the *Harrison location, St. Ignace island, Lake Superior* (G.S.C., N.S., IV, 39T); *Gillies township (Badger mine)* (Pr. Com. T. L. Walker).
- TIMISKAMING DISTRICT.—*Coleman township*, calcite is a common mineral in the silver-bearing veins of the *Cobalt area* (G.S.C., N.S., XVI, 201A).
- WELLAND COUNTY.—*Niagara Falls* (Pr. Com. T. L. Walker).

QUEBEC.—

- ARGENTEUIL COUNTY.—Foetid calcite occurs with tourmaline in *Chatham, 10-XI*.
- HOCHELAGA COUNTY.—*Montreal, Mile End* (Pr. Com. T. L. Walker).
- OTTAWA COUNTY.—Calcite occurs in greater or less abundance at the apatite-mica deposits of this county: in *Buckingham, 19-XII (Emerald mine)* (G.S.C., N.S., IV, 99K); *Templeton, 8-IX*, a fibrous variety of calcite occurs here, and a yellow, cleavable form occurs on *14-XI* (G.S.C., N.S., IV, 25T); *Wakefield, 7-I* (Pr. Com. T. L. Walker).
- PONTIAC COUNTY.—*Litchfield*, a coarsely, cleavable, sky-blue calcite occurs at *Calumet Falls* (G.S.C., N.S., IV, 25T).
- SHERBROOK COUNTY.—*Orford, 6-XII* (G.S.C., N.S., IV, 81K).

YUKON.—

- PORCUPINE RIVER.—A coarsely crystalline calcspar occurs in abundance at the *Ramparts* (G.S.C., N.S., IV, 132D).

Cancrinite.

(*Hydrous silicate and carbonate of aluminum, calcium, and sodium.*)

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—*Ice river, Beaver Foot river* (Mines, G.S. Br., Sum. Rep., 1910, 139).

ONTARIO.—

HASTINGS COUNTY.—Cancrinite occurs associated with nepheline in the nepheline-syenites of *Dungannon, 25-XIII* (G.S.C., N.S., IX, 50A).

QUEBEC.—

HOCHELAGA COUNTY.—Cancrinite occurs in the nepheline syenites of *Montreal* (G.S.C., N.S., IV, 26T).

ROUVILLE COUNTY.—*Beloëil* (G.S.C., N.S., IV, 26T).

Cannel Coal.

(*See Coal.*)

(*Hydrocarbon.*)

Carnelian.

(*Quartz.*)

(*Silicondioxide.*)

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Carnelian is found on the north shore of *Granville* (G.S.C., N.S., IV, 26T).

DIGBY COUNTY.—*Trout cove* (G.S.C., N.S., IV, 26T).

KINGS COUNTY.—*Blomidon* (G.S.C., N.S., IV, 26T).

Cassiterite.

(*Oxide of tin.*)

BRITISH COLUMBIA.—

LARDEAU MINING DIVISION.—Cassiterite has been found in granular quartz schists in this division.

NEW BRUNSWICK.—

YORK COUNTY.—*Stanley*, small quantities of cassiterite occur with topaz, wolframite, etc., in gneiss near *Burnt Hill brook, South-west Miramichi river* (Mines, G.S.Br., Sum. Rep., 1911, 361).

NOVA SCOTIA.—

GUYSBOROUGH COUNTY.—Reported to have been noted at *Country Harbour* (Pr. Com. H. Piers).

HALIFAX COUNTY.—Cassiterite has been reported to occur in sand at *Tangier* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—Small quantities of cassiterite have been found in pegmatite veins near *Lake Ramsay*, and elsewhere in the parish of *New Ross* (Mines, G.S Br., Sum. Rep. 1907, 80 and 81).

QUEENS COUNTY.—Small crystals of cassiterite were observed by Dr. Genth in the tailings of the *Battery lead, Malaga* (G.S.C., N.S., IV, 26T).

ONTARIO.—

SUDBURY DISTRICT.—Cassiterite has been observed by Wells in minute crystals associated with sperrylite at the *Vermilion mine, Denison, 5, 6-IV* (G.S.C., N.S., IV, 26T).

QUEBEC.—

OTTAWA COUNTY.—Cassiterite was observed by Osann in microscopic crystals and grains along with rutile in the more micaceous portions of the gneiss of the graphite area, in *Buckingham, 18 to 28—VII and VIII* (G.S.C., N.S., XII, 72O).

YUKON.—

KLONDIKE RIVER.—Cassiterite has been found in the form of irregularly shaped pebbles in the auriferous gravels of *Bonanza* and *Hunker creeks* (G.S.C., N.S., XII, 16R).

Celestite.

(*Sulphate of strontium.*)

NOVA SCOTIA.—

CAPE BRETON COUNTY.—A bluish-grey, crystalline, granular, massive variety has been observed forming a bed a foot thick in carboniferous limestone on the right bank of *Sydney river*, about 1½ miles above *Sydney bridge* (G.S.C., N.S., VI, 25R).

.ONTARIO.—

ESSEX COUNTY.—Celestite has been observed in crystals and crystal aggregates in an excavation in the bed of the *Detroit river, Amherstburg* (G.S.C., N.S., XVI, 347-348A).

FRONTENAC COUNTY.—In white, translucent, foliated masses in the Trenton limestone of *Kingston* (G.S.C., N.S., IV, 26T).

GREY COUNTY.—*Owen Sound* (G.S.C., N.S., IV, 26T).

HALTON COUNTY.—A red variety of celestite occurs at the *Fleming quarry, Esquesing, 26-X*.

LEEDS COUNTY.—In considerable abundance associated with calcite and galena in *Lansdowne, 2-VIII* (G.S.C., N.S., VII, 9-10R).

MANITOULIN DISTRICT.—In white, bluish, translucent, radiating, columnar masses on the east side of *Manitouaning bay*, and in the neighbourhood of *Cape Robert, Bayard and Drummond islands* (G.S.C., N.S., XII, 19R).

PEEL COUNTY.—A red variety of celestite occurs at *Credit Forks, Caledon township* (G.S.C., N.S., IV, 26T).

PRESCOTT COUNTY.—At *Hawkesbury* on the *Little Rideau river* (G.S.C., N.S., XIII, 174A).

RENFREW COUNTY.—A milk-white, columnar, massive variety in the Grenville series in *Bagot, 7-X* (G.S.C., N.S., XI, 9R).

Analyses of Celestite.

	1	2
SO ₃	43.51	42.09
SrO.....	56.31	48.30
BaO.....	tr.	9.44
CaO.....	0.11	tr.
	99.93	99.83
Sp. Gr.....	3.958	3.944

1. From *Lansdowne, 2-VIII*, by Johnston (Hoffmann, G.S.C., N.S., VII, 9-10R).
2. From *Bagot, 7-X*, by Johnston (Hoffmann, G.S.C., N.S., XI, 9R).

Centrallassite.

(*Hydrous silicate of calcium.*)

NOVA SCOTIA.—

KINGS COUNTY.—The name centrallassite was given by Dr. How to one of three mineral substances found by him in a nodule picked up in the Triassic trap debris of *Black Rock*, the other minerals being cyanolite and cerinite (G.S.C., N.S., IV, 27T).

Analysis of centrallassite from *Black Rock* by How (Edin. New Phil. Journ., N.S., Vol. X, 1859, pp. 84-94; Phil. Mag., 5th ser., Vol. 1, 1876, 128).

SiO ₂	Al ₂ O ₃	CaO	MgO	K ₂ O	H ₂ O	Sp. Gr.
58.86	1.14	27.91	0.16	0.59	11.41—100.07	2.455

Cerinite.*(Hydrous silicate of aluminum and calcium.)*

NOVA SCOTIA.—

KINGS COUNTY.—The name "Cerinite" was given by How (Edin. New Phil. Journ., N.S., Vol. X, 1859, pp. 84-94; Phil. Mag., Vol. 1, 1876, p. 128), to the outer layer of a nodule found in amygdaloid near *Black Rock*; the other minerals in the nodule were centrallasite and cyanolite, which see.

Analysis of cerinite by How (loc. cit.).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	K ₂ O	H ₂ O
58.13	12.21	1.01	9.49	1.83	0.37	15.96— 99.00

Cerussite.*(Carbonate of lead.)*

BRITISH COLUMBIA.—

FORT STEELE MINING DIVISION.—Cerussite occurs with lead ores at the *Donaldson*; *North Star* (G.S.C., N.S., XI, 166A); and *Society Girl claims* (G.S.C., Sum. Rep., 1911, 162-163).

NELSON MINING DIVISION.—*Ymir at the Ymir gold mine* (Pr. Com. T. L. Walker).

SLOCAN MINING DIVISION.—Cerussite is found in the *Beaver*, *Wellington* (G.S.C., N.S., VI, 28R) and *Deadman claims* (G.S.C., N.S., VIII, 120A).

ONTARIO.—

Cerussite is often found as an earthy incrustation on galena in different parts of the province (G.S.C., N.S., X, 141-I).

Chabazite.*(Hydrous silicate of aluminum, calcium, and alkalis.)*

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Chabazite occurs in cavities in basalt at the *Chasm*, *Bonaparte river* (G.S.C., N.S., VIII, 118A).

NOVA SCOTIA.—

Fine specimens of chabazite may be found in the following localities:—

COLCHESTER COUNTY.—*Pinnacle island* (G.S.C., N.S., IV, 27T).

CUMBERLAND COUNTY.—*Cape d'Or* (Pr. Com. T. L. Walker); *Five Islands* (G.S.C., N.S., V, 55A); *Partridge island*; *Swan creek*; *Two Islands* and *Wasson bluff* (G.S.C., N.S., V, 55AA).

DIGBY COUNTY.—*Digby Neck*; *Mink cove*; *Sandy cove*; *William Brook* (G.S.C., N.S., IV, 27T).

See also Acadialite.

ONTARIO.—

HASTINGS COUNTY.—In pale, wine-yellow to white crystals in cavities in a vein composed of pyroxene, biotite, scapolite, quartz, and calcite in *Monteagle, 24, 25-VI* (G.S.C., N.S., VI, 27R).

TIMISKAMING DISTRICT.—*Coleman, King Cobalt claim.*

QUEBEC.—

OTTAWA COUNTY.—Crystals of chabazite are frequently found on the walls of fissures or cavities in some of the apatite and mica bearing veins of *Hull: Portland East, 21-XII* (Mines, Min. Br., No. 118, 284); *Portland West* (Pr. Com. T. L. Walker); *Templeton* (G.S.C., 1877-78, 35G); *Templeton, 21-XII*; *Gore of Templeton, lot 3 (Rheume Lake mine)* (Mines, Min. Br., No. 118, 284); and *Wakefield townships, the Haldane mine in Wakefield, 12-I*, is a good example of these occurrences (G.S.C., 1882-84, 18L).

Chalcanthite.

(*Hydrous sulphate of copper.*)

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Chalcanthite occurs between *Big creek* and *Chilcotin river*, and at the *Avoca claim* on *Bonaparte river, 2½ miles above Hat creek* (G.S.C., N.S., IX, 12R).

SIMILKAMEEN MINING DIVISION.—Chalcanthite is found at *Copper mountain, Princeton* (Pr. Com., W. F. Robertson and Wm. Thomlinson).

VERNON MINING DIVISION.—Chalcanthite is found in claims a short distance west of *City of Vernon* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

Chalcedony.

(*Quartz.*)

(*See under Agate.*)

(*Silicon dioxide.*)

Chalcocite.

(*Sulphide of copper.*)

No large deposits of this mineral have so far been found in Canada, and the greater part of those observed have been unimportant occurrences in connexion with other copper minerals.

ALBERTA.—

BOW RIVER DISTRICT.—Chalcocite has been observed at the headwaters of *Johnson* and *Cascade creeks, Castle mountain* (G.S.C. N.S., XI, 165A).

BRITISH COLUMBIA.—

CLAYOQUOT MINING DIVISIONS.—At *Sidney inlet, Vancouver island* (Pr. Com. W. J. Sutton).

GOLDEN MINING DIVISION.—*Jubilee mountain* (G.S.C., N.S., III, 67R); and *Ice river* (G.S.C., N.S., XI, 165A).

GREENWOOD AND OTHER DIVISIONS IN THE SOUTHERN PART OF THE PROVINCE.—Chalcocite is of common occurrence with the copper ores of these divisions.

KAMLOOPS MINING DIVISION.—¹Small quantities of chalcocite have been observed at *Meadow creek (Grey Eagle claim)* (G.S.C., N.S., XI, 166A).

NANAIMO MINING DIVISION.—Fine, granular chalcocite occurs sparingly in association with bornite at the *Marble Bay mines, Texada island*, and occurs in abundance at numerous prospects on *South Valdes island* (Pr. Com. F. D. Adams).

Considerable amounts of chalcocite are found at *Valdes mines, Quadra island* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

OMINECA MINING DIVISION.—Fine specimens of chalcocite are found at several properties on *Kitsalas river* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW BRUNSWICK.—

ALBERT COUNTY.—Small occurrences of chalcocite have been noted at *Alma* (G.S.C., N.S., VI, 57S) and *Cape Enrage* (G.S.C., N.S., I, 21E.)

CHARLOTTE COUNTY.—Small occurrences at *Clarke head, Mascarene shore* and *Crow Harbour island* (G.S.C., N.S., X, 24M).

GLOUCESTER COUNTY.—*Nipisiguit river* near *Bathurst* (G.S.C., N.S., X, 26M).

KINGS COUNTY.—This mineral has been observed encrusting grey quartzite in *Norton* and with copper pyrites in grey argillite in *Springfield* (G.S.C., N.S., X, 25M).

ST. JOHN COUNTY.—*Black River settlement* (G.S.C., N.S., X, 25M).

WESTMORLAND COUNTY.—In grey conglomerate and sandstone with coaly matter near *Dorchester* (G.S.C., N.S., I, 21E).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—In limited amount at *Pomquet Falls; Brierly brook; Addington Forks; St. Joseph* (G.S.C., N.S., I, 23A).

COLCHESTER COUNTY.—*Oliver (French river)* near *Tatamagouche harbour* (Pr. Com. H. Piers); *Waugh river* (G.S.C., N.S., IV, 31S).

CUMBERLAND COUNTY.—Near *Wentworth* (Pr. Com. H. Piers); *Blue Sea Corner* (G.S.C., N.S., XV, 163AA); *Chisholm creek* near *Pugwash* (Pr. Com. H. Piers); *Malagash Point* (G.S.C., N.S., XV, 165AA); *Nappan* (Pr. Com. H. Piers).

PICOU COUNTY.—*Sundridge* (G.S.C., N.S., VII, 92A); *Carisbo* (G.S.C., N.S., XIV, 28M) and at other points about the *River John* (G.S.C., N.S., V, 115P).

ONTARIO.—

- ALGOMA DISTRICT.—*Bruce mines*; also in *Gould township* (Ont. Bur. Min., 1900, 196).
- HASTINGS COUNTY.—*Eldorado copper mine* (Pr. Com. W. G. Miller).
- MANITOULIN DISTRICT.—*Michipicoten island* (Ont. Bur. Min., 1900, 196).
- PARRY SOUND DISTRICT.—*MacGowan mine* (Pr. Com. T. L. Walker).
- SUDBURY DISTRICT.—*Denison township, 5, 6-IV* (*Vermilion mine*) (G.S.C., N.S., XIV, 105H).
- THUNDER BAY DISTRICT.—*Mamainse*; (Ont. Bur. Min., 1900, 196); and *Spar island* (G.S.C., 1878-9, 19H).

QUEBEC.—

- ARTHABASKA COUNTY.—*Chester, 11 and 14 Craig's Road Range* (G.S.C., N.S., IV, 41K).
- BAGOT COUNTY.—In *Acton, 32-III* (*Acton Copper mine*) (G.S.C., N.S., IV, 30K).
- BEAUCE COUNTY.—In the *Seigniory of St. Marie* (G.S.C., N.S., IV, 30K).
- BROME COUNTY.—In *Brome, 18, 19-VIII*; in *Sutton, 8-X and 9-XI* (G.S.C., N.S., IV, 37, 38, 39K).
- DRUMMOND COUNTY.—*Wickham* (*Wickham Copper mine*) (G.S.C., N.S., IV, 30K).
- MEGANTIC COUNTY.—*Halifax, 10-III* (G.S.C., N.S., IV, 40K); *Inverness: Leeds, 15-XIV, and 17-XV* (*Harvey Hill or Excelsior mine*) (G.S.C., N.S., IV, 41K).
- RICHMOND COUNTY.—*Brompton, 28, 29-IX* (G.S.C., N.S., IV, 49K); *Cleveland, 25-XII, 26-XIII: in Melbourne, 2-II, IV* (G.S.C., N.S., IV, 40K).
- SHEFFORD COUNTY.—*Roxton, 23-III* (G.S.C., N.S., IV, 33K); *Stukely, 9, 10-VI, and 7-VIII* (G.S.C., N.S., IV, 39K).

Chalcodite.(See *Stilpnomelane*.)

(Hydrous silicate of iron, aluminum, and magnesium.)

Chalcopyrite.

(Sulphide of copper and iron.)

ALBERTA.—

- BOW RIVER DISTRICT.—Chalcopyrite is found between the headwaters of *Cascade* and *Johnson creeks* (G.S.C., N.S., XI, 164A); *Copper mountain* (G.S.C., N.S., VI, 60S); *Castle mountain*.

BRITISH COLUMBIA.—

- ATLIN MINING DIVISION.—*Hacket creek* on the *Teslin-Stikine trail* (G.S.C., N.S., XI, 54A); *Rainy Hollow, Chikot river* (G.S.C., N.S., XI, 46A): in quartz veins with other sulphides on *Surprise mountain* and *Birch creek* (G.S.C., N.S., XII, 69A).
- BELLAKULA MINING DIVISION.—With pyrrhotite on *Ellerslie channel* (G.S.C., N.S., III, 153R); and *Dean canal* (G.S.C., N.S., III, 152R).
- CLAYOQUOT MINING DIVISION.—*Barkley sound* and *Sidney inlet* (G.S.C., N.S., X, 62S).
- FORT STEELE MINING DIVISION.—*Cranbrook* (G.S.C., N.S., XII, 90A).
- GRAND FORKS MINING DIVISION.—Chalcopyrite is found at the *Granby* and other mines of this division.
- GREENWOOD MINING DIVISION.—Chalcopyrite is the principal mineral in the copper ores of the *Phoenix* and other mines of this division (G.S.C., N.S., XV, 116A).
- KAMLOOPS MINING DIVISION.—Chalcopyrite is of frequent occurrence in this division (G.S.C., N.S., X, 61S).
- LARDEAU MINING DIVISION.—Chalcopyrite occurs in various claims in this division.
- NANAIMO MINING DIVISION.—*Van Anda Copper mine, Texada island* (G.S.C., N.S., X 62S); with bornite on *Knight inlet, Homathco river*, head of *Bute inlet* (G.S.C., N.S., III, 152-153R).
- NELSON MINING DIVISION.—Chalcopyrite is of frequent occurrence in the mines of this division (G.S.C., N.S., X, 60S).
- NICOLA MINING DIVISION.—*Guichon creek, Iron mountain* (G.S.C., N.S., XVI, 80A); and *Aspen Grove* (G.S.C., N.S., XVI, 75A).
- OMINECA MINING DIVISION.—*Telkwa river* and elsewhere in this division (Mines, G.S.Br., Sum. Rep., 1907, 21).
- OSOYOOS MINING DIVISION.—With pyrrhotite, arsenopyrite, galena, garnet, epidote, diopside, etc., at the *Hedley Camp* (Mines, G.S.Br., Sum. Rep., 1907, 28-31).
- QUEEN CHARLOTTE MINING DIVISION.—With magnetite in diorite at *Skincuttle inlet, Copper bay, Fort Frederick* (G.S.C., N.S., III, 153R).
- REVELSTOKE MINING DIVISION.—*Copper mountain, Illecillewaet river* (G.S.C., N.S., VI, 60S).
- SKEENA MINING DIVISION.—Along the *Skeena river*.
- TRAIL CREEK MINING DIVISION.—The *Centre Star, Le Roi*, and other mines in this division (G.S.C., N.S., IX, 25,26A).
- TROUT LAKE MINING DIVISION.—*Trout Lake mines* (G.S.C., N.S., XV, 72AA).
- VANCOUVER MINING DIVISION.—*Jervis inlet* (G.S.C., N.S., IX, 109A); *Howe sound* (G.S.C., N.S., III, 152R).
- VICTORIA MINING DIVISION.—*Sansum narrows* (G.S.C., N.S., III, 152R).

NORTH WEST TERRITORIES.—

Chalcopyrite is found associated with arsenopyrite and pyrite in calcareous quartz veins traversing diabase at *Corbett inlet*, west coast of *Hudson bay* (G.S.C., N.S., IX, 83F).

GREAT BEAR LAKE.—Chalcopyrite occurs with calcite between *McTavish bay* and *Coppermine river* (G.S.C., N.S., XIII, 102A).

GREAT SLAVE LAKE.—*Buffalo river* (G.S.C., N.S., XII, 194A); *McLeod bay* (G.S.C., N.S., XII, 108A).

MANITOBA.—

WANIPIGOW RIVER.—Chalcopyrite occurs in small amounts in anorthosite at *Pipestone lake*, *Nelson river* (G.S.C., N.S., XIII, 24-25F).

NEW BRUNSWICK.—

Chalcopyrite has been noted in small quantities in various parts of this province, particularly in the areas about the *Bay of Fundy*; in no case, however, do any of these occurrences seem to have attained any pronounced commercial importance.

ALBERT COUNTY.—*Mineral Vale*, *Elgin* (G.S.C., N.S., X, 121A); and *Alma* (G.S.C., N.S., XVI, 285A).

CARLETON COUNTY.—*Bull creek*, 3 miles below *Woodstock* on the *St. John river* (G.S.C., N.S., X, 25M).

CHARLOTTE COUNTY.—*Adams* and *Simpson islands* and at different points in the *Mascareen peninsula* (G.S.C., N.S., X, 24M).

GLOUCESTER COUNTY.—*Tetagouche river* (G.S.C., N.S., X, 26M).

KINGS COUNTY.—Chalcopyrite is found in the parishes of *Springfield*, *Kars*, *Westfield*, and *Upham* (G.S.C., N.S., X, 25 and 36M).

NORTHUMBERLAND COUNTY.—On the *North-west Miramichi river* between *Tomogonops* and *Little river* (G.S.C., N.S., VI, 53A).

ST. JOHN COUNTY.—*Goose creek* and *Black river* (G.S.C., N.S., X, 25M).

WESTMORLAND COUNTY.—*Dorchester* (G.S.C., N.S., XVI, 284A).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—*Brierly brook* (G.S.C., N.S., II, 121P); *Lochaber (College Grant)* (G.S.C., N.S., II, 120P); *Ohio* (Pr. Com. H. Piers); *Polson lake* (G.S.C., N.S., II, 119P).

CAPE BRETON COUNTY.—*Beechmont (Coxheath hills)*; *Eagle head (Gabarus bay)*; *French Road* (Pr. Com. H. Piers); *George river* (G.S.C., N.S., X, 122A).

CUMBERLAND COUNTY.—Chalcopyrite occurs with barite, calcite, and specularite at the *Eureka mines*, near *Five Islands* (G.S.C., 1882-84, 23L).

DIGBY COUNTY.—*Cape cove* (G.S.C., N.S., IX, 74M).

GUYSBOROUGH COUNTY.—*Canso* (G.S.C., N.S., II, 162P); *East Roman valley* (Pr. Com. H. Piers).

INVERNESS COUNTY.—Near *Cheticamp*; *Scottville (near Lake Ainslie)* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—*New Ross* (G.S.C., N.S., XV, 186AA).

PICTOU COUNTY.—*Albion mines* (G.S.C., N.S., V, 70AA); *New Lairry (near Lansdowne)* (Pr. Com. H. Piers); *Sixmile brook* (G.S.C., N.S., V, 185P).

RICHMOND COUNTY.—*Loch Lomond* (G.S.C., N.S., XI, 148A).

ONTARIO.—

Chalcopyrite is a common mineral throughout the Archæan areas of the northern and south-central portions of this province.

ALGOMA DISTRICT.—*Bay of Islands*; *Bruce mines* (Geol. Can., 1863, 515); *Massey mine* (Pr. Com. T. L. Walker); *Wallace mine* (G.S.C., N.S., V, 46F).

FRONTENAC COUNTY.—*Barrie, 19, 20-VI; 20-VII* (G.S.C., N.S., XIV, 72J); *Palmerston, 2-IX* (G.S.C., 1874-75, 161).

HASTINGS COUNTY.—*Madoc, 25-VII* (G.S.C., N.S., X, 120A); *Marmora, 6-VIII* (G.S.C., 1873-74, 194); *Mayo* (G.S.C., N.S., XI, 164A).

LANARK COUNTY.—*Lovant, 1-VI; 6, 8-VII* (Ont. Bur. Min., 1900, 196); *5-VIII, 2-IX*.

LEEDS COUNTY.—*Bastard, 24-X; Escott, 16, 17-II* (Ont. Bur. Min., 1900, 196).

NIPISSING DISTRICT.—*Garrow* (Ont. Bur. Min., 1900, 196).

PARRY SOUND DISTRICT.—*Foley* (G.S.C., N.S., XII, 43S).

PETERBOROUGH COUNTY.—*Chandos, 32-II* (G.S.C., N.S., V, 52R); *Dummer, 30-X* (G.S.C., N.S., VI, 71A).

SUDBURY DISTRICT.—*Blezard, 5, 6-I (Stobie mine)* (G.S.C., N.S., XIV, IIIH); *7-I (Cameron mine)* (G.S.C., N.S., XIV, 120H); *4-II (Blezard mine)* (G.S.C., N.S., XIV, IIIH); *5, 6-II (Mount Nickel mine)* (G.S.C., N.S., XIV, 120H); *1-III (Beatrice mine)* (G.S.C., N.S., XIV, 120H); *Denison, 5, 6-IV (Vermilion mine)* (G.S.C., N.S., XIV, 106H); *12-III (Gersdorffite mine)* (G.S.C., N.S., XIV, 104H); *8-IV (Victoria mine)* (G.S.C., N.S., XIV, 120H); *Creighton, 3, 4, 5-I* (Ont. Bur. Min., pt. III, 1905, 32-33); *2-II (Worthington mine)* (G.S.C., N.S., XIV, IIIH); *Drury, 3-V (Travers mine)* (Ont. Bur. Min., pt. III, 1905, 23); *Graham, 4-IV (Century mine)* (G.S.C., N.S., XIV, 105H); *Lorne, II-V* (G.S.C., N.S., XIV, 113H); *McKim, 1-I (Evans mine)*; *10-I Creighton mine*; *Copper Cliff Extension, 1-II (Copper Cliff mine)* (G.S.C., N.S., XIV, IIIH); *12-II (Lady McDonald mine)* (G.S.C., N.S., XIV, 120H); *1-III (MacCarthy mine)*; *1-IV (Lady Violet mine)*; *2-IV (Clarabelle mine)* (G.S.C., N.S., XIV, 120H); *11-V (Murray mine)* (G.S.C., N.S., XIV, 111H); *12-V (Elsie mine)* (G.S.C., N.S., XIV, 120H); *6-V (Frood mine)* (G.S.C., N.S., XIV, 111H); *Snider* (G.S.C., N.S., VIII, 122A).

THUNDER BAY DISTRICT.—*Black Bay* (Ont. Bur. Min., 1900, 196); *Sturgeon lake* (G.S.C., N.S., XIV, 94A); *Wawa lake* (G.S.C., N.S., XI, 105A).

TIMISKAMING DISTRICT.—*James township* (German Development Company Report, 1907, p. 10): *Lebel*, at the *McKinnon vein* occurring in scattered bunches in a 7 foot quartz vein; also as an impregnation of siliceous iron formation (Pr. Com. W. G. Miller): *Tudhope* (German Development Company Report, 1907, 10).

QUEBEC.—

Chalcopyrite is found sparingly in the Archæan rocks of this province; the most important deposits occur in the metamorphic rocks of the Eastern Townships, where it is sometimes found in veins in dolomite and limestone and at others in quartzose veins in slates and not infrequently associated with barite and calcite.

ABITIBI TERRITORY.—*Lake Chibougamau* (G.S.C., N.S., VIII, 282L).

ARTHABASKA COUNTY.—*Chester 8-VI* (G.S.C., N.S., IV, 41K); *5-IX* (G.S.C., N.S., XVI, 265A); *9-IX* (G.S.C., N.S., IV, 41K); *Tingwick* (G.S.C., N.S., XVI, 265A).

BAGOT COUNTY.—*Acton, 23-III* (*Acton mine*) (G.S.C., N.S., IV, 33K); *31-IV* (*Vale mine*); *29-VI* (*Whitehorse mine*) (G.S.C., N.S., IV, 36K).

BEAUCÉ COUNTY.—*Ste. Marie* (G.S.C. N.S., IV, 30K).

BROME COUNTY.—*Brome, 5-V*; *6-VI* (G.S.C., N.S., IV, 38K); *12-XII: Bolton, 4, 8-VIII, 2-IX* (G.S.C., N.S., IV, 46, 47K); *Sutton, 8, 11-X*; *7, 9, 12-XI* (G.S.C., N.S., IV, 38K).

DRUMMOND COUNTY.—*Durham, 9-IV, VI*; *21-VII* (G.S.C., N.S., IV, 36K); *Upton, 49, 51-XX*; *50, 51-XXI* (G.S.C., N.S., IV, 33K); *Wickham, 14-X*; *3-XI* (G.S.C., N.S., IV, 36K).

LOTBINIÈRE COUNTY.—The *Handkerchief Seigniorship of St. Giles* (G.S.C., N.S., IV, 41K), and the *St. Flavien mine* near *St. Appolinaire* (G.S.C., N.S., IV, 37K).

MEGANTIC COUNTY.—*Inverness, 4-II*; *1-IV* (G.S.C., N.S., XVI, 265A); *Ireland, 13, 14, 15 Craig's Road Range* (G.S.C., N.S., XVI, 265A); *Halifax, 10-III* (G.S.C., N.S., IV, 40K); *Leeds, 15-II* (G.S.C., N.S., IV, 57K); *15-XIV, 17-XV* (*Harvey Hill mine*) (G.S.C., N.S., IV, 41K); *Nelson, 8-XI* (G.S.C., N.S., IV, 36K); *Thetford, 3, 4, 5, 6-I* (G.S.C., N.S., IV, 57K).

MISSISQUOI COUNTY.—*Pinnacle harbour* and *St. Armand* (G.S.C., N.S., IV, 37K).

PONTIAC COUNTY.—*Calumet island* (G.S.C., N.S., XV, 437A).

RICHMOND COUNTY.—*Melbourne, 7-I* (G.S.C., N.S., XV, 309A); *8-1*; *2, 6-II*; *2-IV* (G.S.C., N.S., IV, 40K); *Cleveland, 25-XII, XIII* (G.S.C., N.S., IV, 40K).

SHEFFORD COUNTY.—*Ely, 9, 10-II*; *Roxton, 23-III* (G.S.C., N.S., IV, 33K); *Shefford, 28-III: Stukely, 6-I*; *9, 10-VI*; *7-VIII*; *6-IX*; *4-X* (G.S.C., N.S., IV, 39K).

SHERBROOKE COUNTY.—In *Ascot*, 4-VIII (*Victoria mine*); 8-VIII (*Ascot mine*); other deposits in 12, 14-VIII; 3-IX (*Eustis mine*); in 6, 7, 8, 11-IX; 3, 5-XI (G.S.C., N.S., IV, 50K); in *Orford*, 9-A; 8-F; 2-XIV (G.S.C., N.S., IV, 48, 49K).

STANSTEAD COUNTY.—*Hatley*, 28-I; 9-VI (G.S.C., N.S., IV, 49, 50K).

TIMISKAMING COUNTY.—*Fabre* (G.S.C., N.S., X, 149-I).

NEW QUEBEC TERRITORY.—In schists with pyrite and pyrrhotite in *Kogaluk bay*, east coast of *Hudson bay* (G.S.C., N.S., XIII, 28D).

WOLFE COUNTY.—*Garthby*, 22-I (Mines, G.S.Br., Sum. Rep., 1909, 199); *Ham*, 28-IV (G.S.C., N.S., XIV, 265A); *South Ham*, 44-I (G.S.C., N.S., IV, 57K); *Weedon*, 17, 18-III (G.S.C., N.S., XV, 314A).

YUKON.—

DUNCAN CREEK MINING DIVISION.—Chalcopyrite occurs in small quantities with zinblendite at *Discovery claim* (G.S.C., N.S., XVI, 38A).

WHITEHORSE MINING DIVISION.—Chalcopyrite constitutes the principal copper ore of the mines of this division, *Yukon river*, *Cariboo creek* (G.S.C., N.S., XIV, 62, 63B).

Chemawinite.

(*See Amber.*)

(*Hydrocarbon.*)

Chert.

(*Quartz.*)

(*Silicon dioxide.*)

ALBERTA.—

JASPER PARK.—*Rocky river* (G.S.C., N.S., XI, 30D).

BRITISH COLUMBIA.—

ASHCROFT MINING DIVISION.—*McLean lake* (G.S.C., N.S., VII, 314B).

ATLIN MINING DIVISION.—*Consolation creek*, *Gladys lake*, and elsewhere in this division (G.S.C., N.S., XII, 60A).

BOUNDARY DISTRICT.—Chert is found in greater or less abundance in many of the claims of this district (G.S.C., N.S., XV, 99A).

CARIBOO MINING DIVISION.—*Two Sisters mountain* and other points (G.S.C., N.S., III, 21C).

CLINTON MINING DIVISION.—*Hat creek* (G.S.C., N.S., VII, 314B); *Mount Martley* (G.S.C., N.S., VII, 91B).

KAMLOOPS MINING DIVISION.—*Copper creek* (G.S.C., N.S., VII, 314B).

NICOLA MINING DIVISION.—In the valley of *McDonald* or *Quilchena creek* (G.S.C., N.S., VII, 314B).

NORTH WEST TERRITORIES.—

Liard river, Fort Liard (G.S.C., N.S., IV, 54D).

MANITOBA.—

Lake Winnipegosis, in the form of nodules in dolomite (G.S.C., N.S., V, 155E).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Partridge island* (G.S.C., N.S., III, 73S).

ONTARIO.—

ESSEX COUNTY.—*Amherstburg*.

HALDIMAND COUNTY.—*Walpole*; it is also met with in the Devonian, Silurian, and Grenville areas of the province (G.S.C., N.S., V, 15Q).

MANITOULIN DISTRICT.—*Rutherford* (G.S.C., N.S., IX, 19-I); *Manitoulin: Sayer lake* (G.S.C., N.S., XIII, 116A); *Michipicoten*.

NIPISSING DISTRICT.—*Kokoko* and *Austen Bay ranges*; *Iron lake*; *Snake Island lake*, etc. (G.S.C., N.S., XV, 125, 126AA).

RAINY RIVER DISTRICT.—Chert is found in greater or less abundance in many of the claims in this district (G.S.C., N.S., VIII, 46A).

THUNDER BAY DISTRICT.—*Silver mountain* (G.S.C., N.S., II, 14, 15A).

QUEBEC.—

ARGENTEUIL COUNTY.—*Grenville* (G.S.C., N.S., IV, 38T).

NEW QUEBEC TERRITORY.—*Larch river* (G.S.C., N.S., IX, 32L); and at many points along the east coast of *Hudson bay* (G.S.C., N.S., XII, 145A).

Chiastolite.

(*Andalusite*.)

(*Silicate of aluminum*.)

BRITISH COLUMBIA.—

VERNON MINING DIVISION.—This variety of andalusite forms a prominent constituent of a black schist occurring on the hills west of *Armstrong* (G.S.C., N.S., VI, 7A).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—In fine-grained, micaceous schists at *Moore's Mills* (G.S.C., N.S., IV, 28T).

NOVA SCOTIA.—

HALIFAX COUNTY.—*Geizer's hill*, west of *Halifax* (Pr. Com. T. L. Walker).

QUEBEC.—

COMPTON COUNTY.—It occurs as a product of contact metamorphism near granite dykes cutting slates in the townships of *Compton*, *Eaton* (G.S.C., N.S., II, 14J); *Emberton* (G.S.C., N.S., II, 26J); *Hampden* and *Marsden* (G.S.C., N.S., II, 37J).

FRONTENAC COUNTY.—Chiasolite is found in micaceous argillite on *Lake St. Francis* (G.S.C., N.S., IV, 28 I); *St. Samuel de Gayhurst* (Pr. Com. T. L. Walker).

STANSTEAD COUNTY.—*Stanstead*, *Halley* (G.S.C., N.S., II, 14J) and *Barnstone* (G.S.C., N.S., II, 37J).

Chloanthite.

(*Arsenide of nickel.*)

ONTARIO.—

TIMISKAMING DISTRICT.—*Coleman township*, chloanthite is found with other nickel minerals, cobaltite, smaltite, native silver, and dyscrasite, at the *La Rose* and other mines in the *Cobalt* area (G.S.C., N.S., XVI, 201A); occurs at a few places at *Elk Lake* and *Gowganda* (Pr. Com. W. G. Miller).

Analysis of chloanthite from *La Rose* mine by Burrows (Miller, Ont. Bur. Min., 1905, pt. 2, 19).

As	Sb	S	Ni	Co	Ag
67.17	2.18	23.24	4.11	2.78 —99.48

Chlorastrolite.

(*Hydrous silicate of aluminum, calcium, etc.*)

ONTARIO.—

MANITOULIN DISTRICT.—This doubtful mineral has been found on *Michipicoten island* (G.S.C., N.S., III, 78S).

Chlorite.

(*Hydrous silicate of aluminum, iron, and magnesium.*)

Minerals of the chlorite group are found in many parts of Canada, particularly in connexion with metamorphic slates, schists, and gneisses, etc. In only a few instances have the true mineralogical positions of these been determined; some of them are no doubt of indefinite composition and are generally referable to Tschermak's leptochlorites.

BRITISH COLUMBIA.—

BOUNDARY DISTRICT.—Chlorite occurs as one of the gangue minerals of the copper ore of some of the mines of this district (G.S.C., N.S., XV, 123A).

NOVA SCOTIA.—

DIGBY COUNTY.—In the amygdaloid of *Long island* (Mem. Am. Acad., IX, Aug. 1831).

SHELBURNE COUNTY.—*North-East harbour* (G.S.C., N.S., IX, 58M).

ONTARIO.—

KENORA, NIPISSING, AND RAINY RIVER DISTRICTS.—Chlorite occurs as an alteration of hornblende and allied minerals in the Keewatin schists of these districts.

LEEDS COUNTY.—Chlorite occurs in connexion with magnetic iron ore deposits in *South Crosby, 26-VI (Chaffey mine)*; *North Crosby, 1-VI (Yankee or Matthews mine)* (G.S.C., 1873-74, 200).

PETERBOROUGH COUNTY.—Massive, scaly chlorite at the *Cordova mine, Belmont, 1-XX* (Pr. Com. T. L. Walker).

QUEBEC.—

BEAUCE COUNTY.—*Broughton* (G.S.C., N.S., IV, 28T).

BROME COUNTY.—*Bolton, Poiton* (G.S.C., N.S., IV, 28T); and *Sutton* (G.S.C., N.S., XV, 308A).

COMPTON COUNTY.—*Clinton, 10, 11, 12, 13-I and II* (G.S.C., N.S., XV, 315A).

OTTAWA COUNTY.—With iron ore in *Hull, 11-VII (Forsyth mine)* (G.S.C., 1873-74, 200).

RICHMOND COUNTY.—*Cleveland; Melbourne* (G.S.C., N.S., IV, 28T).

SHEFFORD COUNTY.—*Shefford* (G.S.C., N.S., IV, 28T).

SHERBROOKE COUNTY.—*Ascot* (G.S.C., N.S., IV, 28T).

Chloritoid.

(*Silicate of aluminum, iron, and magnesium.*)

QUEBEC.—

BROME COUNTY.—*Brome and Sutton* (G.S.C., N.S., IV, 28T).

MEGANTIC COUNTY.—*Leeds* (G.S.C., N.S., IV, 28T).

Analysis of chloritoid from Leeds by Hunt (Geol. Can., 1863, 498).

SiO ₂	Al ₂ O ₃	FeO	MnO	MgO	H ₂ O	
26.30	37.10	25.92	0.93	3.66	6.10	—100.01

Chondrodite.

(*Fluo-silicate of magnesium.*)

ONTARIO.—

HALIBURTON COUNTY.—Chondrodite occurs in minute grains in calcite in *Harcourt, 11-I* (G.S.C., Mem. 6, 201).

LEEDS COUNTY.—*North Crosby*, in crystalline limestone near *Newboro* (G.S.C., N.S., IV, 28T): *South Crosby, 27-III* (Ont. Bur. Min., 1900, 196): it has also been noted as an occasional constituent of Grenville limestones elsewhere in the south-central portions of the province.

QUEBEC.—

- BERTHIER COUNTY.—On the east side of *Milieu river*, 3 miles north of *Perrault creek* and near the *Maskinonge County line* (G.S.C., N.S., XI, 26J).
- MONTMORENCY COUNTY.—With spinel in limestone at *Sault a la Puce*.
- PONTIAC COUNTY.—In dolomite in *Aldfield, 10-IV* (G.S.C., N.S., IV, 26T).
- TERREBONNE COUNTY.—In limestone at St. Jerome (G.S.C., N.S., IV, 28T).

Chromite.

(Oxide of chromium and iron.)

BRITISH COLUMBIA.—

- CLINTON MINING DIVISION.—The variety chrompicotite occurs in some abundance in veins or dykes in volcanic rocks at *Scottie creek*, *Bonaparte river* (Mines, G.S.Br., Sum. Rep., 1911, 360).
- SIMILKAMEEN MINING DIVISION.—Small quantities of chromite occur scattered in patches through the peridotite of *Olivine mountain* (Mines, G.S.Br., Sum. Rep., 1910, 112, 113).

ONTARIO.—

- TIMISKAMING DISTRICT.—Chromite is found in an altered peridotite near *Northeast bay*, *Lower Abitibi lake* (Pr. Com. W. G. Miller).

QUEBEC.—

- Chromite is found in greater or less abundance at many points in the serpentine rocks of the eastern part of this province, extending from the Vermont border to the Shickshock mountains in Gaspé.
- BROME COUNTY.—*Bolton, 13-IV; 26-VI; 9, 13, 26½-VII* (Mines, Min. Br., No. 29, 68).
- GASPE COUNTY.—*Mount Albert, Shickshock mountains* (G.S.C., N.S., IV, 29T).
- MEGANTIC COUNTY.—*Coleraine*, large deposits in blocks "A" and "B:" *Leeds, 1-X* (Mines, Min. Br., No. 29, 68); *10-X* (G.S.C., N.S., IV, 112K); *Thetford, 16, 17, 18-IV* (G.S.C., N.S., III, 111F).
- RICHMOND COUNTY.—*Brompton, 25, 26-IX* (Mines, Min. Br., No. 29, 68); *Cleveland, 9-X; Melbourne, 22-VI* (G.S.C., N.S., XIII, 23S).
- WOLFE COUNTY.—*Garthby, b., c., i., -I; 4, 8-II* (G.S.C., N.S., XIII, 23S); *South Ham, 24, 27-I* (Mines, Min. Br., No. 29, 68); *4, 20, 21-II* (G.S.C., N.S., XIII, 23S); *40-II* (G.S.C., N.S., IV, 112K).
- Analysis of chrompicotite from Scottie creek by Johnston (Hoffmann, G.S.C., N.S., XIII, 11-12R).

Cr ₂ O ₃	Al ₂ O ₃	FeO	MgO	SiO ₂	Sp. Gr.
55.90	13.83	14.64	15.01	0.60—99.98	4.239

Chrompicotite.*(See Chromite.)**(Oxide of chromium and iron.)***Chrysoberyl.***(Aluminate of beryllium.)*

ONTARIO.—

RENFREW COUNTY.—*Raglan, 3-XVIII* (G.S.C., Mem. 6, 310 and 326).

QUEBEC.—

MASKINONGE COUNTY.—Chrysoberyl is found about a mile below the forks of the *Rivière du Poste*, a tributary of the *Matawin river* (*Am. Journ. Sci.*, 1905, XIX, 316).**Chrysocolla.***(Hydrous silicate of copper.)*

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—In connexion with the copper ores of the *King Solomon mines* (G.S.C., N.S., XV, 125A).YALE DISTRICT.—*Transvaal claims, Forge mountains* (Pr. Com. W. J. Sutton).

ONTARIO.—

THUNDER BAY DISTRICT.—Chrysocolla occurs in some of the copper ores of the north shore of *Lake Superior* (G.S.C., N.S., IV, 29T).

YUKON.—

WHITEHORSE MINING DIVISION.—Chrysocolla occurs with limonite and green carbonate of copper as an incrustation on granite at the *Pueblo claim* (G.S.C., N.S., XII, 19R).**Chrysolite.***(Olivine.)**(Silicate of magnesium and iron.)*

BRITISH COLUMBIA.—

Olivine is a common constituent of some of the eruptive rocks of this province.

CLINTON MINING DIVISION.—In the dunite of *Scottie creek*.SIMILKAMEEN MINING DIVISION.—In the dunite of *Olivine mountain* (Mines, Min. Br., Sum. Rep., 1910, 113).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—In grains and ill-defined crystals in a dark grey dolerite near *South lake* (G.S.C., N.S., 29T).

ONTARIO.—

NIPISSING AND ADJOINING DISTRICTS.—Olivine has been observed as a constituent of some of the basic eruptives of the northern part of the province.

QUEBEC.—

CHAMBLY COUNTY.—In crystals and grains at *Montarville* (G.S.C., N.S., IV, 29T).

GASPE COUNTY.—In rock masses of a pale yellow to yellowish-green colour at *Mount Albert, Shickshock range* (G.S.C., N.S., IV, 29T).

HOCHELAGA COUNTY.—In crystals and grains at *Montreal* (G.S.C., N.S., IV, 29T).

JACQUES CARTIER COUNTY.—In red, angular masses in a dyke at *St. Anne* (G.S.C., N.S., IV, 29T).

OTTAWA COUNTY.—In coarse crystals with calcite and spinel in *Bigelow, 52-V* (Mines, G.S. Br., Sum. Rep., 1910, 266).

ROUVILLE COUNTY.—*Rougemont* (G.S.C., N.S., IV, 29T).

Analyses of Chrysolite.

	1	2	3
SiO ₂	37.13	37.17	38.560
MgO.....	39.36	39.68	44.369
FeO.....	22.57	22.54	12.649
MnO.....			0.112
Fe ₂ O ₃			1.361
H ₂ O.....			2.914
	99.06	99.39	99.965

1. and 2. From Montarville by Hunt (Geol. Can., 1863, 464).

3. From St. Anne by Harrington (G.S.C., 1877-78, 39G).

Chrysoptase.

(*See Agate.*)

(*Silicon dioxide.*)

Chrysotile.

(*Serpentine.*)

(*Hydrous silicate of magnesium.*)

The fibrous form of serpentine is found in greater or less abundance in association with other forms of this species at many places in Canada.

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Chrysotile is found in small quantities in diabasic rocks associated with limestones, etc., in *Junction valley* (G.S.C., N.S., VII, 92B).

SIMILKAMEEN MINING DIVISION.—Chrysotile is found in association with altered peridotites in this division.

NOVA SCOTIA.—

CAPE BRETON COUNTY.—Chrysotile of poor quality is found on the south side of *Catalone lake* (Pr. Com. H. Piers).

ONTARIO.—

Chrysotile has been noted in small amounts at different places in connexion with the Archæan of this province.

RENFREW COUNTY.—In *Ross, 9-VIII* and *IX: Sebastopol, 32-XI* (Ont. Bur. Min., 1900, 195).

TIMISKAMING DISTRICT.—*Gowganda Mining Division*, in the Keewatin area between *Firth* and *Obushkong lakes* (Mines, Min. Br., No. 69, 40).

QUEBEC.—

Chrysotile has been found at several points in the province in connexion with the Grenville limestone. It occurs in greater abundance, however, in connexion with the serpentine areas in the Cambrian system, chiefly in the districts between the Vermont boundary and Gaspé county.

ABITIBI DISTRICT.—*Asbestos island, Lake Chibougamau* (Mines, Min. Br., No. 69, 43).

ARGENTEUIL COUNTY.—*Wentworth, 20-IX* (Mines, Min. Br., No. 69, 39).

ARTHABASKA COUNTY.—*Tingwick, 20, 21-VI* (Mines, Min. Br., No. 69, 212).

BEAUCE COUNTY.—*Broughton, 13-III, IV, V* (Mines, Min. Br., No. 69, 202-203); *13-VI* (Mines, Min. Br., No. 69, 194); *13-VII, VIII* (Mines, Min. Br., No. 69, 203-204); *14, 15, 16-VIII; 13-IX* (Mines, Min. Br., No. 69, 205); *14, 15-IX; 13-X* (Mines, Min. Br., No. 69, 205).

BROME COUNTY.—*Bolton, 9, 10-VII; 2-XI; cadastral lots 744, 768, 967, and 971* (Mines, Min. Br., No. 69, 210, 211); *Potton, 17-V; 2-VII*.

GASPE COUNTY.—*Mount Albert, Shickshock mountains* (Mines, Min. Br., No. 69, 42).

MEGANTIC COUNTY.—*Coleraine, 26, 27, 32-A; 23-B* (Mines, Min. Br., No. 69, 207); *27, 28-B* (G.S.C., N.S., IV, 143K); *31, 32-C* (G.S.C., N.S., IV, 143K); *18-XII* (G.S.C., N.S., IV, 50A); *Ireland, 24, 25, 26-III* (Mines, Min. Br., No. 69, 207, 208); *36-XI: Leeds,*

Kinnear's Mills (Mines, Min. Br., No. 69, 206): *Thetford*, 13, 16, 17-IV (Mines, Min. Br., No. 69, 200); 2, 9, 10, 13-V (Mines, Min. Br., No. 69, 205, 206); 26-V (Mines, Min. Br., No. 69, 181); 28-VI (G.S.C., N.S., IV, 142K).

OTTAWA COUNTY.—*Denholm*, 20-I; 42-I: *Hull*, 14-8 (G.S.C., N.S., XVI, 230 and 231A): *Mulgrave*, *Blanche lake* (Mines, Min. Br. No. 69, 40): *Portland West*, 16-V (Mines, Min. Br., No. 69, 39); *Templeton*, 11-VII; 16-V; 14-VII; 2-VIII (Mines, Min. Br., No. 69, 39); 11-VIII (G.S.C., N.S., VI, 38A): *Wakefield*, 20-I; 30-IV (G.S.C., N.S., XVI, 230A).

PONTIAC COUNTY.—*Cawood*, 27-II (G.S.C., N.S., XVI, 231A).

RICHMOND COUNTY.—*Brompton*, 25, 26-IX (Mines, Min. Br., No. 69, 209): *Cleveland*, 5-6-XIV, XV: *Shipton*, 12-V; 9-VIII (Mines, Min. Br., No. 69, 212).

WOLFE COUNTY.—*Garthby*, 16, 17, 18-III (Mines, Min. Br., No. 69, 194): *Wolfestown* (G.S.C., N.S., IV, 143, 144K).

Cinnabar.

(*Sulphide of mercury.*)

BRITISH COLUMBIA.—

ALBERNI MINING DIVISION.—With native mercury in a greenish-grey, feldspathic rock at the eastern entrance of *Sechvrt channel*, *Barkley sound*, *Vancouver island* (G.S.C., N.S., V, 66R).

GOLDEN MINING DIVISION.—In calcite veins near *Golden* on the *Kicking Horse river* (G.S.C., N.S., III, 66R).

KAMLOOPS MINING DIVISION.—In veins largely made up of quartz, calcite, dolomite, barite, and feldspar at *Sixmile point* (G.S.C., N.S., VIII, 118A); and *Copper creek* (G.S.C., N.S., VI, 31R).

NANAIMO MINING DIVISION.—*Homathco river* (G.S.C., N.S., II, 9T).

YALE MINING DIVISION.—In small quantities in the gold washings of *Boston Bar*, *Fraser river* (G.S.C., N.S., II, 9T).

Clay Ironstone.

(*Carbonate of iron, impure, from admixture with clay.*)

ALBERTA.—

Clay ironstone is widely distributed throughout this province and is found in many places in considerable abundance in the form of nodules and nodular sheets. *Battle river* (G.S.C., N.S., II, 86E); *Belly*, *Bow*, and *Kananaskis rivers* (G.S.C., 1880-1882, 10, 11H); *Red Deer river* (G.S.C., N.S., II, 61E) and *Edmonton* (G.S.C., 1873-74, 64).

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—*Comox*, *Vancouver island*.

QUEEN CHARLOTTE MINING DIVISION.—*Cowgitz*, *Skidegate inlet*.

QUESNEL MINING DIVISION.—*Quesnel* (G.S.C., N.S., III, 152R).

MANITOBA.—

Pembina river, Souris river.

NOVA SCOTIA.—

PICTOU COUNTY.—Clay ironstone is found in greater or less abundance in the coal-measures of this county (G.S.C., N.S., IV, 29T).

SASKATCHEWAN.—

The Bad Lands south of Wood mountain; Dirt hills (G.S.C., 1873-74, 241); East butte, Souris river.

Clinochlore.

(Hydrous silicate of aluminum and magnesium.)

BRITISH COLUMBIA.—

Clinochlore occurs as a contact metamorphic mineral associated with magnetite, chalcopyrite, etc., in several localities in British Columbia (Pr. Com. W. J. Sutton).

KAMLOOPS MINING DIVISION.—*Fadear creek, Louis creek, North Thompson river (G.S.C., N.S., IX, 107A).*

ONTARIO.—

RENFREW COUNTY.—In broad, dark green transparent folia in *Bagot, 16-VII (G.S.C., N.S., VI, 17R).*

QUEBEC.—

OTTAWA COUNTY.—In scales and broadly foliated aggregations of white or bluish-white colour with scapolite and serpentine in *Buckingham, 24-XII (G.S.C., N.S., VI, 17R).*

Analyses of Clinochlore.

	1	2
SiO ₂	27·23	28·65
Al ₂ O ₃	19·44	18·96
Fe ₂ O ₃	2·17	.....
FeO.....	4·91	.....
Cr ₂ O ₃	0·99	.....
MgO.....	32·67	37·49
K ₂ O.....	0·08	.....
H ₂ O.....	12·04	15·22
	99·53	100·32
Sp. Gr.		2·631

1. From Bagot.

2. From Buckingham by Johnston (Hoffmann, G.S.C., N.S., VI, 17R).

Coal.

(Carbon with varying amounts of hydrogen.)

Only a general statement of the coal occurrences of the Dominion can be entered into here. For fuller information on the subject the reader is referred to various reports of the Geological Survey and of the Department of Mines, and to the excellent summary by Dowling in "The Coal Resources of the World" (Toronto, Morang & Co., 1913).

ALBERTA.—

Coals varying in character from sub-bituminous through bituminous to semi-anthracite and anthracite are found in extensive beds at many places in the Cretaceous strata of this province. Generally speaking the most important deposits—particularly the harder varieties—are found along the eastern slopes and among the foot-hills of the Rocky mountains, extending from the International Boundary on the south to beyond the northern boundary of the province—*Coleman; Blairmore; Frank; Livingstone; Moose Mountain; Elk river; Canmore; Bankhead; Costigan; Nikanassin*, and elsewhere. Important deposits occur also at *Lethbridge; Medicine Hat* and *Taber* to the eastward.

BRITISH COLUMBIA.—

Bituminous coals, sometimes grading in part to semi-anthracite or anthracite, are found at a number of localities in the Cretaceous strata of the Province, while some of the Tertiary beds contain seams of lignite of good quality.

ASHCROFT MINING DIVISION.—*Hat creek* and other localities along the *Fraser* and *Thompson rivers*.

CARIBOO MINING DIVISION.—Bituminous coals occur on *Bear* and *Lightning creeks*.

FORT STEELE MINING DIVISION.—Extensive deposits of bituminous coal occur in the eastern part of this division—*Morrissey; Coal creek; Crowsnest; Fernie; Hosmer*, and *Sparwood*; seams of cannel coal have also been observed at the latter locality.

GREENWOOD MINING DIVISION.—Lignite occurs at *Midway*.

KAMLOOPS MINING DIVISION.—Lignite has been noted at a number of localities in the vicinity of *Kamloops lake*, and also north of *Kamloops* on the *North Thompson river*.

LIARD MINING DIVISION.—Lignite has been observed on some of the tributaries of the *Liard river*.

NELSON MINING DIVISION.—Lignite is found along a number of streams flowing into the *Kootenay river*.

NEW WESTMINSTER MINING DIVISION.—In the *Fraser River delta* near *Vancouver*, a dark brown lignite is found.

NICOLA MINING DIVISION.—Coal, grading between bituminous and sub-bituminous, is found in thick seams near the mouth of the *Cold-water river*; small deposits of similar coal have been exposed along the *Quilchena river*.

OMINECA MINING DIVISION.—Bituminous coals are found in the *Morice River* and *Telkwa River* areas, *Bulkley valley*; thick seams of anthracitic coal are found on *Groundhog mountain* at the head of the *Skeena river*: lignites are found on *Parsnip river*.

OSOYOOS MINING DIVISION.—Lignite is found at various points in the *Okanagan valley*.

PEACE RIVER MINING DIVISION.—Bituminous coals and lignites are found on some of the tributaries of the *Peace river*.

SIMILKAMEEN MINING DIVISION.—Bituminous and sub-bituminous coals of fine quality occur in thick beds near *Tulameen* and *Princeton*.

MANITOBA.—

Lignites are found in the undened Tertiary beds of *Turtle mountain* and other parts of southern and western Manitoba.

NEW BRUNSWICK.—

Bituminous coal has been found in the Millstone Grit of a wide area in the eastern and central parts of the province.

GLOUCESTER COUNTY.—*Clifton* and *Caraquette*.

KENT COUNTY.—*Beersville*.

KINGS COUNTY.—Near *Dunsinane*.

NORTHUMBERLAND COUNTY.—*Dungarvon river*.

QUEENS COUNTY.—Near head of *Grand lake*.

SUNBURY COUNTY.—On the northwest branch of the *Oromocto river*.

YORK COUNTY.—*Nashwaaksis river*.

NORTH WEST TERRITORIES.—

ARCTIC ISLANDS.—Cannel and bituminous coals occur on *Banks*; *Parry*; *Elsmere*; *Baffin*, and *Bylot islands*.

MACKENZIE RIVER AND DELTA.—Lignite occurs at various points in this area.

NOVA SCOTIA.—

Bituminous coals are extensively mined in this province, the most important deposits being found in beds of Upper Carboniferous age; thin seams are also found in the Millstone Grit, but so far these have not attained to any economic importance.

CAPE BRETON COUNTY.—Between *Cape Dauphin* and *Indian bay*; *Glace bay*; *Morien bay*, and *Cape Percy*.

COLCHESTER COUNTY.—Exposures of Lower Carboniferous coals have been noted along the *Debert*, *Salmon*, and *Stewiacke rivers*.

CUMBERLAND COUNTY.—Coal is extensively mined in the *Joggins* and *Springhill* areas.

INVERNESS COUNTY.—*Inhabitants river; Port Hood; Broad Cove, and Chimney Corner.*

PICTOU COUNTY.—Important deposits occur in the *Westville, Vale, and Stellarton* areas south of *New Glasgow.*

RICHMOND COUNTY.—In the neighbourhood of the *Strait of Canso.*

ONTARIO.—

Woody materials, more or less altered to lignite, have been observed at a number of places in the *Moose River water system.*

SASKATCHEWAN.—

Valuable beds of lignite occur over wide areas in the Tertiary strata of this province. Mining has been carried on at *Estevan* and elsewhere in the *Souris valley* in the southern part of the province.

YUKON.—

Bituminous coal is found at widely scattered points in the Jura-Cretaceous beds of this territory: lignite also occurs under similar conditions in the Tertiary.

Cobalt Bloom.

(*See Erythrite.*)

(*Hydrated arsenate of cobalt.*)

Cobaltite.

(*Sulph-arsenide of cobalt.*)

ONTARIO.—

ONTARIO.—Cobaltite occurs in massive form and in small crystals at several points in this district, *Bucke, 15-I (Benn mine)* (Ont. Bur. Min., 1905, pt. 2, 23); *Coleman township (La Rose mine)* (Journ. Can. Min. Inst., Vol. XI, 1908, 483); *Columbus claim.* Analysis of cobaltite crystals from the *Columbus claim* by De Lury (Ont. Bur. Min., 1905, pt. 2, 23).

As	S	Co	Ni	Fe	
44.55	20.73	29.10	0.97	4.55	—99.90

Coccolite.

(*Pyroxene.*)

(*Silicate of calcium, magnesium, iron, and aluminum.*)

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—*Frobisher and Cyrus Field bays* (G.S.C., N.S., II, 41R).

QUEBEC.—

OTTAWA COUNTY.—This variety of pyroxene occurs in various places in *Buckingham* and *Portland townships* (G.S.C., N.S., IV, 30T).

Columbite.

(*Niobate and tantalate of iron and manganese.*)

BRITISH COLUMBIA.—

KAMLOOPS MINING DIVISION.—A mineral, which on examination has proved to belong to the columbite-tantalite group, is reported to have come from the neighbourhood of *Kamloops* (Pr. Com. W. F. Robertson).

NOVA SCOTIA.—

LUNENBURG COUNTY.—*New Ross*, at the *King and Keddy shafts*, near *Lake Ramsay* (Mines, G.S.Br., Sum. Rep., 1907, 81 and 82); *Lavers mine* (Pr. Com. T. L. Walker).

ONTARIO.—

RENFREW COUNTY.—In a coarse pegmatite dyke in *Lyndoch, 23-XV* (Ont. Bur. Min., 1900, 197).

Cookeite.

(*Hydrous silicate of aluminum, lithium, and potassium.*)

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—Associated with galenite at *Otiertail creek* (G.S.C., N.S., IV, 30T): in thin layers in sericite-schist and filling small cavities in quartz veins traversing this schist on *Wait-a-bit creek* (G.S.C., N.S., VI, 22R).

Analysis of cookeite from *Wait-a-bit creek* by *Johnston* (Hoffmann, G.S.C., N.S., VI, 22R).

SiO ₂	Al ₂ O ₃	CaO	MgO	Li ₂ O	K ₂ O	Na ₂ O	F	H ₂ O	
32.00	45.87	1.63	0.78	2.10	0.06	0.65	0.02	17.29	—100.40
								Loss O-F	0.01
									100.39

Copper, Native.

BRITISH COLUMBIA.—

Native copper has been found in grains and large nuggets in the gold washings of many of the streams and rivers—*Dease river*; *Fraser* and *Thompson rivers* (G.S.C., N.S., III, 154R). It also has been found in situ at a number of localities.

ATLIN MINING DIVISION.—Native copper has been found as nuggets in placer workings in this division (Pr. Com. W. F. Robertson): in calcite veins traversing serpentine on *Goat island* (G.S.C., N.S., XII, 69A).

GREENWOOD MINING DIVISION.—In the igneous rocks of *Copper creek* (G.S.C., N.S., III, 154R).

NANAIMO MINING DIVISION.—Native copper occurs very frequently in the amygdaloidal meta-andesites of the Vancouver series on *Vancouver island*. It has been found in a number of the diamond drill cores after passing through the coal-measures. A good example of occurrences of this kind is to be found near *Cumberland* (Pr. Com. W. J. Sutton): in amygdaloidal trap near *Nanaimo*: it also occurs under similar conditions on *South Valdes island* (Pr. Com. F. D. Adams).

NICOLA MINING DIVISION.—*Aspen Grove* (G.S.C., N.S., XVI, 74-78A).

OMINECA MINING DIVISION.—Native copper is found as nuggets in placer workings in this division (Pr. Com. W. F. Robertson).

QUESNEL MINING DIVISION.—Has been noted by Mr. W. F. Robertson in a lava overflow overlying placer gravels near *Horsefly camp*. Native copper is found at *Twentymile creek*. It is also found at *Big Sioux claims, Copper Grove* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—*Wellington mine* (Pr. Com. T. L. Walker).

MANITOBA.—

In the amygdaloidal traps at the north end of *Lake Manitoba* and on *Sugar island, Lake St. Martin* (G.S.C., N.S., XV, 9AA).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—In the igneous rocks of *Clark point, Mascareen peninsula* (G.S.C., N.S., X, 24M): native copper forms small masses and irregular strings in the Triassic traps near *South-West head, Grand Manan island* (G.S.C., N.S., X, 19 and 20 M).

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—*Albert harbour* (Mines, G.S.Br., Sum., 1908, 166). Native copper is reported to occur in thin scales in the amygdaloidal traps of *Copper mountain* (G.S.C., N.S., II, 25R).

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—*Margaretville* (G.S.C., N.S., IV, 30T).

DIGBY COUNTY.—*Briar island* (G.S.C., N.S., IV, 30T).

CUMBERLAND COUNTY.—*Cape d'Or and Spencer island* (G.S.C., N.S., IV, 30T). *Five Islands* (G.S.C., N.S., IV, 30T).

ONTARIO.—

MANITOULIN DISTRICT.—*Michipicoten island*.—(G.S.C., N.S., IV, 30T).

RAINY RIVER DISTRICT.—In small, but very perfect, twinned octahedra at *Andrew bay, Lake of the Woods* (Ont. Bur. Min., 1895, 105).

THUNDER BAY DISTRICT.—Native copper has been noted at many points along the north shore of *Lake Superior* and on the neighbouring islands: *Battle, Spar, and St. Ignace islands, Cape Gargantua, Pt. Mamainse* (G.S.C., N.S., IV, 30T); *Sturgeon lake* (G.S.C., N.S., XIV, 94A); in *O'Connor (Beaver mine)* (Ont. Bur. Min., 1900, 197).

QUEBEC.—

Native copper has been noted in the drift of the *Chaudiere valley* (Geol. Can., 1863, 515).

LEVIS COUNTY.—Native copper has been found in thin plates in a mass of red slates in the bed of the *Etchemin river*; while masses of the metal have been found in the debris of the red slates of *Pt. Levis* (Geol. Can., 1863, 516).

Coracite.

(*Gummite.*)

(*Hydrated urano-silicate of uranium, lead, calcium, etc.*)

ONTARIO.—

THUNDER BAY DISTRICT.—The locality is variously given as being from 70 to 90 miles from *Sault Ste. Marie* on the north shore of *Lake Superior*. It is given by Hunt (Geol. Can., 1863, 504) as *Mamainse*. This mineral was first described as a new species by Dr. Le Conte (Am. Journ. Sci., Vol. III, 117, 173-175, 1847) upon a specimen collected by Mr. B. A. Stanard. It was further examined and described by Whitney (Journ. Bost. Soc. Nat. Hist., 1849, 36); and again by Genth (Am. Journ. Sci., Ser. 2, 1857, 421). It was said to have been found in a vein 2 inches in width at the junction of trap with syenite.

Analyses of Coracite.

	1	2
UO ₂	} 59.30	16.47
UO ₃		46.21
PbO.....	5.36	7.39
Fe ₂ O ₃	2.24	3.51
Al ₂ O ₃	0.90	0.52
CaO.....	14.44	5.33
MgO.....	.....	0.56
SiO ₂	4.35	13.15
CO ₂	7.47	} 6.14
H ₂ O.....	4.64	
	98.70	99.28
Sp. Gr.....	4.38	.....

1. By Whitney (loc. cit).
2. By Genth (loc. cit).

Cordierite.*(See Iolite.)**(Hydrous silicate of aluminum, iron, and magnesium.)***Corundum.***(Oxide of aluminum.)***BRITISH COLUMBIA.—**

NELSON MINING DIVISION.—A celandine-green variety of corundum has been observed in the gold washings of the *Pend d'Oreille* river (G.S.C., N.S., IX, 15R).

SIMILKAMEEN MINING DIVISION.—Minute grains of ruby corundum have been observed in the gravels of some of the creeks tributary to the *Tulameen river*.

ONTARIO.—

Corundum occurs in greater or less abundance at many places in connexion with syenites and anorthosites of the south-central and eastern counties.

HASTINGS COUNTY.—*Carlow 14-XIII and XIV* (G.S.C., N.S., X, 52A): in *Dungannon* (G.S.C., N.S., XII, 192A).

LEEDS COUNTY.—Light red to sapphire blue corundum has been found in the form of grains in a rock aggregate of feldspar, quartz, calcite, mica, and titanite in *South Burgess, 2-IX*; light blue crystals of corundum also occur in the crystalline limestones of this neighbourhood (Geol. Can., 1863, 499).

PETERBOROUGH COUNTY.—*Meihuen, 14-IX* (G.S.C., N.S., IX, 15R).

RENFREW COUNTY.—*Brudenell, 34-V; 25-VI; 32, 33-VII* (G.S.C., N.S., X, 16S); *Raglan, 3, 4-XVII* (G.S.C., N.S., XIII, 128A); *3, 4, XVIII; 1, 2-XIX* (G.S.C., N.S., X, 16S); *Radcliffe, 32-II* (G.S.C., N.S., X, 16S).

Covellite.

(Sulphide of copper.)

BRITISH COLUMBIA.—

SLOCAN CITY MINING DIVISION.—Small quantities of covellite are found in *Highland Light mining claim, Tenmile creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NOVA SCOTIA.—

COLCHESTER COUNTY.—In nodules with chalcocite at *New Annan* (G.S.C., N.S., IV, 30T).

ONTARIO.—

RAINY RIVER DISTRICT.—With pyrite and other sulphides at *Pine Portage bay* (G.S.C., 1882-84, 15K).

TIMISKAMING DISTRICT.—According to Dr. Barlow, covellite occurs at different points in *James and Tudhope townships* (Report of the German Development Company, 1907, p. 10).

Analysis of covellite from New Annan by Louis (Trans. N.S. Inst. Nat. Sci., IV, 1875-78, 424).

S	Cu	Fe ₂ O ₃	Al ₂ O ₃	Insol.	Sp. Gr.
25.64	64.11	(	3.89	) 5.78—99.42	4.3888

Cryptomorphite.

(Hydrous borate of calcium and sodium.)

NOVA SCOTIA.—

HANTS COUNTY.—With nirabilite in seams between anhydrite and gypsum at the *Clifton Quarry, Windsor* (G.S.C., N.S., IV, 31T).

Analysis of cryptomorphite by How (Am. Journ. Sci., Ser. 2, Vol. XXXII, p. 9).

B ₂ O ₃	CaO	Na ₂ O	H ₂ O
59.10	15.55	5.61	19.72—99.98

Cuprite.*(Oxide of copper.)***BRITISH COLUMBIA.—**

GREENWOOD MINING DIVISION.—In small transparent crystals at the *King Solomon mine, Copper creek* (G.S.C., N.S., XV, 125A).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—With native copper and copper carbonates at *Bennett brook; Cape d'Or and Spencer island* (G.S.C., N.S., IV, 31T).

ONTARIO.—

THUNDER BAY DISTRICT.—Cuprite has been observed with native copper amongst the trappean rocks of the north shore of *Lake Superior* (Ont. Bur. Min., 1900, 196).

QUEBEC.—

BAGOT COUNTY.—Cuprite has been observed in the form of cinnabar-red stains on the shales of the copper deposits of *Acton* (G.S.C., N.S., IV, 31T).

BROME COUNTY.—An earthy form occurs with bornite and malachite in *Sutton 9-IX* (G.S.C., N.S., VI, 26R).

Cyanite.*(Silicate of aluminum.)***BRITISH COLUMBIA.—**

CARIBOO MINING DIVISION.—With beryl in the mica vein 7 miles south of *Tete Jaune Cache* (G.S.C., N.S., XI, 163A).

KAMLOOPS MINING DIVISION.—In radiated columnar aggregates embedded in granular quartz along with scales of white mica on the *North Thompson river* (G.S.C., N.S., IV, 31T).

NELSON MINING DIVISION.—In biotite-mica-schist on the ridge south of *Summit creek* (G.S.C., N.S., X, 30A).

VERNON MINING DIVISION.—Three miles from *Armstrong*.

ONTARIO.—

LENNOX COUNTY.—With quartz in mica schist in *Kaladar, 25-VI* (Ont. Bur. Min., 1900, 200).

SUDBURY DISTRICT.—In a pegmatite vein cutting Grenville gneiss in *Dryden, 9-III* (G.S.C., N.S., IV, 28R).

QUEBEC.—

TIMISKAMING COUNTY.—Cyanite characterizes most of the granite gneiss of the *Ottawa river* at *Les Erables rapids* (G.S.C., N.S., VII, 56A); and *Snake creek* (G.S.C., N.S., VIII, 117A): fine, pale blue, plated crystals occur in quartz near *Hunters point*, *Turtle lake*, *Kipawa*, *Grand Lake route*.

Analysis of cyanite from North Thompson river by Hoffmann (G.S.C., 1878-79, 1 H).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Sp. Gr.
36.288	62.254	0.552	1.064	0.355—100.513	3.6005

Cyanolite.

(*Hydrous silicate of calcium.*)

NOVA SCOTIA.—

KINGS COUNTY.—This name was given by How (Edin. New Phil. Journ., Vol. X, 1859, 84) to the inner bluish portion of a nodule found in amygdaloid near *Black Rock*. For notes on the other constituents of the nodule see *cerinite* and *centrallassite*.

Analyses of Cyanolite.

	1	2
SiO ₂	74.15	72.32
Al ₂ O ₃	0.84	1.24
CaO.....	17.52	18.19
MgO.....	tr.	tr.
K ₂ O.....	0.53	0.61
H ₂ O.....	7.39	6.91
	100.43	99.47
Sp. Gr.....	2.495	.....

1 and 2 By How (loc. cit.)

Damourite.

(*Muscovite.*)

(*Hydrous silicate of potassium and aluminum.*)

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—*Damourite* is found with quartz and dolomite in the *Kicking Horse valley* (G.S.C., N.S., VI, 20R).

ONTARIO.—

PETERBOROUGH COUNTY.—*Methuen, 14-XIV.*

Analysis of damourite from the Kicking Horse pass by Johnston (Hoffmann, G.S.C., N.S., VI, 20R).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	K ₂ O	Na ₂ O	F	Cl	H ₂ O		Sp. Gr.
44.28	33.60	0.60	3.03	9.87	0.40	0.59	0.51	6.25	-99.13	2.657
								Less O=F	0.36	
										98.77

Danaite.*(Sulph-arsenide of iron and cobalt.)**(See Arsenopyrite.)***Danalite.***(Silicate of iron, manganese, zinc, sulphur, and beryllium.)*

QUEBEC.

NEW QUEBEC TERRITORY.—Danalite has been observed in small crystals in a vein composed of orthoclase, spodumene, and quartz cutting syenite on *Walrus island, Paint Hills group*, east coast of *James bay* (G.S.C., N.S., XII, 15R).**Datolite.***(Boro-silicate of calcium.)*

ONTARIO.—

FRONTENAC COUNTY.—*Bedford, 30-VI (Bobs Lake mine)* (Mines, Min. Br., 118, 285): fine crystals of datolite have been found in *Loughborough, 11-VII (Smith and Lacey mine)* (Pirsson, Am. Journ. Sci., XLV, 100-102).THUNDER BAY DISTRICT.—One mile west of *Loon station* (Pr. Com. T. L. Walker).

QUEBEC.—

OTTAWA COUNTY.—A massive form occurs in *Derry, 9-I (Daisy mine)* (G.S.C., N.S., XII, 17R).

Analysis of datolite from Derry by Johnston (Hoffmann, G.S.C., N.S., XII, 17-18R).

SiO ₂	B ₂ O ₃	CaO	Al ₂ O ₃	Fe ₂ O ₃	MgO	H ₂ O		Sp. Gr.
36.94	22.37	34.90	0.12	0.02	0.05	5.68	-100.08	2.985

Dawsonite.*(Basic carbonate of aluminum and sodium.)*

QUEBEC.—

HOCHELAGA COUNTY.—In fibrogladiate forms in the joints of feldspathic dykes cutting Trenton limestone near *McGill College* (G.S.C., N.S., IV, 31T) and at the *Reservoir, Montreal* (Can. Nat., Ser. 2, VII, 305-309 and X, 84-86).

Analyses of Dawsonite.

	1	2	3
CO ₂	29·88	30·72	32·23
Al ₂ O ₃	32·84	32·68	24·71
Na ₂ O.....	20·20	20·17	15·64
K ₂ O.....	0·38	.....	.....
CaO.....	5·95	5·65	16·85
MgO.....	tr.	0·45	.....
MnO ₂.....	.....	.....	0·23
SiO ₂	0·40	.....	0·84
H ₂ O.....	11·91	(10·33)	9·06
	101·56	100·00	99·26
Sp. Gr.....	2·40		

1, 2. From McGill College, Montreal.

3. From the Reservoir, Montreal, by Harrington (Can. Nat., Ser. 2, VII, 305-309; X, 84-86).

The lime and magnesia in the above analyses are regarded as impurities in the form of carbonates; if they be calculated as such and deducted along with other manifest impurities, and the remaining figures be recalculated for one hundred parts, the following figures are obtained as representing the composition of the mineral.

Analyses of Dawsonite.

	1	2	3
CO ₂	27·96	29·06	27·78
Al ₂ O ₃	36·42	36·70	36·12
Na ₂ O.....	22·41	22·65	22·86
H ₂ O.....	13·21	11·59	13·24

Diallage.*(Pyroxene.)**(Silicate of calcium, magnesium, iron, and aluminum.)*

ONTARIO.—

SUDBURY DISTRICT.—Diallage forms a constituent of some of the gabbros of this district (Ont. Bur. Min., 1900, 197).

QUEBEC.—

Diallage, frequently altered to a greater or less extent through hydration, occurs at several places in connexion with the serpentines of the Eastern Townships.

RICHMOND COUNTY.—*Melbourne, 22-II* (G.S.C., N.S., VI, 18R).

SHERBROOKE COUNTY.—A celandine-green diallage occurs in the township of *Orford* (Geol. Can., 1863, 469).

WOLFE COUNTY.—A hydrous diallage occurs in the township of *Ham* (Geol. Can., 1863, 469).

Analyses of Diallage.

	1	2	3	4
SiO ₂	50.00	47.20	47.10	50.66
Al ₂ O ₃		3.40	3.50	4.47
Fe ₂ O ₃				0.70
Cr ₂ O ₃		tr.	tr.	1.40
FeO.....	13.59	8.91	8.55	2.75
NiO.....		tr.	tr.	
CaO.....	3.80.	11.36	11.34	21.81
MgO.....	27.17	24.53	24.58	17.45
H ₂ O.....	6.30	5.80	5.85	0.69
Sp. Gr.....	100.86	101.20	100.92	99.93 3.238

1. From Ham by Hunt (Geol. Can., 1863, p. 469).

2. and 3. From Orford, *ibid.* (loc. cit.).

4. From Melbourne by Johnston (Hoffmann, G.S.C., N.S., VI, 18R).

Diamond.*(Carbon.)*

BRITISH COLUMBIA.—

Microscopic diamonds have been found in scattered groups and minute veinlets in connexion with chromite or chrompicotite occurring in dunite at two localities in this province.

CLINTON MINING DIVISION.—With the chrompicotite of *Scottie creek, Bonaparte river* (Mines, G.S.Br., Sum. Rep., 1911, 360).

SIMILKAMEEN MINING DIVISION.—With the chromite of *Olivine mountain* (Mines, G.S.Br., Sum. Rep., 1910, 112, 113).

ONTARIO.—

TIMISKAMING DISTRICT.—Microscopic diamonds have been noted in connexion with certain chromite deposits in the township of *Rheaume*. Diamonds of microscopic dimensions were also observed in what appeared to be an altered pyroxene associated with these deposits (Ont. Bur. Min., 1914, 47).

QUEBEC.—

MEGANTIC COUNTY.—Microscopic diamonds have been found in connexion with the chromite of *Black lake* (Mines, G.S.Br., Sum. Rep., 1911, 360).

Diopside.*(Pyroxene.)**(Silicate of calcium, magnesium, and iron.)*

ONTARIO.—

HALIBURTON COUNTY.—In fine translucent to transparent green crystals in *Cardiff, 1-XXI* (Mines, G.S.Br., Sum. Rep., 1908, 167).

HASTINGS COUNTY.—Herschell, 3-IV (Pr. Com. T. L. Walker).

LANARK COUNTY.—Diopside has been observed in the townships of *Bathurst* and *North Elmsley* (Geol. Can. 1863, 467 and 468).

RENFREW COUNTY.—In *Bliethfield*, at the *High falls* and the *Ragged chute* on the *Madawaska river* (G.S.C., N.S., IV, 44T).

QUEBEC.—

ARGENTEUIL COUNTY.—*Grenville* (Geol. Can., 1863, 468).

JOLIETTE COUNTY.—*Kildare* (Geol. Can., 1863, 467).

PONTIAC COUNTY.—In crystals up to 6 inches in length at *Calumet falls, Litchfield* (Geol. Can., 1863, 467).

SHERBROOKE COUNTY.—In crystals in druses in pyroxene rock in *Orford* (Geol. Can., 1863, 467).

Analyses of Diopside.

	1	2	3	4	5	6
SiO ₂	51.27	54.20	51.50	50.90	54.90	54.50
Al ₂ O ₃	4.00	.....	6.15	.....	.....	.....
Fe ₂ O ₃	0.10	.....	0.35	6.77	.....	.....
FeO.....	.....	3.24	.....	.....	.....	4.86
CaO.....	25.27	25.65	23.80	23.74	27.67	25.20
MgO.....	17.46	17.02	17.69	18.14	16.76	15.29
K ₂ O.....	0.14	.....	.....	.....	.....	.....
Na ₂ O.....	0.62	.....	.....	.....	.....	.....
Li ₂ O.....	tr.	.....	.....	.....	.....	.....
H ₂ O.....	1.63	0.45	1.10	0.90	0.80	0.55
	100.49	100.56	100.59	100.45	100.13	100.40
Sp. Gr.....	3.35	3.273 to 3.275	3.19	.....	.....	3.13 to 3.15

1. From Grenville, by Harrington (G.S.C., 1874-75, 302).
2. From High Falls.
3. and 4. From Bathurst.
5. From Calumet island.
6. From Orford, by Hunt (Geol. Can. 1863, 467-468).

Dog-Tooth-Spar.(See *Calcite*.)

(Carbonate of calcium.)

Dolomite.

(Carbonate of calcium and magnesium.)

ALBERTA.—

Heavy beds of dolomite occur at *Castle mountain* (G.S.C., N.S., II, 25D); *Rocky Mountains park*; *Jasper park*; and in *Pincher Creek division* (G.S.C., N.S., I, 40B).

BRITISH COLUMBIA.—

Dolomite occurs as a rock formation at several localities in this province.

FORT STEELE MINING DIVISION.—At *Green hills* and elsewhere in this district (G.S.C., N.S., XIV, 72A).

GOLDEN MINING DIVISION.—Dolomitic rocks occur in the *Kicking Horse pass* (G.S.C., N.S., V, 13 AA).

KAMLOOPS MINING DIVISION.—At *Duffy creek*, there is a vein of dolomite a quarter of a mile wide and 4 miles long revealing traces of gold (G.S.C., N.S., VII, 141B).

OMINECA MINING DIVISION.—At *Germansen Landing* on the *Omineca river*, in bands with serpentine and magnesite interbedded with argillites and green volcanic ash rocks (G.S.C., N.S., VII, 25C).

OOSOYOS, SIMILKAMBEEN, AND SLOCAN MINING DIVISIONS.—Dolomite occurs in scattered patches or as a vein mineral associated with lead and copper ores in these divisions (G.S.C., N.S., XIII, 73A, and G.S.C., N.S., XVI, 75A).

MANITOBA.—

Cliffs of yellow dolomite occur at *Cat head*, *Lake Winnipeg* (G.S.C., N.S., V, 24AA), good exposures of fossiliferous dolomite occur in the islands of *Dawson bay*, *Lake Winnipegosis* (G.S.C., N.S., IV, 22A); *Cedar lake*, *Saskatchewan river* (G.S.C., N.S., XIV, 36F).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Dolomite occurs in association with the limestone at *L'Etang and Frye islands* (G.S.C., 1870-71, 237); and on the road between *Lepreau* and *Point Lepreau* near the boundary line between St. John and Charlotte counties (G.S.C., N.S., XVI, 275A).

KINGS COUNTY.—Crystals of dolomite are found in the manganese mine at *Markhamville* (G.S.C., 1870-71, 237).

ST. JOHN COUNTY.—Dolomite occurs in association with limestone in the neighbourhood of *St. John city* (G.S.C., N.S., XVI, 275A).

NOVA SCOTIA.—

CAPE BRETON COUNTY.—*George river* (Pr. Com. H. Piers).

INVERNESS COUNTY.—Near *Whycocomagh* (Pr. Com. H. Piers).

KINGS COUNTY.—*Cape Blomidon* (Pr. Com. T. L. Walker).

VICTORIA COUNTY.—*New Campbellton* (Pr. Com. H. Piers).

ONTARIO.—

Dolomite constitutes important masses or beds both in the Archæan and Palæozoic systems of the province. The so-called limestones of the Silurian of the Interlake peninsula consist for the most part of dolomites; the same mineral forms extensive beds in the Calciferous of the eastern part of the province. Beds of dolomite are also extensively developed in the Grenville of the south-central and eastern parts and the Huronian of the northern parts. Crystallized dolomite—bitter spar or pearl spar—is often found with calcite and gypsum in the dolomites of the Niagara formation of the Interlake peninsula and under similar circumstances in cavities in the Calciferous formation; it is also found in connexion with the copper-bearing rocks of *Bruce Mines*, *Algoma district* (Geol. Can., 1863, 456, 457).

QUEBEC.—

As in the province of Ontario, dolomite is of common occurrence in the great areas of Archæan rocks to be found in the province of Quebec. It occurs also to a greater or less extent in some of the Palæozoic rocks (Geol. Can., 1863, 456, 457).

PONTIAC COUNTY.—A quarry of crystalline dolomite is being worked at *Portage du Fort* (Pr. Com. T. C. Denis).

WOLFE COUNTY.—At *Dudswell*, the Devonian limestones are traversed by veins of dolomite (Geol. Can., 1863, 456, 457).

Domeykite.

(*Arsenide of copper.*)

ONTARIO.—

MANITOULIN DISTRICT.—Domeykite occurs in association with niccolite in a vein cutting amygdaloid on *Michipicoten island* (Geol. Can., 1863, 506).

THUNDER BAY DISTRICT.—Domeykite has been noted on *Silver islet, Lake Superior* (Ont. Bur. Min., 1900, 198).

Dufrenite.

(*Hydrous phosphate of iron.*)

ONTARIO.—

HASTINGS COUNTY.—*Madoc, 17-V (Moore's mine)* (Fr. Com. T.L. Walker).

Durangite.

(*Fluo-arsenate of sodium and aluminum.*)

NOVA SCOTIA.—

LUNENBURG COUNTY.—Durangite occurs sparingly with amblygonite, cassiterite, and other minerals in a pegmatite dyke near *Lake Ramsay, New Ross* (Mines, G.S.Br., Sum. Rep., 1907, 96).

Dyscrasite.

(*Antimonide of silver.*)

ONTARIO.—

TIMISKAMING DISTRICT.—Dyscrasite occurs in abundance in *Coleman township*, at the *La Rose, O'Brien*, and other mines in the Cobalt area.

A sample of dyscrasite from the *La Rose* mine analysed by Mr. Burrows afforded him the formula Ag_4Sb (Ont. Bur. Min., 1905, pt. 2, p. 23).

Edenite.(See *Hornblende*.)

(Silicate of calcium, iron, and aluminum.)

Elaeolite.(See *Nephelite*.)

(Silicate of aluminum and sodium.)

Emplectite.

(Sulphide of copper and bismuth.)

ONTARIO.—

TIMISKAMING DISTRICT.—*Bucke township*, at the *Floyd mine*, 6 miles west of *Haileybury* (Mines, G.S.Br., Sum. Rep., 1910, 264).

Enstatite.

(Silicate of magnesium and iron.)

ONTARIO.—

ALGOMA, NIPISSING, RAINY RIVER, SUDBURY, AND THUNDER BAY DISTRICTS.—Enstatite occurs as a constituent of some of the eruptives of these districts.

QUEBEC.—

OTTAWA COUNTY.—Enstatite has been found as a constituent of a gabbro in *Buckingham*, 18-XII (G.S.C., N.S., XII, 39-O).

TERREBONNE COUNTY.—Good examples of this mineral have been found in association with labradorite at *Ste. Adele* (Mines, G.S.C., Sum. Rep., 1908, 168).

Eosphorite.

(Hydrated phosphate of manganese, aluminum, and iron.)

NOVA SCOTIA.—

LUNENBURG COUNTY.—Eosphorite occurs sparingly near the *Molybdenite mine*, *Larder river*, *New Ross*.

Epidote.

(Hydrous silicate of aluminum, iron, and calcium.)

BRITISH COLUMBIA.—

Epidote is of frequent occurrence amongst the intrusives of this province: the *Boundary district*, the mining divisions of the southern interior (G.S.C., N.S., XV, 119A); and the west coast of *Vancouver island* (G.S.C., N.S., XV, 69A).

MANITOBA.—

Epidote is found in pockets and stringers in amphibolite schists near bands of red granite at the mouth of *Loon creek*, east side of *Lake Winnipeg* (G.S.C., N.S., XI, 49G).

NEW BRUNSWICK.—

Epidote occurs sparingly with other minerals at a number of localities in this province.

CHARLOTTE COUNTY.—*Beaver Harbour, Chamcook lake, New river* (G.S.C., 1870-71, 240).

KINGS COUNTY.—With chlorite at *Clifton* in the parish of *Kingston; Land's End* in the parish of *Westfield* (G.S.C., 1870-71, 239-240).

ST. JOHN COUNTY.—*Grand bay* (G.S.C., 1870-71, 240).

ONTARIO.—

HALIBURTON COUNTY.—*Glamorgan, 15-VI: Harcourt*, on the shores of *Farragut lake*; it is found in large individuals in a curious gneiss, evidently an altered limestone, which occurs on *Pine lake*, on *concession III of Monmouth* (G.S.C., Mem. 6, p. 203).

HASTINGS COUNTY.—In fine crystals in *Tudor, 8-XIX* (G.S.C., N.S., VIII, 119A); *10, 11-XIX* (G.S.C., N.S., VIII, 129A).

LANARK COUNTY.—In *Ramsay*, near *Carleton Place* (G.S.C., N.S., III, 74S).

NIPISSING DISTRICT.—In the gneissic rocks in the country about *Lake Timagami* (G.S.C., N.S., X, 83-84-I).

PETERBOROUGH COUNTY.—With some of the iron ores in *Belmont, 8-I (Blairton mine)* G.S.C., 1873-74, 200).

THUNDER BAY DISTRICT.—Epidote is found to some extent amongst the amygdaloidal traps and greenstones of *Lake Superior* and at *Mamainse* crystals are sometimes found implanted on mesolite (G.S.C., N.S., IV, 32T).

QUEBEC.—

Epidote is frequently found amongst rocks of the Grenville series, also at times amongst the metamorphic trap rocks of the Eastern Townships (G.S.C., N.S., IV, 32T).

BEAUCE COUNTY.—*St. Joseph*, where it was found in concretionary argillite (G.S.C., N.S., IV, 32T).

BROME COUNTY.—Epidote constitutes one of the principal minerals in the amygdaloidal trap of *Sutton mountain* (G.S.C., N.S., XV, 308A).

MISSISQUOI COUNTY.—*St. Armand, lot 43* (Pr. Com. T. L. Walker).

NEW QUEBEC TERRITORY.—An extensive development of epidote-syenite occurs on the northeast part of *Walrus island, Paint Hills group*, east coast of *James bay* (G.S.C., N.S., XIII, 65D).

OTTAWA COUNTY.—*Hull*, 8, 9-IX: *Templeton*, 9-X and 23-XIII (Mines, Min. Br., 118, 285); 14-XI (*McLarens Limits*), *Gatineau river* (Pr. Com. T. L. Walker): *Wakefield*, 12-I; 18-II (G.S.C., 1882-84, 18L).

YUKON.—

WHITEHORSE MINING DIVISION.—Epidote occurs in abundance at some of the claims in this division (G.S.C., N.S., XIII, 49A).

Epistilbite.

(*Hydrous silicate of aluminum, calcium, and sodium*).

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Epistilbite is found with stilbite on ledges of trap at *Margaretville* about 7 miles east of *Port George* (G.S.C., N.S., IV, 32T).

Analysis by How (Am. Journ. Sci., Ser. II, Vol. XXVI, 1858, p. 33).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	K ₂ O	Na ₂ O	H ₂ O
58.57	15.34	1.58	7.00	0.99	0.99	15.42—99.89

Epsomite.

(*Hydrated sulphate of magnesium*.)

ALBERTA.—

Epsomite occurs intermixed with fibroferrite on the *Canyon branch* of the *Elbow river* (G.S.C., N.S., IX, 12, 13R).

BRITISH COLUMBIA.—

OMINECA MINING DIVISION.—Epsomite occurs in association with mirabilite as an incrustation upon cliffs of shale at *Fort St. John*, *Peace river* (G.S.C., N.S., IV, 33T).

OSOYOOS MINING DIVISION.—West side of *Osoyoos lake*, *Okanagan valley*.

NOVA SCOTIA.—

HANTS COUNTY.—Epsomite has been noted at the *Clifton Gypsum Quarry*, *Windsor* (G.S.C., N.S., IV, 32T).

ONTARIO.—

HASTINGS COUNTY.—Epsomite occurs as an efflorescence on serpentine rocks near the iron-ore beds of *Crow lake*, *Marmor* (G.S.C., N.S., IV, 32, 33T).

INTERLAKE PENINSULA.—This mineral has been found at times as an incrustation amongst the dolomites and shales of this area (G.S.C., N.S., IV, 32, 33T).

QUEBEC.—

HOCHELAGA COUNTY.—Epsomite occurs as an efflorescence on Utica shales near *Montreal* (G.S.C., N.S., IV, 32T).

QUEBEC COUNTY.—Epsomite occurs as an efflorescence on black shales at *Quebec* (G.S.C., N.S., IV, 32T).

YUKON.—

Epsomite occurs as a coating on clay at and in the neighbourhood of *Alum hill, George river, Peel river* (G.S.C., N.S., XVI, 34 CC).

Analyses of Epsomite.

	1	2
SO ₃.....	.....	36.43
SO ₄	49.849	.....
Fe ₂ O ₃.....	.....	13.15
FeO.....	.....	0.93
Fe.....	0.205	.....
Al.....	0.072	.....
Al ₂ O ₃.....	.....	5.57
Mn.....	0.158	.....
Ca.....	0.571	.....
Mg.....	4.633	.....
MgO.....	.....	5.92
Na.....	14.156	.....
K.....	0.094	.....
Cl.....	0.270	.....
H ₂ O.....	14.748	36.98
Insol.....	16.325	0.48
	101.081	99.46

1. From Fort St. John, Peace river, of the mixed epsomite and mirabilite, by Hoffmann (G.S.C., 1875-76, 421).
2. From the Canyon branch of the Elbow river, of the mixed epsomite and mirabilite by Johnston (Hoffmann, G.S.C., N.S., IX, 12, 13R).

Erubescite.

(*Syn. Bornite.*)

(*Sulphide of copper and iron.*)

Erythrite.*(Hydrated arsenate of cobalt.)***BRITISH COLUMBIA.—**

Erythrite occurs very sparingly in a number of copper ore occurrences in this province (Pr. Com. W. J. Sutton).

FORT STEELE MINING DIVISION.—*Bull river* (G.S.C., N.S., XII, 20R).

NANAIMO MINING DIVISION.—*Texada island (Little Billie mine)* (Pr. Com. W. F. Robertson).

NELSON MINING DIVISION.—On the *Crows Nest railway* between *Creston* and *Kootenay Landing* (G.S.C., N.S., XIV, 238A).

OYOYOOS MINING DIVISION.—The earthy variety of this mineral occurs at *Nickel Plate mountain* (G.S.C., Mem. No. 2, 149).

TRAIL CREEK MINING DIVISION.—Erythrite is found in the arsenical ores of *Monte Christo mountain* (G.S.C., N.S., VIII, 13R).

NORTH WEST TERRITORIES.—

GREAT BEAR LAKE.—Cobalt bloom occurs as a stain on rocks east of *MacTavish bay* (Journ. Can. Min. Inst., XI, 361).

GREAT SLAVE LAKE.—On a greenstone carrying chalcopyrite near *McLeod bay* (G.S.C., N.S., XII, 108A).

ONTARIO.—

ALGOMA DISTRICT.—In a quartz vein at *Bay of Islands* (Ont. Bur. Min., 1900, 198): in diabase at *Desbarats: Otter, SE. $\frac{1}{4}$, SE. $\frac{1}{4}$ I-IV* (Pr. Com. W. G. Miller).

HASTINGS COUNTY.—With mispickel in quartz at *Limerick: in Madoc, 2-II (Dominion Iron mine)* with magnetite (G.S.C., N.S., VIII, 128A); also at *Madoc village (Cross mine)* (G.S.C., N.S., X, 117A).

THUNDER BAY DISTRICT.—Erythrite is found in connexion with the silver ores of *Silver islet* (G.S.C., N.S., III, 27H); and *Prince mine* (G.S.C., N.S., IV, 33T).

TIMISKAMING DISTRICT.—Erythrite is of common occurrence in the silver mines of *Cobalt in Coleman township* and also in the adjoining townships (G.S.C., N.S., XVI, 201A): west shore of *Rabbit lake* (Ottawa Nat., IX (No. 10), 1896, 193).

YUKON.—

WHITEHORSE MINING DIVISION.—Erythrite occurs as a bright red flecking on grossularite at the *Rabbit Foot claim* (G.S.C., N.S., XII, 20R).

Essonite.*(Hessonite.)**(See Grossularite.)**(Silicate of calcium and aluminum.)*

Fahlunite.*(See Iolite.)**(Hydrous silicate of aluminum, iron, and magnesium.)***Fassaite.***(Pyroxene.)**(Silicate of calcium, magnesium, and iron.)*

QUEBEC.—

OTTAWA COUNTY.—Fassaite is found in connexion with apatite deposits in *Templeton, 13-XI*, and elsewhere (G.S.C., 1877-78, 17G).

Analysis of fassaite by Harrington (G.S.C., 1877-78, 17G).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	CaO	MgO	Ign.	Sp. Gr.
51.275	2.821	1.317	9.164	0.329	23.344	11.612	0.174	—100.026 3.385

Faujasite.*(Hydrated silicate of aluminum, calcium, and sodium.)*

QUEBEC.—

OTTAWA COUNTY.—Faujasite is found associated with datolite in *Derry, 9-I (Daisy mica mine)* (G.S.C., N.S., XIII, 12, 13R).

Analysis of faujasite by Johnston (Hoffmann, G.S.C., N.S., XIII, 12, 13R).

SiO ₂	Al ₂ O ₃	CaO	Na ₂ O	H ₂ O(Ign)	Sp. Gr.
48.7	17.0	4.6	3.2	26.0	—99.5 2.07

Feldspar.*(Composition various.)**(Silicates of aluminum, calcium, sodium, and potassium.)*

For occurrences of the different varieties of feldspar see albite, andesine, anorthite, labradorite, microcline, oligoclase, orthoclase, etc.

Fergusonite.

(Metaniobate and tantalate of yttrium, with erbium, cerium, uranium, iron, and calcium.)

QUEBEC.—

BERTHIER COUNTY.—*The Mica mines, Maisonneuve* (Min. Oper. in Quebec, 1906, 42).

CHARLEVOIX COUNTY.—*Pied des Monts* (Min. Oper. in Quebec, 1906, 42).

Ferroprehnite.(See *Prehnite*.)*(Hydrous silicate of aluminum, calcium, and iron.)***Fibroferrite (?)***(Hydrous sulphate of iron.)*

ALBERTA.—

Saline incrustations occurring on the *Canyon branch* of the *Elbow river*, from their analysis appear to be composed in part of this material. See under epsomite (G.S.C., N.S., IX, 12R).

BRITISH COLUMBIA.—

QUATSINO MINING DIVISION.—Fibroferrite occurs in the bog iron ore deposit at *Quatsino, Vancouver island* (Pr. Com. W. J. Sutton).

Fibrolite.*(See Sillimanite.)**(Silicate of aluminum.)***Fluorite.***(Fluoride of calcium.)*

BRITISH COLUMBIA.—

NELSON MINING DIVISION.—A band of bluish and purplish fluorite, whose maximum thickness is 14 inches, occurs along and near the foot-wall of a tunnel in granite porphyry at *Fivemile point*, just east of *Troup junction* (Mines, G.S.Br., Sum. Rep., 1911, 157).

NORTH WEST TERRITORIES.—

Fluorite is found with quartz and calcite cutting Huronian schists at the west end of *Baker lake, Dubawnt river* (G.S.C., N.S., VII, 43A).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—With barite on *Frye island* (G.S.C., N.S., X, 125M).

WESTMORLAND COUNTY.—With copper-glance in quartz veins at *Beech hills* (G.S.C., N.S., X, 25M).

YORK COUNTY.—In zones of igneous action in the Lower Carboniferous System near *Harvey Station* and *Lysters Mills* (G.S.C., N.S., X, 125M).

NOVA SCOTIA.—

HALIFAX COUNTY.—Associated with galena near the head of *Musquodoboit harbour* (Pr. Com. H. Piers).

INVERNESS COUNTY.—Near *Cap Rouge* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—With molybdenite, calcite, etc., in the vicinity of *Larder river*, also about *Lake Ramsay* (G.S.C., N.S., XVI, 344A).

RICHMOND COUNTY.—Fine blue fluorite is found at *Plaster Cove* (G.S.C., N.S., III, 79S).

ONTARIO.—

ESSEX COUNTY.—*Malden township* (Pr. Com. T. L. Walker).

HASTINGS COUNTY.—Handsome specimens of green fluorite with an incrustation of crystalline barite are found in *Madoc, 1-IV* (Mines, G.S.Br., Sum. Rep., 1909, 252); and also in *Huntingdon, 10-XI: Limerick township* (Pr. Com. T. L. Walker): a pale, sea-green fluorite occurs embedded in magnetite, pyrite, and calcite in *Marmora, 6-VIII* (G.S.C., 1873-74, 200).

HALIBURTON COUNTY.—*Cardiff* (Pr. Com. T. L. Walker).

INTERLAKE PENINSULA.—Fine crystals of purple fluorite of great beauty are found on pearl-spar in geodes in the Niagara formation (G.S.C., N.S., III, 79S).

NIPISSING DISTRICT.—In large, light green, cleavable masses associated with orthoclase, microcline, and perthite in large pegmatite dykes cutting biotite gneisses in *Cameron* (G.S.C., N.S., X, 159-I).

RENFREW COUNTY.—A purple variety occurs in *Ross, 13, 14-III; 13-VI* (G.S.C., 1882-84, 6L).

THUNDER BAY DISTRICT.—A deep purple variety occurs on *Blueberry lake*, north of *Clearwater and Snake lakes*, *Niven's fifth meridian* (G.S.C., N.S., X, 40A); with calcite, quartz, pyrite, and sphalerite at the *Star mine, Strange township* (G.S.C., N.S., XIII, 172A); in cubes 2 inches in diameter with large crystals of amethyst at the mouth of *Mackenzie river*; near *Black and Terrace bays; Cape Gargantua*; in veins in syenite on the mainland opposite *Pic island*; with barite lining fissures in porphyry 3 miles east of *Gravelly point; Fluor island, Nipigon lake*, and elsewhere on the islands and along the shores of *Lake Superior* (G.S.C., N.S., IV, 33T); *Prince's mine* (G.S.C., N.S., III, 79S).

TIMISKAMING DISTRICT.—*Langmuir township*; fluorite occurs in barite veins on mining claim *R.S.C., 216* (Pr. Com. W. G. Miller).

QUEBEC.—

CHARLEVOIX COUNTY.—A green, compact variety of fluorite occurs associated with galena in veins of white calcite cutting Potsdam sandstone at *Bay St. Paul* and *Murray Bay* (G.S.C., N.S., III, 79S).

OTTAWA COUNTY.—Fluorite is met with in the apatite and mica deposits of this county. Fine green crystals occur with faujasite and datolite in *Derry (Daisy mica mine)* (G.S.C., N.S., XV, 436A); *Templeton, 12-XIII* (Mines, Min. Br., 118, 286); *Villeneuve 31-I* and *Wakefield* (Pr. Com. T. L. Walker).

PONTIAC COUNTY.—Fluorite is found in *Huddersfield, 22-IV* (Mines, Min. Br., 118, 285).

Folgerite.

(*Sulphide of iron and nickel.*)

ONTARIO.—

SUBDURY DISTRICT.—This name has been applied by Dr. S. H. Emmons (Journal of the American Chemical Society, Vol. XIV, No. 7) to one of several nickeliferous iron sulphides found in this district. It is now regarded merely as a nickeliferous variety of marcasite. *Denison, 12-III, Drury, 1, 2-II*. See also Blueite and Whartonite.

Franklinite.

(*Oxide of iron, zinc, and manganese.*)

ONTARIO.—

HASTINGS COUNTY.—*Madoc, Tenney's farm, 2 miles from Madoc village* (Ont. Bur. Min., 1900, 198).

Freibergite.

(*Tetrahedrite.*)

(*Sulphantimonite of copper and silver.*)

BRITISH COLUMBIA.—

KAMLOOPS MINING DIVISION.—An argentiferous tetrahedrite occurs on a branch of the *Eagle river*, near *Craigellachie* (G.S.C., N.S., V, 65R).

SLOCAN MINING DIVISION.—Freibergite is found associated with most of the argentiferous galenas of this district (Pr. Com. W. F. Robertson).

VERNON MINING DIVISION.—An argentiferous tetrahedrite occurs on *Cherry creek* (G.S.C., N.S., IV, 33T).

YALE DISTRICT.—*Hope* (Journ. Can. Min. Inst., 1911, 603).

Fuchsite.*(A chromiferous variety of muscovite).***ONTARIO.—**

RENFREW COUNTY.—This mica forms one of the constituents of a schist in *Matawatchan* (G.S.C., N.S., V, 21R).

QUEBEC.—

BROME COUNTY.—In the dolomites of *Bolton* and in the magnesite of *Sutton* (G.S.C., N.S., XVI, 231, 232A).

YUKON.—

In scaly aggregates and scattered particles with chromite and quartz in magnesite in the first range of mountains east of *Big Salmon river*, *Lewes river*. Scales of this mineral are found scattered through white dolomite, 1½ miles above the mouth of *Hunter creek*, *Klondike river* (G.S.C., N.S., XI, 15R).

Analysis of fuchsite from *Matawatchan* by Wait (Hoffmann, G.S.C., N.S., Vol. V, 21R).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	Cr ₂ O ₃	MnO	CaO	MgO	K ₂ O	Na ₂ O	H ₂ O (dir. est.)
43.72	35.51	2.94	1.26	0.26	4.46	1.36	8.88	0.39	3.68—102.46

Gahnite.*(Aluminate of zinc).***ONTARIO.—**

RENFREW COUNTY.—In dark green crystals lining cavities in hair brown corundum, in *Raglan*, 2-XVIII (G.S.C., N.S., IX, 15R).

Galena.*(Sulphide of lead).***ALBERTA.—**

Twin lakes, *Vermilion pass* (G.S.C., N.S., I, 137B); *Castle mountain* near *Eldon Station* (G.S.C., N.S., XI, 164A).

BRITISH COLUMBIA.—

Galena is of common occurrence throughout this province.

AINSWORTH MINING DIVISION.—Galena is found in this division in a great variety of forms from coarse to fine crystalline, coarse to fine cleavable, and in what have been locally called steel, wavy, and ribbed varieties (Can. Rec. Sci., VI, 494-8).

ATLIN MINING DIVISION.—In quartz veins in this division (G.S.C., N.S., XII, 69A).

CARIBOO MINING DIVISION.—Occurs near *Barkerville* and on *Breakwater Ridge* (G.S.C., N.S., III, 156R).

- GOLDEN MINING DIVISION.—Extensive deposits on *Mount Stephen* (G.S.C., N.S., I, 140B).
- LARDEAU MINING DIVISION.—Galena is found under conditions similar to those which obtain in Ainsworth mining division (Can. Rec. Sci., VI, 494-498).
- LIARD MINING DIVISION.—*Lower canyon, Upper Liard river* (G.S.C., N.S., III, 155R).
- OMINECA MINING DIVISION.—Galena occurs in extensive veins at *Boulder and Birch creeks* (G.S.C., N.S., XII, 70A).
- QUEEN CHARLOTTE MINING DIVISION.—Galena occurs in scattered veins near the Indian village of *Cumshewa* (G.S.C., N.S., III, 155R).
- REVELSTOKE MINING DIVISION.—In good crystals at the *Illecillewaet mines* (G.S.C., N.S., VI, 61S).
- SLOCAN AND TROUT LAKE MINING DIVISIONS.—Galena is found under conditions similar to those which obtain in Ainsworth mining division (Can. Rec. Sci., Vol. VI, 494-498).

MANITOBA.—

Wanipigow lake (G.S.C., N.S., V, 21AA); *25-XI, E. 1st mer.* near *Nelson House*, north of *Burntwood river* (Mines, G.S. Br., Sum. Rep., 1910 20).

NEW BRUNSWICK.—

Galena has been reported from a number of localities in this province; none of these occurrences so far have proved to be of any considerable extent.

CARLETON COUNTY.—*Briton mines*, near *Woodstock* (G.S.C., N.S., V, 89SS).

CHARLOTTE COUNTY.—*Magaguadavic river* below *St. George* (G.S.C., N.S., X, 35M); *Welchpool, Campobello island* (G.S.C., N.S., X, 34M).

GLOUCESTER COUNTY.—*Millstream, Beresford* (G.S.C., N.S., V, 67A); *Bathurst* (G.S.C., N.S., X, 36M).

KINGS COUNTY.—*Dickie mountain, Norton; Hammond river, Upham; Quispamsis* (G.S.C., N.S., X, 36M).

NORTHUMBERLAND COUNTY.—*Miramichi river*, between *Tomogonops* and *Little river* (G.S.C., N.S., VII, 148M).

WESTMORLAND COUNTY.—Small quantities of galena in a barite vein at *Goldville* (G.S.C., N.S., X, 125M).

NORTH WEST TERRITORIES.—

GREAT SLAVE LAKE.—Scattered through limestone about 30 miles south of *Fort Resolution* (G.S.C., N.S., XII, 108-109A).

NOVA SCOTIA.—

Small occurrences of galena have been noted at a number of localities in this province.

ANTIGONISH COUNTY.—*Arisaig* (G.S.C., N.S., II, 122P).

CAPE BRETON COUNTY.—*Steels Crossing* (East bay); *Salmon river* near *McAdam lake* (Pr. Com. H. Piers).

COLCHESTER COUNTY.—*Gays river* (Pr. Com. H. Piers).

CUMBERLAND COUNTY.—Galena has been found with pyrite and chalcocite at *Blue Sea Corner* (G.S.C., N.S., XV, 163AA).

GUYSBOROUGH COUNTY.—*Salmon river* (G.S.C., N.S., II, 122P); and *Smithfield* (G.S.C., N.S., II, 162P).

HALIFAX COUNTY.—Near head of *Musquodoboit harbour* (Pr. Com. H. Piers).

INVERNESS COUNTY.—Near *Cheticamp*; near *Broad Cove, Pleasant Bay* (Pr. Com. H. Piers).

RICHMOND COUNTY.—*Arichat* (G.S.C., N.S., X, 118S).

VICTORIA COUNTY.—*South Harbour* (*Aspy Bay*) (Pr. Com. H. Piers).

ONTARIO.—

ALGOMA DISTRICT.—Galena occurs sparingly at many points in this district (G.S.C., N.S., XIV, 105H).

CARLETON COUNTY.—*Fitzroy*, 25-VII.

FRONTENAC COUNTY.—*Bedford*, 18, 21-VIII (Geol. Can., 1863, 687, 688); 9-IX; *Loughborough*, 15, 16-IX (G.S.C., N.S., X, 121S); *Olden*, 5, 6-III (G.S.C., N.S., XV, 244S); *Storrington*, 17-IX.

HALBURTON COUNTY.—*Cardiff*, 13-V; *Lutterworth*, 13-XIV (G.S.C., Mem. 6, p. 203).

HASTINGS COUNTY.—*Bridgewater: Elzevir* (G.S.C., 1866-69, 164): *Hollandia mine* on the town line between *Madoc* and *Tudor* (G.S.C., N.S., XII, 130A); *Hastings Road*, 13 (G.S.C., 1863-66, 105); *Hungerford*, 22-XI (G.S.C., N.S., VIII, 122A); *Lake*, 7-XI (G.S.C., N.S., XV, 243S); *Limerick*, 1-III (Ont. Bur. Min., 1900, 198); *Tudor*, 28-B, 28, 29-XIV (G.S.C., 1866-69, 162).

LANARK COUNTY.—*Dalhousie*, 16-III; *Ramsay*, 3-V (Geol. Can., 1863, 688).

NIPISSING DISTRICT.—Galena occurs sparingly at many points in this district (G.S.C., N.S., XIV, 105H).

PARRY SOUND DISTRICT.—Galena occurs in greater or less abundance at the *McGowan mine, Foley township* (G.S.C., N.S., XI, 164A).

THUNDER BAY DISTRICT.—Fine crystals have been found at *Silver islet* (G.S.C., N.S., III, 27H); and it is of frequent occurrence in greater or less quantities throughout the *Thunder Bay mines*.

VICTORIA COUNTY.—*Galway*, 20-A; *Somerville*, 1-VII (G.S.C., N.S., VI, 14-15J).

QUEBEC.—

- ARTHBASKA COUNTY.—*Chester, 9-11; 2, 5-IX; 19-X* (G.S.C., N.S., X, 120S).
- BAGOT COUNTY.—*Acton, 22-V* (G.S.C., N.S., X, 120S).
- BROME COUNTY.—*Potton, 8-XI* (G.S.C., N.S., X, 120S).
- CHARLEVOIX COUNTY.—*Seigniory de la Côte Beauvre* (G.S.C., N.S., X, 120S).
- DRUMMOND COUNTY.—*Upton, 51-XXI* (G.S.C., N.S., X, 120S).
- MISSISQUOI COUNTY.—*St. Armand* (G.S.C., N.S., X, 120S).
- NEW QUEBEC TERRITORY.—Occurrences of galena have been met with on the *Little Whale river* (G.S.C., N.S., VIII, 282L).
- OTTAWA COUNTY.—*Buckingham, 21-IV; Lead island, Denholm; Wakefield, 6-II* (G.S.C., N.S., X, 120S).
- PONTIAC COUNTY.—*Calumet island, 9-10, 10W, 12-IV* (G.S.C., N.S., X, 120S).
- SHEFFORD COUNTY.—*Stukely, 1-VIII* (G.S.C., N.S., X, 120S).
- SHERBROOKE COUNTY.—*Ascot, 15-IV; 9-IX* (G.S.C., N.S., X, 120S).
- TIMISKAMING COUNTY.—*Duhamel, 61, 62, 63-I; Guigues, 1-II* (G.S.C., N.S., X, 120S).

YUKON.—

Galena has been met with in small quantities in quartz veins between *Eldorado* and *Ophir creeks* (G.S.C., N.S., XV, 40AA).

Garnet.

(*Composition various.*)

(*Silicates of calcium, magnesium, iron, aluminum, manganese, etc.*)

Garnets are of widespread distribution throughout the Dominion.

ALBERTA.—

Garnet is a common constituent in the wash of many of the streams of this province.

BRITISH COLUMBIA.

On the *Stikine* and *Skeena rivers* and along the coast to the southward of the latter river are extensive developments of schists in which garnet crystals form an important constituent. Garnets are likewise found in the wash of most of the streams and are of frequent occurrence in the mines of the southern interior and Boundary district (G.S.C., N.S., IV, 34T).

AINSWORTH MINING DIVISION.—Large crystals of garnet are found in schist at *Hamill creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NANAIMO MINING DIVISION.—Garnet is found associated with bornite, chalcopyrite, etc., at *Marble Bay mine, Texada island* (Pr. Com. F. D. Adams).

NELSON MINING DIVISION.—Massive garnets are found at many places on *Sheep* and *Hidden creeks* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—Garnets are found in pegmatites on the west side of *Slocan lake* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Garnets are met with in greater or less abundance in metamorphic rocks at *Moore's Mills* (G.S.C., N.S., X, 126M).

YORK COUNTY.—Garnets occur at *Canterbury* under conditions similar to those which obtain in Charlotte county (G.S.C., N.S., X, 126M).

NOVA SCOTIA.—

Garnets are not at all uncommon in pegmatite dykes along the granite axis of this province and also amongst metamorphic rocks elsewhere (G.S.C., N.S., IX, 147-148M).

ONTARIO.—

ALGOMA AND NIPISSING DISTRICTS.—Garnet is frequently found in connexion with mica schists in these districts (G.S.C., N.S., X, 85-I).

RAINY RIVER AND THUNDER BAY DISTRICTS.—Garnets occur in these districts under conditions similar to those which obtain in Algoma and Nipissing districts (G.S.C., N.S., V, 20G).

Garnet is also found in the counties of the south-central portion of the province.

QUEBEC.—

Garnets are frequently found scattered throughout the Grenville area as well as in the metamorphic rocks of the Eastern Townships and elsewhere (Geol. Can., 1863, 496).

SASKATCHEWAN.—

On the *Stone river* above the mouth of the *Carp river* there is an extensive development of amphibolite schists in which garnet is a prominent constituent (G.S.C., N.S., VIII, 73D).

YUKON.—

Garnets are found in the wash of the *Pelly river* and other streams (Mines, G.S.Br., Sum. Rep., 1908, 36).

WHITEHORSE MINING DIVISION.—Garnet occurs abundantly as a secondary mineral in connexion with copper ores in this division (G.S.C., N.S., XIII, 51A).

For particulars of varieties see further under Almandite, Andradite, Grossularite, Spessartite, and Uvarovite.

Gedrite.

(*Anthophyllite.*)

(*Silicate of magnesium and iron.*)

ONTARIO.—

HALIBURTON COUNTY.—Gedrite occurs in abundance in *Harcourt*, 11-IX (Am. Journ. Sci., Ser. 4, XXV, 511).

Analysis of gedrite from Harcourt by Evans (Am. Journ. Sci., Ser. 4, XXV, 511).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	CaO	MgO	H ₂ O	K ₂ O	and Na ₂ O
44.32	16.04	2.80	16.88	0.09	0.77	15.95	1.31	1.86	—100.02

Genthite.

(*Hydrated silicate of nickel, aluminum, calcium, etc.*)

ONTARIO.—

MANITOULIN DISTRICT.—Genthite has been observed as the gangue of native copper and native silver in a vein cutting amygdaloid on *Michipicoten island* (G.S.C., N.S., IV, 34T).

Analyses of genthite from Michipicoten island by Hunt (Geol. Can., 1863, 506-507).

SiO ₂	NiO	FeO	CaO	MgO	Al ₂ O ₃	H ₂ O
33.60	30.40	2.25	4.09	3.55	8.40	17.10—99.39

Gersdorffite.

(*Sulph-arsenide of nickel.*)

BRITISH COLUMBIA.—

SLOCAN MINING DIVISION.—With quartz and pyrite at *Fourmile creek*, *Silverton*.

TRAIL CREEK MINING DIVISION.—With pyrrhotite and chalcopyrite at *Kootenay mountain* near *Rossland* (G.S.C., N.S., IX, 15, 16R).

ONTARIO.—

SUDBURY DISTRICT.—The *Macdonnell or Gersdorffite mine* in *Denison*, 12-III (G.S.C., N.S., V, 22R).

Analysis of gersdorffite from Gersdorffite mine, Denison, by Johnston (G.S.C., N.S., V, 22R).

As	S	Ni	Fe	Co	Cu	Sp. Gr.
46.96	16.71	26.32	7.90	2.01	0.10—100.00	6.231

Gieseckite.*(Hydrous silicate of aluminum, sodium, and potassium.)*

NOVA SCOTIA.—

ANTIGONISH COUNTY.—Gieseckite occurs at *Arisaig Pier* and *Frenchmans Barn* (G.S.C., N.S., IV, 35T).**Gismondite.***(Hydrated silicate of aluminum, calcium, and potassium.)*

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Two Islands* (Pr. Com. T. L. Walker).**Glaucosite.***(Hydrous silicate of iron and potassium.)*

QUEBEC.—

MONTMORENCY COUNTY.—Glaucosite occurs in a sandstone of the *Lauzon* formation on the *Island of Orleans* (G.S.C., N.S., IV, 35T).LEVIS COUNTY.—Near *Point Levis* (G.S.C., N.S., IV, 35T).Analysis of glaucosite from *Island of Orleans* by Hunt (Geol. Can., 1863, 487).

SiO ₂	Al ₂ O ₃	FeO	MgO	K ₂ O	Na ₂ O	H ₂ O(ign)
50.7	19.8	8.6	3.7	8.2	0.5	8.5—100.00

Gmelinite.*(Syn. Ledererite).**(Hydrated silicate of aluminum, sodium, and calcium.)*

BRITISH COLUMBIA.—

TRAIL CREEK MINING DIVISION.—*Rosland (War Eagle mine)* (G.S.C., N.S., XII, 21R).

NOVA SCOTIA.—

COLCHESTER COUNTY.—*Two islands* and *Five Islands* (G.S.C., N.S., IV, 35T).KINGS COUNTY.—*Cape Blomidon* (G.S.C., N.S., IV, 35T).

Analyses of Gmelinite.

	1	2	3	4	5	6a	6b
SiO ₂	49.47	53.71	51.32	51.36	50.45	50.35	50.67
Al ₂ O ₃	21.48	17.63	18.45	17.81	18.27	18.33	18.50
Fe ₂ O ₃	0.14	.....	.....	0.15	0.17	0.26	0.15
CaO.....	11.48	6.52	6.40	5.68	1.12	1.01	1.05
Na ₂ O.....	3.94	3.10	{ 3.48 }	3.92	9.79	9.76	9.88
K ₂ O.....	.....	0.80		0.23	0.20	0.15	0.16
H ₂ O.....	8.58	17.98	20.35	20.96	20.71	20.23	20.15
P ₂ O ₅	3.48	trace	.....	.....	.....	.....	.....
Insol.....	0.03	.....	.....	.....	.....	.....	.....
Loss.....	1.40	.....	.....	.....	.....	.....	.....
	100.00	99.74	100.00	100.11	100.71	100.09	100.56
Sp. Gr. ...	.....	2.108	2.099	.....	.....	2.037	2.037

1. Ledererite from Cape Blomidon by Hayes (Am. Journ. Sci., XXV, 1834, p. 80).

2 and 3. From the same locality by Marsh (Am. Journ. Sci., Ser. 2, XLIV, 365).

4. From Two islands.

5. From Five Islands by How (Am. Journ. Sci., Ser. 3, XII, 272).

6a. The outer shell, and 6b the nucleus of crystals from Five Islands by Pirsson (Am. Journ. Sci., Ser. 3, XLII, p. 62).

Goethite.

(Hydrated sesquioxide of iron.)

NOVA SCOTIA.—

HANTS COUNTY.—*Black Rock* (G.S.C., N.S., IV, 35T); *Shubenacadie river* (G.S.C., N.S., X, 111S); and *Walton* (Am. Journ. Sci., Ser. 4, XXIX, 235).

PICTOU COUNTY.—*Bridgeville, East river* (G.S.C., N.S., VII, 13R).

ONTARIO.—

LANARK COUNTY.—The variety "Przibramite" has been observed by Mr. H. DeSchmidt in the form of a crystalline coating on pyrite at the *McNally mine, North Burgess, 21-V* (Mines, G.S.Br., Sum. Rep., 1911, 363).

Gold.

Gold is widely distributed throughout the Dominion, having been found in one form or other in nearly all the provinces and territories.

ALBERTA.—

Placer gold has been found on the *North* and *South Saskatchewan*, *Peace*, *McLeod*, *Bow*, *Oldman*, and other rivers (G.S.C., N.S., X, 180S).

BRITISH COLUMBIA.—

Placer gold has been found along the streams of this province as well as at some localities along the sea coast: the *Fraser* (G.S.C., N.S., XI, 38D) and *Peace rivers* (G.S.C., N.S., VI, 18, 19AA) and some of their tributaries have been fruitful sources of this precious metal: the *Skeena* (G.S.C., N.S., III, 141R), *Stikine* (G.S.C., N.S., III, 79B), and *Similkameen rivers* (G.S.C., N.S., III, 127R) and their tributaries have also afforded considerable quantities. On Vancouver island it has been found in *Bear*, *Cowichan*, *Jordan*, *Leach*, *Nanaimo*, *San Juan*, and *Sooke rivers*; also at *Cape Cooke* (G.S.C., N.S., III, 142-143R). On *Queen Charlotte island* it has been found in magnetic iron sand about *Cape Fife* (G.S.C., N.S., XVI, 22B).

Native gold has also been found in situ at a number of points in this province.

AINSWORTH MINING DIVISION.—Gold is found at many points in this district.

ATLIN MINING DIVISION.—Gold is found in veins at the *Engineer Group* (G.S.C., Mem. 37, 80-83): free gold and stibnite were found in quartz at the *Hope claim* on *Taku Arm*, 8 miles south of *Golden Gate*: free gold and argentite were seen in the vein matter of the *Lakeview claim*, near *Surprise lake* (G.S.C., N.S., XII, 45B): it has also been found in many of the streams and rivers of this division.

CARIBOO MINING DIVISION.—Native gold in galena is found in the placer mines of this division (Pr. Com. W. F. Robertson).

LARDEAU MINING DIVISION.—Gold is found at many points in this division (G.S.C., N.S., XV, 79AA).

NANAIMO MINING DIVISION.—Several very rich mines occur on *Texada island* (Pr. Com. W. F. Robertson).

OSOYOOS MINING DIVISION.—Associated with arsenopyrite in the *Hedley district* (G.S.C., Mem. 2, 140).

QUEEN CHARLOTTE MINING DIVISION.—Native gold occurs at *Gold harbour*, *Moresby island*, *Queen Charlotte islands* (Am. Journ. Sci., XXXI, 1911, 45).

SIMLKAMEEN MINING DIVISION.—Gold has been observed with platinum and microscopic diamonds in the peridotite of *Olivine mountain* (Mines, G.S.Br., Sum. Rep., 1910, 263).

TRAIL CREEK MINING DIVISION.—Gold occurs in connexion with the pyrrhotites of this division (G.S.C., N.S., IX, 27-28A).

MANITOBA.—

In quartz veins with pyrite, siderite, and chalcopyrite at the *Gabrielle mine* on *Rice lake* near *Wanipigow river*; also in veins at the mouth of this stream: with chalcopyrite, pyrrhotite, and arsenopyrite at *Star lake* near *Ingolf* on the Canadian Pacific railway near the eastern provincial boundary line (Pr. Com. R. C. Wallace).

NEW BRUNSWICK.—

CARLETON COUNTY.—Native gold has been observed with iron and copper pyrites in grey quartz on the *St. John river* opposite *Bull creek* (*Cobbler-Sexton mine*) (Mines, G.S.Br., Sum. Rep. 1908, 166).

NOVA SCOTIA.—

Gold occurs commonly in quartz veins cutting stratified rocks in Guysborough (G.S.C., N.S., II, 159-160P), Halifax, Lunenburg, and Queens counties and elsewhere in this province (G.S.C., N.S., IX, 132-133M).

ONTARIO.—

ALGOMA DISTRICT.—Gold occurs in small amounts in many places in this district (Ont. Bur. Min., 1900, 199).

FRONTENAC COUNTY.—*Clarendon*, 28-VIII (G.S.C., N.S., IX, 56A).

HASTINGS COUNTY.—*Madoc*, 18-V: *Marmora*, 18, 24, 28-V; 4, 5-VIII; 58-IX; 16, 17, 18-XI (Ont. Bur. Min., 1900, 199).

KENORA DISTRICT.—Gold is found at various mines on the *Lake of the Woods*, *Eagle*, *Manitou*, and *Wabigoon lakes* (Pr. Com. T. L. Walker).

PARRY SOUND DISTRICT.—*Foley township* (*McGowan mine*) (G.S.C., N.S., XI, 164A).

PETERBOROUGH COUNTY.—*Belmont*, 19, 20-I (G.S.C., N.S., VI, 79AA); *Chandos*, 32-II (G.S.C., N.S., V, 52R).

RAINY RIVER DISTRICT.—In a vein of waxy quartz carrying pyrite and chalcopyrite at *Sawbill lake* and elsewhere in this district (G.S.C., N.S., X, 61H).

THUNDER BAY DISTRICT.—*Sturgeon lake*, *Purdom township* (G.S.C., N.S., XIV, 93,94A).

TIMISKAMING DISTRICT.—*Gauthier township*: occurs in quartz veins in rocks of the Timiskaming series in *Munro township*: *Larder Lake Gold Area*—gold occurs in porphyry and carbonate rocks,

which are intersected by quartz stringers in *Hearst and McVittie townships*: *Porcupine Gold Area*—in quartz veins carrying pyrites: in pyritous schists; and in carbonate (ankerite), which is intersected by quartz veinlets in *Deloro, Tisdale, Whitney*, and other townships in this area: *Swastika Gold Area*—gold is found in quartz veins carrying iron pyrites in *Otto and Teck townships* (Pr. Com. W. G. Miller).

QUEBEC.—

Gold has been found in the wash of some of the streams of this province, more particularly the *Chaudiere* and its tributaries, and the *Little Ditton river*, which in turn falls into the *Salmon river*, the principal upper tributary of the *St. Francis river* (G.S.C., N.S., IV, 68, 69K).

COMPTON COUNTY.—In quartz veins cutting porphyrite near *East Angus* (Pr. Com. T. C. Denis).

SHERBROOKE COUNTY.—In pyritous ores of *Eustis mine, Ascot, 2, 3-IX* (Pr. Com. T. C. Denis).

TIMISKAMING COUNTY.—On the shores of *Lakes Kinawisik and Opasatika* (Pr. Com. T. C. Denis).

WOLFE COUNTY.—In pyritous ores of *Weedon mine, Weedon, 22-II* (Pr. Com. T. C. Denis).

YUKON.—

Gold has been found in great abundance in many of the tributaries of the *Yukon river* (G.S.C., N.S., IV, 142-144D), these include the *Klondike river* (G.S.C., N.S., XIV, 30B), *Stewart* (G.S.C., N.S., XIII, 42A), *Pelly* (G.S.C., N.S., III, 134B), *Lewes* (G.S.C., N.S., III, 141B), and many other similar streams and their tributaries; near the mouth of the *Wind river* and elsewhere on the *Peel river* (G.S.C., N.S., XVI, 46 CC); the *Francis river* (G.S.C., N.S., III, 85B) and at other points in this territory.

Graphite.

(Carbon.)

BRITISH COLUMBIA.—

BELLAKULA MINING DIVISION.—Disseminated graphite occurs at *Alkow harbour, Dean canal* (G.S.C., N.S., IV, 36T).

NEW BRUNSWICK.—

CARLETON COUNTY.—*Woodstock* (G.S.C., N.S., IX, 53S).

CHARLOTTE COUNTY.—*Dumbarton* (G.S.C., N.S., IX, 53S).

ST. JOHN COUNTY.—*Marble Cove mine, near St. John* (G.S.C., N.S., IX, 52S).

NORTH WEST TERRITORIES.—

Baffin island (G.S.C., N.S., X, 80, 81A); *North Bay* (G.S.C., N.S., I, 59A); west of *Davis strait* (G.S.C., N.S., II, 41R), and in islands in *Cumberland sound*.

NOVA SCOTIA.—

CAPE BRETON COUNTY.—Disseminated graphite is found near *Frenchvale* (G.S.C., N.S., IV, 36T); *Christmas island* (Pr. Com. H. Piers).

HALIFAX COUNTY.—Graphitic slate occurs near *Dartmouth* (Pr. Com. H. Piers).

INVERNESS COUNTY.—Disseminated graphite is found near *Glendale* (G.S.C., N.S., IV, 36T); and at *Big brook* near *River Denys* (Pr. Com. H. Piers).

ONTARIO.—

ADDINGTON COUNTY.—*Denbigh*, 34-VIII (G.S.C., N.S., V, 67R).

FRONTENAC COUNTY.—Graphite occurs in *Loughborough*, 11-VII (*Lacey mine*) (Mines, Min. Br., 118, 286); 6-IX: *Bedford*, 18-IX (G.S.C., N.S., IX, 53S).

HALIBURTON COUNTY.—*Lutterworth*, 15-IV (G.S.C., N.S., VI, 8J); *Wilberforce* (Pr. Com. F. D. Adams).

HASTINGS COUNTY.—*Dungannon*, 28-XIII (G.S.C., N.S., VII, 98A); *Marmora*, 13-VIII (G.S.C., N.S., VII, 11 and 12R); near *Mumfort* and *Maynooth* (Pr. Com. F. D. Adams).

RENFREW COUNTY.—A fine quality of massive graphite, often with crystals, is found in *Brougham*, 12-III (*Black Donald mine*) (G.S.C., M.R.C., 877, 26).

QUEBEC.—

Graphite occurs in abundance in connexion with the Grenville gneisses. ARGENTEUIL COUNTY.—*Chatham Gore*, 5-IX: *Grenville*, 3-II; 13, 14-V; 1, 3-VI; 3-X: *Wentworth*, 1, 2-III (G.S.C., N.S., IX, 53S).

NEW QUEBEC TERRITORY.—East coast of *Ungava bay* (G.S.C., N.S., XVI, 140A).

OTTAWA COUNTY.—*Buckingham*, 22, 24-IV; 19, 20-V; 22, 23, 25, 26, 27, 28-VI; 4, 15, 16, 21, 23, 24, 25, 26, 27-VII; 20, 21-VIII; 4, 5, 17-IX; 3, 4, 13, 17-X; 4, 5-XI: *Lochaber*, 10, 24-VII; 23, 24, 25-VIII; 28-X; 23, 24, 25, 26-XI; 23-XII: *Wakefield*, 7-I (G.S.C., N.S., IX, 53S).

PONTIAC COUNTY.—*Litchfield*, 25, 26-IX (G.S.C., N.S., IX, 53S).

Grossularite.

(Silicate of aluminum and calcium.)

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—*Texada island, Vananda river*, with bornite, chalcopyrite, etc. (Pr. Com. F. D. Adams).

QUEEN CHARLOTTE MINING DIVISION.—In fine trapezohedrons at *Lepaz bay, Graham island* (G.S.C., N.S., VII, 13R).

QUEBEC.—

ARGENTEUIL COUNTY.—Hessonite occurs with vesuvianite, pyroxene, and zircon in *Grenville* (G.S.C., N.S., IV, 33T).

MEGANTIC COUNTY.—In fine crystals near *Black lake, block A, Coferaine* (G.S.C., N.S., X, 123A).

OTTAWA COUNTY.—In beautiful crystals in *Wakefield, 6, 7-I* (G.S.C., 1880-82, 12, 13 GG): hessonite occurs, massive and crystallized, in *Portland* and *Wakefield* (G.S.C., N.S., IV, 33T).

PONTIAC COUNTY.—A honey-yellow, massive form in *Litchfield, 12-I* (G.S.C., N.S., VI, 16R).

SHERBROOKE COUNTY.—*Orford* (G.S.C., N.S., IV, 36T).

YUKON.—

WHITEHORSE MINING DIVISION.—A crystalline, massive form in the *Whitehorse Copper Belt* (G.S.C., N.S., XII, 14, 15R).

Analyses of Grossularite.

	1	2	3	4
SiO ₂	38.94	36.80	38.80	38.60
Al ₂ O ₃	15.11	20.53	22.66	22.71
Fe ₂ O ₃	6.30	2.38	1.75	} 1.60
FeO.....		0.56		
MnO.....	0.78	0.50	0.30	
CaO.....	36.93	37.41	35.00	34.83
MgO.....	1.62	1.51	0.68	0.49
H ₂ O.....	0.35	0.07		1.10
Alk.....				0.47
	100.03	99.76	99.19	99.80
Sp. Gr.....	3.603	3.623	3.525	3.52-3.53

1. From Whitehorse Copper Belt by Johnston (Hoffmann, G.S.C., N.S., XII, 14R).
2. From Litchfield by Wait (Hoffmann, G.S.C., N.S., VI, 16R).
3. From Wakefield by Bullmann (Kunz, Am. Journ. Sci., Ser. 3, XXVII, 306).
4. From Orford by Hunt (Geol. Can., 1863, p. 496).

Gummite.*(Alteration product of uraninite.)**(Hydrous urano-silicate of lead, iron, calcium, etc.)*

NOVA SCOTIA.—

LUNENBURG COUNTY.—In pegmatite dykes near *Lake Ramsay*, *New Ross*.

QUEBEC.—

OTTAWA COUNTY.—*Villeneuve mica mine* (G.S.C., N.S., II, 10T): in pegmatite dykes in *Wakefield*, 25-VII (G.S.C., N.S., XVI 229A).**Gypsum.***(Hydrated sulphate of calcium.)*

ALBERTA.—

Gypsum is found at different places along the *Athabaska river* (G.S.C., N.S., V, 35D); at *Labuite* on the *Slave river* (G.S.C., N.S., XV, 167A); *Peace point* on the *Peace river* (G.S.C., N.S., V, 64D) and frequently in crystals in the Pierre shales of the Province.

BRITISH COLUMBIA.—

ASHCROFT MINING DIVISION.—*Spence bridge* (G.S.C., N.S., IX, 60S); *Thompson river*, opposite *Spatsum* (Mines, B. C., 1907, 134).KAMLOOPS MINING DIVISION.—Large deposits of gypsum on the *Salmon river* 20 miles from the mouth, also on the *Thompson river*, 20 miles north of *Kamloops* (G.S.C., N.S., XVI, 60S).NICOLA MINING DIVISION.—Gypsum is worked commercially at *Merritt* (Pr. Com. W. F. Robertson).SIMILKAMEEN MINING DIVISION.—Gypsum is found near *Granite creek* (Mines, B.C., 1913, 240).VERNON MINING DIVISION.—*Okanagan lake* (Pr. Com. W. F. Robertson).

MANITOBA.—

Gypsum is found in crystals in Pierre shales and is also mined extensively at a locality north of *Lake St. Martin*, east of *Lake Manitoba* (G.S.C., N.S., XV, 188-190A). Beds of gypsum have also been discovered by boring in the Ordovician formation in the *Red River valley*, as at *Bird hill* near *Dominion city* (Pr. Com. R. C. Wallace).

NEW BRUNSWICK.—

- ALBERT COUNTY.—Extensive deposits of gypsum occur in the parish of *Hillsborough* (G.S.C., N.S., X, 84M).
- KINGS COUNTY.—Gypsum occurs in greater or less abundance in *Sussex* and *Upham* (G.S.C., N.S., X, 79S), at the former locality in crystals containing symmetrically distributed sand grains.
- ST. JOHN COUNTY.—*Quaco head* (G.S.C., N.S., XIII, 18M).
- VICTORIA COUNTY.—Extensive deposits of gypsum occur at *Plaster Rock* on the *Tobique river* (Mines, Min. Br., No. 84, p. 90).
- WESTMORLAND COUNTY.—Extensive deposits occur at *Salisbury* and elsewhere in this county (G.S.C., N.S., X, 79S).

NORTH WEST TERRITORIES.—

- LITTLE BUFFALO RIVER, GREAT SLAVE LAKE, AND SALT RIVER.—*Slave river* (G.S.C., N.S., XV, 159A); and "*Rock by the Riverside*" halfway between *Liard and Bear rivers* (G.S.C., N.S., II, 18R).

NOVA SCOTIA.—

- Gypsum occurs in various forms at many points throughout the province.
- ANTIGONISH COUNTY.—*North river (Antigonish Harbour)* (Pr. Com. H. Piers): *Ogdens Cliffs; Ohio and James rivers* (Mines, Min. Br., No. 84, 61).
- CAPE BRETON COUNTY.—*Boularderie island* (G.S.C., 1875-76, 406); *East bay* (Mines, Min. Br., No. 84, 57).
- COLCHESTER COUNTY.—*Moose island* (Mines, G.S.Br., Sum. Rep., 1907, 101); *Old Barns* (Pr. Com. H. Piers).
- CUMBERLAND COUNTY.—*Amherst head; Canfield creek* near *Upper Pugwash* (Pr. Com. H. Piers); *Philip river, Wallace harbour* (G.S.C., N.S., X, 78S).
- HALIFAX COUNTY.—*Gay and Musquodoboit rivers* (Mines, Min. Br., No. 84, 68).
- HANTS COUNTY.—Gypsum occurs in fibrous and other forms at *Cheverie* (G.S.C., N.S., XI, 79S); *Dutch Settlement* near *Elmsdale* (Pr. Com. H. Piers); *Hantsport; Horn Settlement* near *Enfield* (Pr. Com. H. Piers); *Walton* (Pr. Com. H. Piers and *Windsor* (G.S.C., N.S., XI, 79S).
- INVERNESS COUNTY.—*Margaree* (Mines, Min. Br., 84, 46); *Cheticamp* (Mines, Min. Br., No. 84, 43).
- KINGS COUNTY.—*Blomidon* and elsewhere in this county (G.S.C., N.S., VII, 98A).
- PICTOU COUNTY.—*Ferrona Junction* and elsewhere in this county (Mines, Min. Br., No. 84, 62).
- RICHMOND COUNTY.—*Campbell cove, Hay cove, and McNab creek* (Mines, Min. Br., No. 84, 58).

VICTORIA COUNTY.—*Ingonish* (Mines, Min. Br., No. 84, 43); *Lieutenant pond*; *Little Narrows*; *MacIvor point*; *McKay point*, etc., in *Washabuck peninsula* (Mines, Min. Br., No. 84, 51); near *Baddeck* (Pr. Com. H. Piers).

See also Alabaster.

ONTARIO.—

BRANT COUNTY.—*Brantford* and *South Dumfries* (G.S.C., N.S., IV, 36T).

FRONTENAC COUNTY.—Selenite occurs in *Loughborough, 7-VIII* (*Foxton mine*) (Ont. Bur. Min., 1900, 199).

HALDIMAND COUNTY.—In *North* and *South Cayuga, Oneida* and *Seneca* (G.S.C., N.S., IV, 36T).

INTERLAKE PENINSULA.—Rocky masses of granular and compact gypsum, more or less mixed with dolomite, characterize the Onondaga of this peninsula; also along the valley of the *Grand river* (G.S.C., N.S., X, 79S).

LANARK COUNTY.—In *North Burgess, 4-VII* (*MacLaren's mines*) (Can. Rec. Sci., IV, 476).

TIMISKAMING DISTRICT.—*Moose river*, 38 miles above *Moose Factory* (G.S.C., 1875-76, 321).

QUEBEC.—

Magdalen islands (G.S.C., N.S., X, 79S).

SASKATCHEWAN.—

Crystals of selenite are found in connexion with the Pierre shales of this province (G.S.C., N.S., I, 34C).

Gyrolite.

(*Hydrated silicate of calcium.*)

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Gyrolite is found on apophyllite in trap, about 25 miles southwest of *Cape Blomidon* between *Margaretville* and *Port George* (G.S.C., N.S., IV, 37T).

Analysis of gyrolite by How (Edin. New Phil. Journ., XIV, 117, 1861) and (Am. Journ. Sci., XXXII, 13, 1861).

SiO ₂	Al ₂ O ₃	CaO	MgO	K ₂ O	H ₂ O
51.90	1.27	29.95	0.08	1.60	15.05—99.85

Halite.

(*Chloride of sodium.*)

ALBERTA.—

Halite occurs as an efflorescence at *La Saline* and elsewhere on the *Athabaska river* (G.S.C., N.S., V, 35D).

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—*Nanaimo* (G.S.C., N.S., III, 112R).

SKEENA MINING DIVISION.—Halite is found in a basin on the north side of *Skeena river* about 40 miles up from the mouth. It is said to cover an area of several hundred acres, and has been drilled into for 25 feet. Salt is being produced from the brine pumped up. (Pr. Com. W. F. Robertson).

VICTORIA MINING DIVISION.—*Saltspring island* (G.S.C., N.S., III, 112R).

MANITOBA.—

Brine springs are common in the Devonian west of *Lakes Manitoba* and *Winnipegosis* (G.S.C., N.S., V, 219E).

NORTH WEST TERRITORIES.—

Halite occurs as an efflorescence on clay and also in small natural evaporating basins about springs on *Salt river* (G.S.C., N.S., IV, 63D).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—*Antigonish* (Pr. Com. H. Piers).

HANTS COUNTY.—At *Avondale* in the old *McDonald* and *Allison quarries*, lumps of rock salt weighing from one to two pounds have been found, also glauber salt, calcspar, aragonite, carbonate, and oxide of iron (Mines, Min. Br., No. 84, 150); halite occurs as brine at *Cheverie* and in small lenses in gypsum at *Newport*; it also occurs at *Walton* as brine (Pr. Com. H. Piers).

INVERNESS COUNTY.—*Whycocomagh* (Pr. Com. H. Piers).

ONTARIO.—

An important deposit of rock salt is known to exist along the eastern shore of Lake Huron, embracing the counties of Bruce, Huron, and Lambton. It was first met with at *Goderich*, in 1866, at a depth of 964 feet; in the year following at *Clinton*, at a depth of 1,180 feet, and in the succeeding year at *Kincardine*, at a depth of about 900 feet; subsequently at *Seaforth* at 1,035 feet, and again at *Kingstones Mills* in *Warwick* at 1,200 feet. A boring made in *Goderich* in 1876, which was carried to a depth of 1,517 feet, has shown the existence of no less than six beds of rock salt, one of which is close upon 31 feet, and another very nearly 35 feet in thickness. For geological details, records of borings, and analyses of brines and salt, see following reports by Dr. T. Sterry Hunt—“On Brine-springs and Salt” Rep. Geol. Can., 1863-66, pp. 263-272. “On the Goderich Salt Region,” *ib.*, 1866-69, pp. 211-242, and a second report on the Goderich Salt region, *ib.*, 1876-77, pp. 221-243 (G.S.C., N.S., IV, 37T). See also G.S.C., N.S., XV, 214-229S).

Halloysite.*(Hydrated silicate of aluminum.)*

ALBERTA.—

The variety called smectite has been found in a layer $2\frac{1}{2}$ inches thick in the Belly River formation in the foothills west of *Edmonton*.

Halotrichite.*(Hydrous sulphate of aluminum and iron.)*

NOVA SCOTIA.—

CAPE BRETON COUNTY.—Halotrichite has been found in some heaps of shale and slack coal at the *Glace Bay coal mines* (G.S.C., N.S., IV, 37T).

Analysis of halotrichite by Gilpin (N.S. Inst. Nat. Sci., VI, 1883-86, p. 175).

So	Al ₂ O ₃	FeO	H ₂ O
39.715	9.131	16.570	35.097—100.513

Harmotome.*(Hydrous silicate of aluminum, barium, and potassium.)*

ONTARIO.—

THUNDER BAY DISTRICT.—Harmotome occurs in small crystals implanted on prisms of calcite resting on a layer of crystalline quartz, coating the surface of a dark grey shale at the *Beaver mine, O'Connor township* (G.S.C., N.S., V, 16R).

Analysis of harmotome by Hoffmann (G.S.C., N.S., V, 16R).

SiO ₂	Al ₂ O ₃	BaO	CaO	K ₂ O	Na ₂ O	H ₂ O	Sp. Gr.
46.36	17.16	21.18	2.25	?	?	14.54—101.49	2.39

Hastingsite.*(Hornblende.)**(Amphibole.)**(Silicate of aluminum, iron, calcium, etc.).*

ONTARIO.—

HALIBURTON COUNTY.—*Glamorgan, 32-II* (Guide Book to Haliburton and Hastings region by F. D. Adams and A. E. Barlow, International Geological Congress, 1913, p. 76).

HASTINGS COUNTY.—In *Dungannon township, York river* (G.S.C., N.S., IX, 50A).

Analysis of hastingsite from York river, Dungannon township, by Harrington (Can. Rec. Sci., VII, pp. 77-87).

SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	CaO	MgO	K ₂ O	Na ₂ O
34.184	1.527	11.517	12.621	21.979	0.629	9.867	1.353	2.286	3.290
H ₂ O (ign.)				Sp. Gr.					
0.348				—99.601		3.433			

Heliotrope.

(Quartz.)

(Oxide of silicon.)

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Heliotrope has been found in small nodules or fragments of rock at the base of *Chute cove* (G.S.C., N.S., IV, 37T).

CUMBERLAND COUNTY.—Heliotrope has been found in situ at *Two Islands* (G.S.C., N.S., IV, 37T).

Hematite.

(Sesquioxide of iron.)

BRITISH COLUMBIA.—

BOUNDARY DISTRICT.—Hematite is a common constituent in small quantities in the ores of this division (G.S.C., N.S., XV, 118A).

CLINTON MINING DIVISION.—*Clinton* (G.S.C., N.S., VII, 313B); *Whitewater lake* (Pr. Com. W. F. Robertson).

FORT STEELE MINING DIVISION.—Near *Bull river* (G.S.C., N.S., I, 151B): a bed some 4 feet thick occurs 8 miles west of *Fernie* (Pr. Com. T. L. Walker).

NELSON MINING DIVISION.—A large body of hematite occurs at *Kitchener*; also on a creek flowing into *Crawford bay*, *Kootenay lake* (Pr. Com. W. F. Robertson).

VICTORIA MINING DIVISION.—*Sooke Iron mine*, *Juan de Fuca strait* (G.S.C., N.S., II, 17T).

MANITOBA.—

LAKE WINNIPEG.—Pisolitic hematite occurs on *Black island* (G.S.C., N.S., IV, 46, 47S).

NEW BRUNSWICK.—

CARLETON COUNTY.—Hematite occurs with magnetite near *Woodstock* (G.S.C., N.S., I, 20 G).

GLOUCESTER COUNTY.—Concretionary nodules at *Clifton* (Mines G.S. Br., Sum. Rep., 1910, 222).

KINGS COUNTY.—In fine crystals near *Sussex* (G.S.C., N.S., III, 76S).

ST. JOHN COUNTY.—*Black river* (G.S.C., N.S., IV, 37T).

NORTH WEST TERRITORIES.—

Prince Regent inlet, between *Somerset* and *Coburn islands* (G.S.C., N.S., 11, 45R); *Baring*, *Bathurst*, and *Byam-Martin islands* (G.S.C., N.S., II, 46R). Specularite and finely fibrous massive hematite

occur in a number of places on the east side of *Great Bear lake* also at *Rocher Rouge*, *MacTavish*, and *Écho bays*. An extensive development of micaceous hematite and quartz is to be found in the more southerly member of *Les Iles du Large*, *Great Slave lake* (G.S.C., N.S., XII, 21R).

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—*Torbrook* (G.S.C., N.S., V, 80SS).

ANTIGONISH COUNTY.—*Doctors Brook* (G.S.C., N.S., II, 44A); *College Grant (Lochaber)* (Pr. Com. H. Piers); *McNeil brook* (G.S.C., N.S., II, 44A); *Springfield* (Pr. Com. H. Piers).

CAPE BRETON COUNTY.—*Barachois*; *Boisdale*; *Gabarus*; *Gillis lake*; *George River mountain*; and *Mira river* (Pr. Com. H. Piers).

COLCHESTER COUNTY.—*Little Tatamagouche river* (G.S.C., N.S., V, 182P); *Londonderry* (G.S.C., N.S., IV, 46T).

CUMBERLAND COUNTY.—In good crystals at *Cape Spencer* (G.S.C., N.S., III, 76S); *Brookville*; *East river*, head of *Bass river* (Pr. Com. H. Piers).

DIGBY COUNTY.—In good crystals at *Digby Neck* (G.S.C., N.S., IV, 58T).

GUYSBOROUGH COUNTY.—Hematite is met with at *Erinville* on *Salmon river* (Pr. Com. H. Piers); at *Melrose* and *Roman valleys* (G.S.C., N.S., IV, 46T).

HANTS COUNTY.—*Cambridge*, *Grand lake*, near *Mailand* (Pr. Com. H. Piers).

INVERNESS COUNTY.—*Whycocomagh* (Pr. Com. H. Piers).

PICTOU COUNTY.—*Sutherland*; *East and West rivers* (G.S.C., N.S., IV, 45A); *McLellan mountain* (G.S.C., N.S., I, 62A).

RICHMOND COUNTY.—*Loch Lomond*, *Grande Anse* (Pr. Com. H. Piers); *St. Peters* (G.S.C., N.S., IV, 46T).

ONTARIO.—

ADDINGTON COUNTY.—*Oso*, 28-V (G.S.C., N.S., IV, 49A).

ALGOMA DISTRICT.—In the neighbourhood of *Bruce Mines* (G.S.C., N.S., XVI, 186, 187A): *Deroche*, 2, 3, 4, 5-I.

FRONTENAC COUNTY.—*Bedford*, 2-VII (Ont. Bur. Min., 1900, 199); 2-XIV (G.S.C., N.S., XIV, 181A): *Clarendon*, 29-XIV (Ont. Bur. Min., 1892, 79); *Loughborough*, 1-IX (Mines, Min. Br., 118, 287). *Portland*, 4-IX (Ont. Bur. Min., 1900, 199); 7-X (Ont. Bur. Min., 1892, 81): *South Canonto*, 7, 8-III (Ont. Bur. Min., 1900, 199): *Storrington*, 20-X (G.S.C., N.S., XII, 76-1); 13-XI (G.S.C., N.S., XIV, 181A).

HASTINGS COUNTY.—*Elaevir*, 2-IV (Ont. Bur. Min., 1900, 199); *Huntingdon*, 9-XIV (G.S.C., N.S., X, 118A): *Madoc*, 12-V; 10-VI: *Marmora*, 13-X (Ont. Bur. Min., 1900, 199).

- LANARK COUNTY.—*Bathurst*, 2-IV; 20-X; 23-XI (Ont. Bur. Min., 1900, 199); *Beckwith*, 14-XI (G.S.C., N.S., IV, 21R); *Dalhousie*, 1-IV (Ont. Bur. Min., 1900, 199); *Darling*, 16-IV; 22, 23, 24, 26, 27-XI; 26, 27-XII (Ont. Bur. Min., 1900, 199).
- LEEDS COUNTY.—*Bastard*, 23-X (G.S.C., N.S., XII, 79-I); *South Crosby*, 19-IX (G.S.C., N.S., II, 18T).
- MANITOULIN DISTRICT.—Hematite has been discovered at a number of points in *Michipicoten mining division* (Ont. Bur. Min., 1900, 199).
- RAINY RIVER DISTRICT.—Hematite has been discovered at a number of points about *Lake of the Woods*.
- RENFREW COUNTY.—*McNab*, 6-C and D (Ont. Bur. Min., 1900, 199).
- QUEBEC.—
- BROME COUNTY.—Specularite occurs in *Brome*, 1, 4, 5, 6-III; 4, 5, 6-IV; *Sutton*, 4, 5, 6, 7-IX; 7, 9-XI (G.S.C., N.S., IV, 16, 17K).
- CHICOUTIMI COUNTY.—In patches in pink pegmatite at *Commissioner lake* (G.S.C., N.S., V, 51A).
- FRONTENAC COUNTY.—*Spalding*, 10, 11-VIII (Pr. Com. T. C. Denis).
- MISSISQUOI COUNTY.—*St. Armand* (G.S.C., N.S., IV, 16K).
- NEW QUEBEC TERRITORY.—*Koksoak river* (G.S.C., N.S., VII, 17R); and *Menihék lake*, *Hamilton river* (G.S.C., N.S., VII, 18R).
- OTTAWA COUNTY.—Hematite occurs with magnetite at the *Haycock mine*, *Hull*, 1-XI (G.S.C., N.S., XII, 111J); *Templeton*, 28-VI, and elsewhere in this county (G.S.C., N.S., IV, 15K).
- PONTIAC COUNTY.—Hematite occurs with magnetite at the *Bristol mines*, *Bristol township* (G.S.C., N.S., IV, 12-13K).
- PORTNEUF AND QUEBEC COUNTIES.—In crystalline masses in large pegmatite veins on the *Jacques Cartier* and *St. Anne rivers* (G.S.C., N.S., V, 67L).
- SASKATCHEWAN.—
- Hematite occurs with limonite at *Black bay*, *Lake Athabaska* (G.S.C., N.S., VI, 4AA).
- YUKON.—
- PEEL RIVER.—Float hematite has been noted in considerable abundance in the neighbourhood of the *Wind*, *Bear*, and *Bonnet Plume rivers* (G.S.C., N.S., XVI, 23CC).
- WHITEHORSE MINING DIVISION.—Crystalline, massive, specular iron with intermixed carbonate of copper at the *Pueblo claim* (G.S.C., N.S., XIII, 50A).

Hemimorphite.

(See *Calamine*.)

(*Hydrous silicate of zinc*.)

Hessite.*(Telluride of silver.)***BRITISH COLUMBIA.—**

GREENWOOD MINING DIVISION.—With altaite, native gold, native copper, and native tellurium in a segregated quartz vein carrying chalcopryrite, pyrrhotite, and chalcocite at the *Lake View claim on Long lake*: with native gold, chalcopryrite, pyrite, and galena in a quartz vein at the *Norih Star claim* also on *Long lake* (G.S.C., N.S., VIII, 11 and 12R).

OSOYOOS MINING DIVISION.—With petzite, native gold, etc., in a quartz and siderite vein in the *Calumet claim, Kruger mountain, Osoyoos lake* (G.S.C., N.S., VIII, 11, 12R).

ONTARIO.—

RAINY RIVER DISTRICT.—In lead-grey, plate-like masses with quartz and a very little pyrite and chalcopryrite at *Gold creek, Pine Portage bay, Lake of the Woods* (Ont. Bur. Min., 1895, 105).

TIMISKAMING DISTRICT.—With native gold in a quartz-ankerite deposit at *Powell claim* (M. E. 22) Deloro township (Pr. Com. W. G. Miller).

YUKON.—

CONRAD MINING DIVISION.—In association with gold, sylvanite, etc., in this district (Mines, G.S.Br., Sum. Rep., 1909, 54).

Analyses of Hessite.

	1	2
Te.....	37.33	36.72
Ag.....	60.68	63.28
Au.....	2.29	.....
	100.30	100.00
Sp. Gr.....	.....	7.968

1. From Lake View claim by H. A. and G. A. Guess (Hoffmann, G.S.C., N.S., VIII, 12R).
2. From Gold creek by Lawson (Coleman, Ont. Bur. Min., 1895, 105).

Hessonite.(See *Grossularite*.)

(Silicate of calcium and aluminum.)

Heterogenite.

(Hydrated oxide of cobalt.)

ONTARIO.—

TIMISKAMING DISTRICT.—In small black, spheroidal masses with native silver in some of the veins near *Cobalt, Coleman township* (G.S.C., N.S., XIV, 158H).

Heubachite.

(Hydrated oxide of cobalt, nickel, and iron.)

ONTARIO.—

TIMISKAMING DISTRICT.—Heubachite occurs occasionally with smaltite at the *Nipissing mine, Cobalt, Coleman township*.

Heulandite.

(Hydrous silicate of aluminum and calcium.)

BRITISH COLUMBIA.—

SLOCAN MINING DIVISION.—Heulandite is found at *Fishermalden mine, Fourmile creek* (Pr. Com. W. F. Robertson and Wm. Thomson).

TRAIL CREEK MINING DIVISION.—*Rossland (War Eagle mine)*.

NEW BRUNSWICK

RESTIGOUCHE COUNTY.—DALHOUSIE (Pr. Com. T. L. Walker).

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—*St. Croix cove, Chute cove* (Jackson and Alger, Mem. Amer. Acad., IX, Aug., 1831), and *North mountain* (G.S.C., N.S., VII, 97A).

CUMBERLAND COUNTY.—*Cape d'Or, Five Islands* (G.S.C., N.S., V, 55AA); *Isle Haute; Partridge island* (G.S.C., N.S., IV, 38T); *Spencer island* (G.S.C., N.S., V, 55AA); *Swan creek* (N.S. Inst., Nat. Sci., V, 294); *Two Islands* (G.S.C., N.S., IV, 38T).

DIGBY COUNTY.—*Digby Neck* (G.S.C., N.S., VI, 21Q); *Mink cove* (N.S. Inst. Nat. Sci., V, 294); *Waterford* (G.S.C., N.S., IX, 147M); *William brook* (N.S. Inst. Nat. Sci., V, 294).

KINGS COUNTY.—*Black Rock, Cape Blomidon, Hall harbour, Long point* (G.S.C., N.S., IV, 38T); *Morden* (G.S.C., 1882-84, 26L).

Heulandite also occurs at other points along the Bay of Fundy coast in this province.

Hexahydrite.*(Hydrated sulphate of magnesium.)*

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Halfway between *Cargill* and *Scottie creek*, *Bonaparte* river (Mines, G.S.Br., Sum. Rep., 1910, 256, 257).

Analysis of hexahydrite by Johnston (Mines, G.S.Br., Sum. Rep. 1910, 256, 257).

SO ₂	MgO	H ₂ O	—	100·00	Sp. Gr.
35·19	17·48	47·33	—	100·00	1·757

Hornblende.*(Amphibole.)**(Silicate of calcium, iron, and aluminum.)*

BRITISH COLUMBIA.—

LILLOOET MINING DIVISION.—Blackish-green, fibrous confused aggregates near *Foster Bar*, *Fraser* river (G.S.C., N.S., VI, 17R).

NEW BRUNSWICK.—

Hornblende is abundant as a constituent of some of the Archæan rocks of this province.

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—*Ashe inlet*, *Big island* (G.S.C., N.S., I, 58, 59A).

ONTARIO.—

Fibrous hornblende is of common occurrence in the hornblende schists of the Huronian of the northern and western parts of the province. Good specimens have been found in the Grenville series at the following localities:—

FRONTENAC COUNTY.—Crystals have been found in *Bedford*, 21-IX (Ont. Bur. Min., 1900, 199).

LANARK COUNTY.—*Bathurst*, 11-VIII, in fine black or dark green cleavable masses (G.S.C., 1873-74, 201); and on 20-IX, in fine crystals with pyroxene, orthoclase, scapolite, apatite, and titanite in a calcareous vein cutting granite (G.S.C., 1882-84, 15L); and in the anorthosite of *South Sherbrooke* (Ont. Bur. Min., 1899, 227).

RENFREW COUNTY.—In dark green prisms at *High falls* and *Ragged chute* on the *Madawaska* river (G.S.C., N.S., IV, 51T): in *Ross*, 7-I; 7-IX: *Sebastopol*, 23, 32-XII (Ont. Bur. Min., 1900, 199).

See also Hastingsite.

QUEBEC.—

Hornblende is a common constituent of the feldspathic rocks of the Grenville series.

ARGENTEUIL COUNTY.—Edenite occurs in fine specimens in *Grenville*, 15-IX (G.S.C., N.S., XIII, 13, 14R) (Dr. Stefan Kreutz; Sitzungsberichten der Kaiserl. Akademie der Wissenschaften in Wien; Mathem-Naturw. Klasse; Bd. CXVII, Abt. 1, Juli, 1908).

BROME COUNTY.—In the trachytes of *Brome mountain* (G.S.C., N.S., IV, 38T).

CHICOUTIMI COUNTY.—Extensive developments of hornblendic rock occur at *Lake St. John* (G.S.C., N.S., IV, 38T).

GASPE COUNTY.—Beds of black hornblende are associated with the serpentines of *Mount Albert*, *Shickshock mountains* (G.S.C., N.S., IV, 38T).

IBERVILLE COUNTY.—Hornblende is found in the diorites of *Mount Johnson* (G.S.C., N.S., IV, 38T).

OTTAWA COUNTY.—*Hull*, 12-XVI (Pr. Com. T. L. Walker). Bigelow, 52-V (Parker mine); Hincks, 23-III (Mines, Min. Br., 118, 287). Wright, 15-D (Father Guay mine) (Mines, Min. Br., 118, 287).

PONTIAC COUNTY.—*Calumet island*, *Grand falls* (Pr. Com. T. L. Walker).

SHEFFORD COUNTY.—This mineral is found in the trachytes of *Shefford mountain* (G.S.C., N.S., IV, 38T).

YAMASKA COUNTY.—Hornblende is found in the diorites of *Yamaska mountain* (G.S.C., N.S., IV, 38T).

Analyses of Hornblende.

	1	2	3	4	5	6	7
SiO ₂	38.79	43.76	40.02	41.40	45.50	46.09	45.79
TiO ₂		0.78			0.68		1.20
Al ₂ O ₃	11.51	8.33	15.55	15.39	12.25	12.93	11.37
Fe ₂ O ₃	16.88	6.90	3.44	7.01	0.28	0.79	0.42
FeO.....	15.96	10.47	8.60	7.17	0.75	none	0.42
MnO.....	0.62	0.50		trace	0.11	0.36	0.39
MgO.....	2.86	12.63	14.37	10.31	20.63	20.82	21.11
CaO.....	11.57	9.84	12.21	12.53	13.31	12.91	12.71
K ₂ O.....	1.36	1.28	2.13	1.56	1.76	1.84	1.69
Na ₂ O....	0.71	3.43	2.40	3.58	2.76	2.36	2.51
H ₂ O.....	0.92	0.65	1.81	0.81	0.40	0.66	0.67
F.....		1.82			2.80	2.84	2.76
O=F....	101.18	100.39	100.53	99.76	101.23	101.60	101.04
		0.76			1.17	1.19	1.16
Sp. Gr...	101.18	99.63	100.53	99.76	101.06	100.41	99.88
	3.404	3.290		3.188	3.110	3.108	

1. From Foster Bar by Wait (Hoffmann, G.S.C., N.S., VI, 17R).
2. From Renfrew county by Stanley (Am. Journ. Sci., Ser. IV, XXIII, p. 39).
3. From Bathurst by Harrington (G.S.C., 1873-74, 201).
4. From the anorthosite of South Sherbrooke by Lawson (Ont. Bur. Min., 1899, 227).
5. From Grenville, 15-IX, by Harrington (Am. Journ. Sci., Ser. IV, Vol. XV, 392).
6. From Grenville, 15-IX, by Johnston (Hoffmann, G.S.C., N.S., XIII, 13, 14R).
7. From Grenville, 15-IX, by Stanley (Am. Journ. Sci., Ser. IV, XXIII, p. 49).

Hornstone.

(*Chert.*)

(*Silicon dioxide.*)

ONTARIO.—

Hornstone occurs in great abundance in nodular masses and thin layers in the Corniferous formation, and occasionally in a similar form in the limestones of the Trenton and Niagara group; also in layers in the lower beds of the silver-bearing rocks of *Thunder bay* (the lowest division of the upper copper-bearing rocks of Logan), *Lake Superior* (G.S.C., N.S., IV, 38T).

QUEBEC.—

ARGENTEUL COUNTY.—In veins traversing syenite in the township of *Grenville* (G.S.C. N.S., IV, 38T).

Howlite.

(*Hydrous silico-borate of calcium.*)

NOVA SCOTIA.—

HANTS COUNTY.—This mineral was first identified as a new species by the late Professor Henry How of Windsor and described by him under the name of silicoborocalcite. It occurs in the form of nodules, ranging in size from that of a pigeon's egg to that of a man's head, embedded in anhydrite and gypsum at *Brockville*, and in gypsum at *Newport Station*, *Noel*, *Wentworth*, etc. (G.S.C., N.S., IV, 38T).

Analyses of Howlite.

	1	2
SiO ₂	15.25	15.33
B ₂ O ₃	44.22	44.52
CaO.....	28.69	27.94
Na ₂ O.....		0.53
K ₂ O.....		0.13
H ₂ O.....	11.84	11.55
Sp. Gr.....	2.55	2.59

1. By How (Phil. Mag. IV, Vol. XXV, 32-41).

2. By Penfield and Sperry (Am. Journ. Sci., Ser. 3, Vol. XXXIV, 220-223).

Both analyses give the centesimal composition after allowance for the presence of gypsum.

Hubnerite.

(*Tungstate of manganese.*)

BRITISH COLUMBIA.—

ATLIN MINING DIVISION.—Hubnerite is found in blades in quartz in this division (Mines, Min. Br., No. 25, 52).

OSOYOOS MINING DIVISION.—*Ashmola river, Cathedral mountain* (Mines, G.S. Br., Sum. Rep., 1908, 167).

NOVA SCOTIA.—

INVERNESS COUNTY.—Hubnerite occurs with chalcopryrite and hydrous mica in quartz at *Emerald on Tom Murphy's brook* (G.S.C., N.S., XI, 10R).

LUNENBURG COUNTY.—Hubnerite occurs near *Lake Ramsay, New Ross* (Mines, G.S.Br., Sum. Rep., 1907, 82).

Analysis of hubnerite from Emerald by Johnston (Hoffmann, G.S.C., N.S., XI, 10R).

Wo ₃	MoO ₃	MnO	FeO	CaO	MgO	SiO ₂	Sp. Gr.
74.28	trace	22.73	0.47	0.02	0.86	1.33—99.69	6.975

Humboldtine.

(*Hydrous oxalite of iron.*)

ONTARIO.—

LAMBTON COUNTY.—Humboldtine has been observed as a sulphur-yellow incrustation upon black schists at *Kettle point, Bosanquet township* (G.S.C., N.S., IV, 39T).

Huntelite.*(Arsenide of silver.)*

ONTARIO.—

THUNDER BAY DISTRICT.—*Silver islet, Lake Superior* (G.S.C., N.S., IV, 18T).

See also Animikite and Macfarlanite.

Huronite.*(Silicate of aluminum, iron, calcium magnesium, potassium, and sodium.)*

ONTARIO.—

ALGOMA DISTRICT.—*Timber Limit 90, north of Murray lake* (Pr. Com. F. D. Adams): about 4 miles northwest of *Pogamasing Station* on the Canadian Pacific railway (Trans. R.S.C., IV, Sec. III, 1896, 82): huronite is found in situ in many places near *Missinaibi station* on the Canadian Pacific railway, in the vicinity of *Lake Huron* and elsewhere (G.S.C., N.S., VI, 32AA).

QUEBEC.—

ASHUANUPI TERRITORY.—*Ashuanipi river* (G.S.C., N.S., VIII, 275L).

MISTASSINI TERRITORY.—North of *Lake Kawachagami* (G.S.C., N.S., VIII, 350L).

NEW QUEBEC TERRITORY.—*Eastmain river* (G.S.C., N.S., VIII, 253L).

Analysis of huronite from about 4 miles northwest of *Pogamasing Station*, Canadian Pacific railway, by Harrington (Trans. R.S.C., IV, Sec. III, 1896, 82).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	CaO	MgO	K ₂ O	Na ₂ O
47.07	32.49	0.97	....	13.30	0.22	2.88	2.03
H ₂ O (ign.)			Sp. Gr.				
2.72 —101.68			2.814				

For details concerning this substance see Barlow (The Ottawa Naturalist, Vol. 2, 1895, p. 25).

Hyalite.*(Opal.)**(Hydrated oxide of silicon.)*

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Good specimens of this mineral in dark grey, foliated basalt are found near *Hihhum lake, Bonaparte river* (G.S.C., N.S., IV, 28R).

KAMLOOPS MINING DIVISION.—*Dropping Water creek, Stump lake* (G.S.C., N.S., III, 110R).

Hyacinth.*(Zircon.)**(Silicate of zirconium.)*

QUEBEC.—

ARGENTEUIL COUNTY.—Cherry-red, transparent crystals of zircon are mentioned by Dr. Hunt as occurring in the crystalline limestone of the township of *Grenville* (G.S.C., N.S., IV, 39T).

Hydromagnesite.*(Hydrated carbonate of magnesium.)*

BRITISH COLUMBIA.—

ATLIN MINING DIVISION.—Extensive deposits of earthy hydromagnesite occur in the neighbourhood of *Atlin* (G.S.C., N.S., XI, 11R).

CLINTON MINING DIVISION.—Hydromagnesite has been met with in considerable abundance in the vicinity of *108-Mile House* on the *Cariboo road* (G.S.C., N.S., XI, 10R).

NORTH WEST TERRITORIES.—

GREAT BEAR LAKE.—Hydromagnesite is found in white, pinkish, amorphous incrustations on the upper surfaces of cavities in a porous dolomite at *Dease bay* (G.S.C., N.S., XII, 22R).

Analysis of hydromagnesite from *108-Mile House* by Johnston (G.S.C., N.S., XI, 11R).

CO ₂	MgO	CaO	Al ₂ O ₃	Fe ₂ O ₃	P ₂ O ₅	SiO ₂	H ₂ O
37.03	43.71	0.10	0.02	0.04	0.30	0.38	17.79

Insol.

SiO₂ 1.35Al₂O₃ 0.10Fe₂O₃ 0.03

CaO 0.03

MgO 0.02 1.53—100.90

Hydronephelite.*(Hydrous silicate of aluminum and sodium.)*

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—In white, pinkish spherules in the nepheline-syenites of *Ice river*, *Beaverfoot river*, *Kicking Horse river* (G.S.C., N.S., XII, 13R). Sp. Gr. 2.243-2.475, by Barlow (G.S.C., N.S., XII, 13R).

Analysis of hydronephelite by Johnston (loc. cit).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	Na ₂ O	K ₂ O	H ₂ O
42.80	28.50	0.34	1.90	14.33	0.30	10.81 —98.98

Hypersthene.*(Silicate of iron and magnesium.)*

QUEBEC.—

CHARLEVOIX COUNTY.—Near *Bay St. Paul*, in the parish of *St. Urbain* (G.S.C., N.S., IV, 39T).

MONTMORENCY COUNTY.—Hypersthene occurs in broad lamellar masses with andesite and ilmenite constituting a rock at *Chateau Richer* (G.S.C., N.S., IV, 39T).

Analyses of hypersthene from *Chateau Richer* by Hunt (Geol. Can. 1863, p. 468).

Analyses of Hypersthene.

	1	2
SiO ₂	51.35	51.85
Al ₂ O ₃	3.70	3.90
FeO.....	20.56	20.20
CaO.....	1.68	1.60
MgO.....	22.59	21.91
Vol.....	0.10	0.20
	99.98	99.66
Sp. Gr.....	3.41	

Ilmenite.*(Oxide of titanium and iron.)*

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—In crystals in a more or less brecciated intrusive on *Ice river*, *Beaverfoot river* (G.S.C., N.S., I, 124B).

NOVA SCOTIA.—

YARMOUTH COUNTY.—In tabular crystals and in lustrous scales in a hornblende schist at *Cheggin' point* and *Brazil* (G.S.C., N.S., IX, 145M).

ONTARIO.—

Ilmenite occurs in the magnetic sands along the shores of *Lakes Erie, Huron, and Superior* (G.S.C., N.S., IV, 40T).

HALIBURTON COUNTY.—Ilmenite is found in small quantities in association with some of the iron ores of *Minden*.

HASTINGS COUNTY.—*Carlow* (G.S.C., N.S., III, 25T).

PATRICIA DISTRICT.—Ilmenite is found in small crystals in limestone at *Sutton Mill lakes* (Ont. Bur. Min., 1912, 152).

QUEBEC.—

Ilmenite often forms large deposits in rocks of the Grenville system and is also found in the sands derived from the breaking down of these rocks.

BEAUCE COUNTY.—Mixed with magnetite in the *Seigniorship of St. Francis* (Mines, Min. Br., No. 29, 20).

BROME COUNTY.—Ilmenite is found in beds of considerable thickness in *Brome, 1-I; 2-II; 1-III* (G.S.C., 1873-74, 228); *Sutton, 3-VII; 6, 7-IX; 8-IX* (G.S.C., 1873-74, 228); *9-IX; 9-XI* (G.S.C., 1873-74, 228).

CHARLEVOIX COUNTY.—*Bay St. Paul, Parish of St. Urbain* (G.S.C., N.S., IV, 39T); *St. Irénée*.

CHICOUTIMI COUNTY.—*Bourget, 44-I: Kenogami township, Lake St. John, Alma island* (Pr. Com. T. C. Denis).

GASPE COUNTY.—*Malbaie*.

L'ASSOMPTION COUNTY.—*St. Lin* (G.S.C., N.S., IV, 15K).

MONTCALM COUNTY.—*Rawdon* (G.S.C., N.S., IV, 39T); *St. Julien* (G.S.C., 1873-74, 227).

MONTMORENCY COUNTY.—*Chateau Richer* (G.S.C., N.S., IV, 39T).

SAGUENAY COUNTY.—*Rapid river, Bay of Seven Islands* (G.S.C., N.S., IV, 39T); *St. Marguerite river, Chaloupe river, Thunder river* (Pr. Com. T. C. Denis).

TERREBONNE COUNTY.—*St. Jerome* (G.S.C., N.S., IV, 15K); *Wexford, 7-I* (G.S.C., N.S., VIII, 100J).

WOLFE COUNTY.—Ilmenite is found in fine crystals in *Ham, 11-XX* (Mines, G.S.Br., Sum. Rep. 1909, 251).

Analyses of Ilmenite.

	1	2	3	4	5
TiO ₂	47.5	48.60	40.00	39.86	34.30
Fe ₂ O ₃		10.42	20.35	56.64*	49.77
FeO.....	39.8	37.06	29.57		
Al ₂ O ₃			4.00		
MnO.....	6.5				
MgO.....		3.60	3.17	1.44	
CaO.....			1.00		
Insol.....	not. deter.			4.90	6.35
SiO ₂			1.91		
*Part FeO.....	93.8	99.68	100.00	102.84	90.42
	6	7	8	9	10
TiO ₂	32.36	33.67	27.20	29.86	24.16
Fe (metallic).....	24.65	38.27	40.87	39.14	41.46

1. From Ice river by Hoffmann (Dawson, G.S.C., N.S., I, 124B).
2. From Bay St. Paul by Hunt (Geol. Can., 1863, 501).
3. From Bay St. Paul by Penny (Harrington, G.S.C., 1873-74, 227).
4. From Chateau Richer by Hunt (Geol. Can., 1863, p. 501).
5. From Bay of Seven Islands by Hunt (G.S.C., 1866-69, p. 260).
- 6 and 7. Partial analysis of ilmenite from St. Jerome and St. Julien, respectively.
8. From Sutton, 7-XI.
9. From Sutton, 8-IX.
10. From Brome, 1-III, by Harrington (G.S.C., 1873-74, pp. 227-228).

Ilvaite.

(Hydrous silicate of calcium and iron.)

BRITISH COLUMBIA.—

ALBERNI MINING DIVISION.—Ilvaite is found at the *Monitor mine, Alberni canal*, about 3 miles from *Uchucklesit harbour* (Pr. Com. W. J. Sutton).

ONTARIO OR QUEBEC.—

A substance, which from its composition and physical characteristics was regarded as a variety of lievrite, was found in the form of a boulder in the vicinity of *Ottawa* (G.S.C., N.S., IV, 39T).

Analyses of Iwaite.

	1	2
SiO ₂	29.81	27.80
Al ₂ O ₃	0.16	.....
Fe ₂ O ₃	18.89	10.80
FeO.....	32.50	56.52
MnO.....	2.22	tr.
CaO.....	13.82	0.64
MgO.....	0.30	2.59
H ₂ O.....	1.62	1.20
	99.32	99.55
Sp. Gr.....	3.859	4.154-16

1. From Monitor mine by Hoffmann (G.S.C., N.S., V, 11R).
2. From Ottawa by Hunt (Geol. Can., 1863, p. 465).

Infusorial Earth.

(This material consists of the siliceous skeletons of diatoms and other microscopic forms.)

BRITISH COLUMBIA.—

- CARIBOO MINING DIVISION.—*Blackwater river* (G.S.C., N.S., III, 112R).
 CLINTON MINING DIVISION.—*Loon lake* (G.S.C., N.S., V, 20R).
 NEW WESTMINSTER MINING DIVISION.—Near *Riverside*, opposite *Mission city* (G.S.C., N.S., XV, 28S).
 QUESNEL MINING DIVISION.—Near *Quesnel* (Mines, G.S.Br., Sum. Rep., 1911, 362).
 VANCOUVER ISLAND.—Infusorial earth has been found at different points on this island (Pr. Com. W. F. Robertson).

NEW BRUNSWICK.—

- KINGS COUNTY.—*Pollet river, Mechanic Settlement; Pleasant lake* (G.S.C., N.S., XV, 27S).
 NORTHUMBERLAND COUNTY.—*Diatom lake, Nipisiguit river*.
 ST. JOHNS COUNTY.—*Lake Fitzgerald* (G.S.C., N.S., XV, 27S).

NOVA SCOTIA.—

- Infusorial earth occurs in many of the lakes of this province.
 ANTIGONISH COUNTY.—*Lochaber* (G.S.C., N.S., XV, 26S).
 CAPE BRETON COUNTY.—*McCuish lake (Catalone)* (Pr. Com. H. Piers).
 COLCHESTER COUNTY.—*Earltown, Gully, and MacIntosh lakes* (G.S.C. N.S., II, 127P).

CUMBERLAND COUNTY.—Large deposits of infusorial earth occur at *Folly, Fountain, and Bass River lakes*, and at other lakes in the *Cobequid ranges* (G.S.C., N.S., XV, 25, 26S).

DIGBY COUNTY.—*Meteghan river* (Pr. Com. H. Piers).

HALIFAX COUNTY.—*Dartmouth and Grand lakes* (G.S.C., N.S., XV, 26S); *Chain lakes; Lower Musquodoboit river* (Pr. Com. H. Piers).

INVERNESS COUNTY.—*River Denys* (G.S.C., N.S., XV, 26S).

KINGS COUNTY.—*Kempt lake* (G.S.C., N.S., XV, 26S).

PICTOU COUNTY.—*Ben, Black Brook, Eden, Forbes, and McKay lakes, and Upper Barney river* (G.S.C., N.S., XV, 26S).

VICTORIA COUNTY.—*Lake Ainslie, St. Ann* (G.S.C., N.S., XV, 26S).

ONTARIO.—

RENFREW COUNTY.—*Petawawa river*, and a few scattered unimportant deposits elsewhere (G.S.C., N.S., XV, 28S).

QUEBEC.—

MASKINONGE COUNTY.—*St. Justin, Concession Trompe Souris* (G.S.C., N.S., XV, 27S).

MONTCALM COUNTY.—*Chertsey, 15-V* (G.S.C., N.S., XV, p. 28S).

MONTMORENCY COUNTY.—*Laval Settlement, 20-II* (G.S.C., N.S., XV, 27S).

OTTAWA COUNTY.—*Egan*.

PORTNEUF COUNTY.—*Gosford, Range IX* (G.S.C., N.S., XV, 27S).

QUEBEC COUNTY.—*Stoneham, lot 69* (G.S.C., N.S., XV, 28S).

Iolite.

(*Hydrous silicate of aluminum, iron, and magnesium.*)

NOVA SCOTIA.—

HALIFAX COUNTY.—Cordierite occurs in small spots in metamorphosed slate near granite contacts near *Halifax city*, and doubtless at many other points in the province (Pr. Com. H. Piers).

ONTARIO.—

HALIBURTON COUNTY.—Cordierite occurs in amphibolite in *Harcourt, 11-IX* (Am. Journ. Sci., Ser. 4, Vol. XXV, 509).

Iridosmine.

(*Alloy of iridium and osmium.*)

BRITISH COLUMBIA.—

QUESNEL MINING DIVISION.—*Dease lake* (Pr. Com. W. F. Robertson).

SIMILKAMEEN MINING DIVISION.—With platinum on *Granite creek, Tulameen river* (G.S.C., N.S., II, 7T).

QUEBEC.—

BEAUCE COUNTY.—Associated with platinum in the gold washings of *Rivière du Loup*, a branch of the *Chaudière river* (G.S.C., N.S., IV, 40T).

Iron.

ONTARIO.—

ALGOMA DISTRICT.—Iron is found in spherules embedded in limonite coating fissures in quartzite in 5th concession back of *Campement d'Ours, St. Joseph island, Lake Huron* (Trans. R.S.C., Vol. VIII, Sec. III, p. 39, 1890).

NIPISSING DISTRICT.—In minute spherules in kaolinite and limonite in an orthoclase-albite-perthite from a pegmatite vein in *Cameron, 7-B* (G.S.C., N.S., VI, 23R).

TIMISKAMING DISTRICT.—In scales with silicates in a gossan at *Smooth Water, Gowganda Mining Division* (Mines, G.S.Br., Sum. Rep., 1910, 266).

ALBERTA.—

Metallic iron reduced from clay ironstone by the action of burning lignite has been observed by Tyrrell at a point on the North Saskatchewan river about 70 miles above Edmonton. Some masses were found having a weight of 15 to 20 pounds (Am. Journ. Sci., Ser. 3, XXXIII, 73).

Analyses of Iron.

	1	2
Fe.....	88.00	90.45
Mn.....	0.51	0.75
Ni.....	0.10	trace
Co.....	0.21	.....
Cu.....	0.09	.....
S.....	0.12	undet.
P.....	0.96	undet.
C.....	?	.....
Organic.....	undet.	undet.
Insol.—SiO ₂ 9.17		
Al ₂ O ₃ 0.11		
Fe ₂ O ₃ 0.10		
CaO..... 0.06		
MgO..... 0.03		
Loss..... 0.29		
	9.76	7.26
	99.75	98.46
Sp. Gr.....	6.8612	7.257

1. From St. Joseph island (Trans. R.S.C., Vol. VIII, Sec. 3, 39-42).

2. From Cameron by Johnston (Hoffmann, G.S.C., N.S., VI, 24R).

Iron Ochre.*(Hydrated oxide of iron.)*

More or less extensive deposits of this mineral are found in different parts of the Dominion.

BRITISH COLUMBIA.—

NEW WESTMINSTER MINING DIVISION.—*Silver creek, Harrison lake.*

NEW BRUNSWICK.—

NORTHUMBERLAND COUNTY.—*Champlain island, Northwest Miramichi river* (G.S.C., N.S., VI, 67A).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Pudsey point, Apple river.*

INVERNESS COUNTY.—*Chimney Corner*; East side of *Lake Ainslie* (Pr. Com. H. Piers).

KINGS COUNTY.—*New Canaan* (G.S.C., N.S., XVI, 304A).

LUNENBURG COUNTY.—*Chester Basin* (Pr. Com. H. Piers); *East Chester* (G.S.C., N.S., X, 117A).

ONTARIO.—

GREY COUNTY.—*Sydenham* (G.S.C., N.S., IV, 40T).

HALTON COUNTY.—*Esquesing* (G.S.C., N.S., IV, 40T).

INTERLAKE PENINSULA.—Iron ochre is found at different points in this area.

NIPISSING DISTRICT.—*Madawaska Station*; *Murchison.*

NORFOLK COUNTY.—*Walsingham, 12-XIV.*

SIMCOE COUNTY.—*Nottawasaga, 21-XI, etc.,* (Geol. Can., 1863, 770).

WATERLOO COUNTY.—*Conestogo.*

QUEBEC.—

BONAVENTURE COUNTY.—*Carleton.*

CHAMPLAIN COUNTY.—*Cap de la Madeleine, St. Malo range* (Geol. Can., 1863, 768).

JOLIETTE COUNTY.—*Ste. Rose (Rosalie)*; *Seigniory de Lanoraie* (Geol. Can., 1863, 769); *Ste. Elizabeth.*

MASKINONGE COUNTY.—*Riviere du Milieu* (G.S.C., N.S., VI, 70AA).

MONTMORENCY COUNTY.—*St. Ann de Montmorenci* (Geol. Can., 1863, 768).

OTTAWA COUNTY.—*Hull, 15-X* (G.S.C., N.S., IV, 116K).

PONTIAC COUNTY.—*Leslie, 30-II.*

ST. MAURICE COUNTY.—*Point du Lac* (G.S.C., N.S., IV, 40T); *St. Marguerite* (Geol. Can., 1863, 768).

STANSTEAD COUNTY.—*Stanstead, 13-IX* (G.S.C., N.S., IV, 118K).

SAGUENAY COUNTY.—*Les Escoumains* (Pr. Com. T. C. Denis).

VAUDREUIL COUNTY.—*Côte St. Charles* (G. S.C., N.S., X, 133S).

Ironstone.*(Carbonate of iron with clay or sand.)***ALBERTA.—**

Red Deer river (G.S.C., N.S., II, 79E); *Battle river* (G.S.C., N.S., II, 86E); *Beaver creek, North Saskatchewan* (G.S.C., N.S., II, 115E); between *Vermilion falls* and *North Vermilion* on the *Peace river* (G.S.C., N.S., V, 46D).

BRITISH COLUMBIA.—

NICOLA MINING DIVISION.—Ironstone is found in Tertiary sediments in the *Nicola valley* (G.S.C., N.S., VII, 193B).

NORTH WEST TERRITORIES.—

Peel river (G.S.C., N.S., IV, 144-D); *Sans Sault rapids, Mackenzie river* (G.S.C., N.S., IV, 105D); *Liard river* (G.S.C., N.S., IV, 20D); *Trail point* on the Arctic coast (G.S.C., N.S., II, 29R).

NOVA SCOTIA.—

PICTOU COUNTY.—*McDonald brook, West river of St. Mary* (G.S.C., N.S., II, 78P).

SASKATCHEWAN.—

Green lake (G.S.C., N.S., VIII, 27D); and at *Wood mountain* (G.S.C., N.S., I, 50C).

Iserine.*(Oxide of iron and titanium.)***NOVA SCOTIA.—**

DIGBY COUNTY.—*St. Mary bay* (G.S.C., N.S., IV, 40T): Iserine is found in the sands of the western counties of this province. A sample examined by How (N. S. Inst., Nat. Sci., Vol. I, 78-86) contained 30 per cent iserine.

ONTARIO.—

Iserine found on the shores and islands of *Lakes Superior, Huron, Erie, and Ontario*.

QUEBEC.—

North shore and Gulf of *St. Lawrence* (G.S.C., N.S., IV, 40T).

Jade.*(See Nephrite.)**(Silicate of calcium, magnesium, and iron.)*

Jamesonite.*(Sulphantimonite of lead.)***BRITISH COLUMBIA.—**

GOLDEN MINING DIVISION.—In a fibrous massive form on *Vermont* and *Deception creeks*, middle fork of the *Spillimacheen river* (G. S.C., N.S., V, 65R).

GREENWOOD MINING DIVISION.—Fine specimens of jamesonite from some of the claims at the head of *Kettle river* (G.S.C., N.S., XII, 22R).

OMINECA MINING DIVISION.—Jamesonite is found with silver-lead ores at *Silver Bell mine* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—Jamesonite is found with silver-lead ores at *Reco mine* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW BRUNSWICK.—

YORK COUNTY.—Jamesonite is stated to occur near *Frederickton*: assuming this to be the case, Dr. Bailey is of the opinion that the precise locality would most probably be the *Antimony mine* at *Lake George, Prince William* (G.S.C., N.S., IV, 41T).

ONTARIO.—

FRONTENAC COUNTY.—In *Barrie, 10-VIII*, with sphalerite, and on 7-X with chalcopyrite in an impure granular dolomite (G.S.C., N.S., VI, 30R): in *Clarendon, 30-II*, with pyrite and pyrrhotite in a gangue of crystalline dolomite (G.S.C., N.S., XI, 15R).

Jasper.*(Quartz.)**(Silicon dioxide.)***BRITISH COLUMBIA.—**

ATLIN MINING DIVISION.—In rounded pebbles in the vicinity of *Atlin lake* (G.S.C., N.S., XII, 14B).

BOUNDARY DISTRICT.—in pebbles in the conglomerate of some portions of this district (G.S.C., N.S., XV, 99A).

MANITOBA.—

GRASS RIVER DISTRICT.—In pebbles in some of the conglomerates of this district (G.S.C., N.S., XIII, 42F).

RICE LAKE DISTRICT.—Jasper is found as pebbles in the conglomerate and also as narrow bands in the same rock (Journ. Can. Min. Inst., 1913, p. 540). Jasper conglomerate is associated with amygdaloid at the north end of *Lake Manitoba* (G.S.C., N.S., XV, 9 AA).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—*Grand Manan* (G.S.C., N.S., III, 72S).

KINGS COUNTY.—*Belleisle bay, Hampton* (G.S.C., N.S., III, 72S).

NORTH WEST TERRITORIES.—

Pebbles of jasper conglomerate have been noted at the east end of *Great Slave lake* (G.S.C., N.S., II, 16R): *Princess Royal island* (G.S.C., N.S., II, 46R).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Partridge island* (G.S.C., N.S., IV, 41T).

DIGBY COUNTY.—Fine banded jaspers are abundant at *St. Mary bay* and a red variety at *Briar island* (G.S.C., N.S., IV, 41T).

KINGS COUNTY.—*Long island, Woodworth cove* (G.S.C., N.S., IV, 41T).

ONTARIO.—

ALGOMA DISTRICT.—Jasper conglomerate forms mountain masses amongst the quartzites of the Huronian series for miles in the country north of *Bruce Mines*; on *Lake Superior* north of *Goulais bay*; on the *St. Mary river*; on the east shore of *Lake George*, and on *Lake Huron* (G.S.C., N.S., III, 72S).

RAINY RIVER DISTRICT.—Jasper occurs interbanded with hematite at *Jasper lake, Hunter island* (G.S.C., N.S., V, 63G).

THUNDER BAY DISTRICT.—*Whitefish* and *Kaministikwia rivers*, east of *Lake Nipigon* and elsewhere in this district (G.S.C., N.S., III, 24H.)

QUEBEC.—

KAMOURASKA COUNTY.—Banded dark green and reddish brown jasper with white chalcedony at *River Ouelle* (G.S.C., N.S., IV, 41T).

NEW QUEBEC TERRITORY.—*Hamilton* and *Ungava rivers* (G.S.C., N.S., VII, 79A).

OTTAWA COUNTY.—Large quantities of rich red jasper in *Hull, 15-X* (G.S.C., 1882-84, 16 L).

SHERBROOKE COUNTY.—Blood-red jasper, often finely clouded, occurs near *Sherbrooke* (G.S.C., N.S., IV, 41T).

YUKON.—

Red jasper occurs with magnetite and hematite as float in the wash of *Bonnet Plume* and *Snake rivers* (G.S.C., N.S., XVI, 46 CC); *Patterson mountain, Tagish lake* (G.S.C., N.S., XII, 31B).

Kalinite.

(*Hydrous sulphate of aluminum and potassium.*)

ONTARIO.—

THUNDER BAY DISTRICT.—Kalinite occurs in considerable abundance on the exposed faces of high bluffs of argillaceous shale on *Slate river, Kaministikwia river* (G.S.C., N.S., IV, 41T).

Kammererite.*(Hydrous silicate of aluminum and magnesium.)***QUEBEC.—**

BROME COUNTY.—Kammererite occurs with chromite and serpentine in *Bolton* (G.S.C., N.S., IV, 41T).

RICHMOND COUNTY.—This mineral is found with chromite and serpentine in *Melbourne* (G.S.C., N.S., IV, 41T).

Kaolinite.*(Hydrous silicate of aluminum.)***BRITISH COLUMBIA.—**

ASHCROFT MINING DIVISION.—Mixed with quartz in a shattered and leached zone of rocks on the west side of *Thompson river* opposite *Spatsum* (G.S.C., N.S., VII, 16A).

FORT STEELE MINING DIVISION.—Kaolinite is found at different points in this division (Pr. Com. W. F. Robertson).

NOVA SCOTIA.—

HALIFAX COUNTY.—Kaolinite occurs at *Reid's farm* at *Middle Musquodoboit* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—Kaolinite occurs in small quantities in granite districts such as *New Ross* (Pr. Com. H. Piers).

QUEBEC.—

BAGOT COUNTY.—Kaolinite has been found lining cavities in a rock at *Acton, 23-V* (G.S.C., 1874-75, 314).

LEVIS COUNTY.—*Chaudiere falls* (G.S.C., N.S., IV, 41T).

OTTAWA COUNTY.—*Amherst, 5-VI* (G.S.C., N.S., VII, 101A).

TWO MOUNTAINS COUNTY.—In a dyke at *Grand Frenier* (G.S.C., 1878-79, 6, 7H).

Analyses of Kaolinite.

	1	2
SiO ₂	44.604	46.05
Al ₂ O ₃	39.145	38.37
Fe ₂ O ₃	1.035	.....
CaO.....	0.390	0.61
MgO.....	0.213	0.63
Na ₂ O.....	0.270	.....
K ₂ O.....	0.196	.....
H ₂ O.....	14.240	14.00
	100.093	99.66
Sp. Gr.....	2.577	.....

1. From Acton by Hoffmann (G.S.C., 1874-75, 314-315).

2. From Chaudiere falls by Hunt (Geol. Can., 1863, p. 495).

Kermesite.*(Oxysulphide of antimony.)*

NEW BRUNSWICK.—

YORK COUNTY.—Kermesite occurs with native antimony at the *Lake George mine, Prince William* (Am. Journ. Sci., Ser. III, XXX, 1885, 275-277).

NOVA SCOTIA.—

HANTS COUNTY.—With stibnite at the *West Gore mines* (G.S.C., N.S., VI, 58A).

QUEBEC.—

WOLFE COUNTY.—Kermesite occurs in crystalline tufts with native antimony, stibnite, valentinite, and senarmonite in veins traversing argillite in *South Ham, 56-I* (G.S.C., N.S., IV, 80K).

Labradorite.*(Silicate of aluminum, calcium, and sodium.)*

ONTARIO.—

GLENGARRY COUNTY.—In boulders in the township of *Lochiel* (G.S.C., N.S., VIII, 74A).

PETERBOROUGH COUNTY.—Labradorite occurs in large phenocrysts in diabase in *Belmont* (G.S.C., N.S., XII, 127A).

QUEBEC.—

ASHUANUPI TERRITORY.—*Lake Ossokmanuan* (G.S.C., N.S., VIII, 289L).

CHICOUTIMI COUNTY.—*Peribonka river*, 30 miles above the entrance into *Lake St. John* (Geol. Can., 1863, 46.)

MONTCALM COUNTY.—In a bluish-white, granular form at *Rawdon* (G.S.C., N.S., IV, 42T).

MONTMORENCY COUNTY.—A pale bluish or greenish-grey rock with red spots at *Chateau Richer* (G.S.C., N.S., IV, 42T).

NEW QUEBEC TERRITORY.—*Lake Michikamau* (G.S.C., N.S., VIII, 289 L).

SAGUENAY COUNTY.—At *Sheldrake*, in the *Seigniorship of Mingan* (G.S.C., N.S., IV, 4A); *Romaine river* (G.S.C., N.S., VIII, 289L).

TERREBONNE COUNTY.—*Abercrombie, Mille Isle, Morin, St. Jerome* (G.S.C., N.S., IV, 42T).

For analyses see T. S. Hunt (Geol. Can., 1863, p. 478) and G. C. Hoffmann (G.S.C., 1874-75, 316).

Lampadite.*(Hydrated mixture of various oxides, chiefly of manganese, cobalt, copper, and iron.)*

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Lampadite occurs with hematite in the *King Solomon mine* (G.S.C., N.S., XV, 125A).

Laumontite.*(Hydrous silicate of aluminum and calcium.)*

BRITISH COLUMBIA.—

TRAIL CREEK MINING DIVISION.—*Rossland, West Eagle river, Centre Star mine* (Pr. Com. F. D. Adams).

NOVA SCOTIA.—

Laumontite is found at various places along the coast of the *Bay of Fundy*.

ANNAPOLIS COUNTY.—*Peter point* (Mem. Amer. Acad. IX, August 1831); *Port George, St. Croix Cove* (G.S.C., 1882-84, 25L).

DIGBY COUNTY.—*St. Mary bay, Sandy cove* (Mem. Amer. Acad., IX, August, 1831).

KINGS COUNTY.—*Victoria Harbour* (G.S.C., 1882-84, 26L).

Analysis of laumontite from Port George by How (Am. Journ. Sci., Ser. 2, XXVI, 1858, 34).

SiO ₂	Al ₂ O ₃	CaO	H ₂ O
51.43	21.64	12.07	15.26—100.40

Lazulite.*(Hydrated phosphate of aluminum, iron, and magnesium.)*

NORTH WEST TERRITORIES.—

Lazulite occurs in quartz three-quarters of a mile east of *Churchill river* (G.S.C., N.S., IV, 42T).

QUEBEC.—

MISTASSINI TERRITORY.—Lazulite occurs with quartz at *Lake Mistassini* (G.S.C., N.S., V, 66R).

Analysis of lazulite from Churchill river by Hoffmann (G.S.C., 1878-79, 2 H).

P ₂ O ₅	Al ₂ O ₃	FeO	MgO	CaO	H ₂ O	Sp. Gr.
46.388	29.140	2.091	13.838	2.829	6.468	—100.754 3.0445

Lead (native).

ONTARIO.—

THUNDER BAY DISTRICT.—Lead occurs in thin strings in quartz in the vicinity of Dog lake, *Kaministikwia river* (G.S.C., N.S., IV, 42T).

Ledererite.*(See Gmelenite.)**(Hydrated silicate of aluminum, sodium, and calcium.)*

Lepidolite.*(Silicate of potassium, lithium, and aluminum with hydrous fluoride of aluminum.)***BRITISH COLUMBIA.—**

REVELSTOKE MINING DIVISION.—In pearly scales with calcite in rust stained quartz at the *Gold Hill claim*, 10 miles northeast of *Illecillewaet* (G.S.C., N.S., VI, 29R).

NOVA SCOTIA.—

LUNENBURG COUNTY.—In scaly masses with quartz, feldspar, apatite, fluorite, etc., in a pegmatite dyke near *Lake Ramsay, New Ross* (Mines, G.S.Br., Sum. Rep. 1907, 82).

QUEBEC.—

OTTAWA COUNTY.—*Lievre river* (Journ. Can. Min. Inst., 1913, 376-377); in laminae, sometimes several inches across, in *Wakefield, 25-VII* (G.S.C., N.S., XII, 11-12R): *Templeton* (Pr. Com. T. L. Walker).

Analysis of lepidolite from *Wakefield*, by Johnston (Hoffmann, G.S.C., N.S., XII, 11-12R).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MnO	K ₂ O	Li ₂ O	Na ₂ O	MgO
47.89	21.16	2.52	4.19	10.73	5.44	1.34	0.36
H ₂ O (dir. est.)		F		Less O=F		Sp. Gr.	
1.90		7.41—102.94	—	3.12	— 99.82	2.858	

Lepidomelane.*(Hydrous silicate of aluminum, iron, and potassium.)***ONTARIO.—**

HASTINGS COUNTY.—In sodalite in *Dungannon, 29-XIII; 25-XIV* (G.S.C., N.S., VI, 15R): in brilliant black plates or scales in arsenopyrite in *Marmora, 11-IX* (G.S.C., N.S. VIII, 123A); *14-X; 16-XI* (G.S.C., N.S., VI, 14, 15R).

SUDBURY DISTRICT.—*Drury, 2-II* (G.S.C., N.S., VI, 15R).

Analysis of lepidomelane from *Marmora, 14-X*, by Wait (Hoffmann, G.S.C., N.S., VI, 14, 15R).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	CaO	MgO	K ₂ O	Na ₂ O
32.79	14.34	4.52	26.32	0.29	1.45	4.68	7.24	2.00
TiO ₂	H ₂ O at 100°C.		H ₂ O above 100°C.				Sp. Gr.	
0.92	1.38		3.68—99.61				3.19	

Leucite.*(Silicate of aluminum and potassium.)*

BRITISH COLUMBIA.—

QUESNEL MINING DIVISION.—Crystals of smoke-grey, sub-translucent leucite have been found in boulders of dark grey leucite rock at *Horsefly mine, Horse Fly river* (G.S.C., N.S., VII, 13, 14R).

YUKON.—

YUKON RIVER.—A leucite rock occurs on the north fork of the *Spotted Fawn creek, Twelvemile river* (G.S.C., N.S., XV, 40AA).

Leucoxene.*(Dull white mineral resulting from the alteration of titanite iron.)*

ONTARIO.—

FRONTENAC COUNTY.—Leucoxene occurs in the granite of *Barriefield Common, Kingston* (Ont. Bur. Min., 1900, 201).

NIPISSING DISTRICT.—Leucoxene occurs as an alteration product of titanite iron ore in this district (G.S.C., N.S., X, 86-I).

SUDBURY DISTRICT.—Leucoxene forms one of the constituents of a highly altered, basic eruptive in *Denison, 6-IV* (Ont. Bur. Min., 1891, 92).

THUNDER BAY DISTRICT.—Leucoxene occurs as a constituent of altered diabase at *Peep bay, Manitou lake* (G.S.C., N.S., III, 71F).

Lievrite.*(See Ilvaite.)**(Hydrous silicate of calcium and iron.)***Lignite.***(See Coal.)**(Hydrocarbon.)***Limonite.***(Hydrous sesquioxide of iron.)*

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—*Texada island* (G.S.C., N.S., V, 68AA).

NEW WESTMINSTER MINING DIVISION.—*Port Kells* (G.S.C., N.S., XIII, 33R).

Limonite occurs in oxidized zones at several points in the southern part of the province.

MANITOBA.—

Big island, Lake Winnipeg (G.S.C., N.S., II, 19T).

NOVA SCOTIA.—

Botryoidal, mammillary, and stalactitic masses with fibrous structure, also compact, and lustreless or earthy forms at many localities in this province.

ANTIGONISH COUNTY.—*Lochaber* (G.S.C., N.S., II, 115P).

COLCHESTER COUNTY.—*Brookfield; Old Barns* (Pr. Com. H. Piers); and in the neighbourhood of *Londonderry* (G.S.C., N.S., V, 98S).

CUMBERLAND COUNTY.—*Canfield creek* (Pr. Com. H. Piers); *Fullerton lake* (G.S.C., N.S., V, 175P).

HALIFAX COUNTY.—*Preston Road* near *Dartmouth* (Pr. Com. H. Piers).

HANTS COUNTY.—*Selma* (Pr. Com. H. Piers); *Lennycapc* (G.S.C., 1882-84, 22L).

LUNENBURG COUNTY.—*Wallaback lake, New Ross* (G.S.C., N.S., XV, 186AA).

PICOU COUNTY.—*Springville, East river, etc.* (G.S.C., N.S., IV, 48SS).

ONTARIO.—

ALGOMA DISTRICT.—*Lower Mattagami river* (G.S.C., N.S., XIII, 33R); *Echo bay* (Ont. Bur. Min., 1892, 82).

CARLETON COUNTY.—*Marlborough* (G.S.C., N.S., XI, 163A).

HALIBURTON COUNTY.—*Snowdon* (Ont. Bur. Min., 1892, 79).

HASTINGS COUNTY.—*Huntingdon, 9-XIV* (G.S.C., N.S., X, 118A).

LANARK COUNTY.—*Darling: North Elmsley* (Ont. Bur. Min., 1900, 201).

LINCOLN COUNTY.—*Gainsborough, lot 28, Broken Front Concession* (Ont. Bur. Min., 1892, 81).

MANITOULIN DISTRICT.—Limonite occurs in greater or less abundance at the *Helen mine* (Pr. Com. T. L. Walker) and at many other points in *Michipicoten* (G.S.C., N.S., XIII, 115A).

NORFOLK COUNTY.—*Charlotteville, Windham* (Geol. Can., 1863, 683).

THUNDER BAY DISTRICT.—*English river*.

QUEBEC.—

BROME COUNTY.—*Potton, 28-IX* (G.S.C., N.S., IV, 48SS).

CHAMPLAIN COUNTY.—*Lac Tortue* (G.S.C., N.S., V, 83SS).

DRUMMOND COUNTY.—*Drummondville* (G.S.C., N.S., IV, 26K).

JOLIETTE COUNTY.—Along the line of the Canadian Pacific railway in this county (G.S.C., N.S., V, 43AA).

MEGANTIC COUNTY.—*Ireland, 12-IV* (G.S.C., N.S., IV, 24K).

MONTCALM COUNTY.—*Kilkenny, 7-VII* (G.S.C., N.S., VII, 16R).

NICOLET COUNTY.—*Gentilly* (G.S.C., N.S., V, 83SS).

OTTAWA COUNTY.—*Wakefield, 12-I* (G.S.C., 1882-84, 18 L).

- PORTNEUF COUNTY.—*Portneuf* and *St. Basil* (G.S.C., N.S., IV, 25K).
 ST. MAURICE COUNTY.—*Radnor Forges* and elsewhere near *Three Rivers* (Geol. Can., 1863, 686).
 SAGUENAY COUNTY.—East branch of the *Saguenay river* (G.S.C., N.S., IV, 25K).
 TEMISCOUATA COUNTY.—*Green island*, *Cacouna*, and *Villeray* (G.S.C., N.S., IV, 26K).
 VAUDREUIL COUNTY.—*Cote St. Charles*; *Petit Cote* and *Ste. Angelique* (G.S.C., N.S., IV, 27K).
 YAMASKA COUNTY.—*Riviere aux Vaches*; *St. Francis river* (G.S.C., N.S., IV, 26K).

SASKATCHEWAN.—

- Limonite occurs with hematite in connexion with an outcrop of Huronian quartzite at the western end of *Lake Athabaska* (G.S.C., N.S., VII, 64S).

Linarite.

(Basic sulphate of lead and copper.)

BRITISH COLUMBIA.—

- ATLIN MINING DIVISION.—In a cavity in a calcareous gangue-stone, impregnated with galena and chalcopyrite at the *Table Mountain claims* (Mines, Sum. Rep., 1910, 51).
 SLOCAN MINING DIVISION.—Fine specimens of linarite are found in the *Beaver group*, *Beaver mountain* (Mines, G.S.Br., Sum. Rep., 1910, 260, 261).
 Analysis of linarite from *Beaver mountain* by Johnston (Mines, G.S.Br., Sum. Rep., 1910, 260).

PbSO ₄	CuO	H ₂ O	Sp. Gr.
75.17	19.88	4.73—99.78	5.23

Lodestone.

(Magnetite.)

(Oxide of iron.)

BRITISH COLUMBIA.—

- NANAIMO MINING DIVISION.—Lodestone has been found in small quantities a mile west of *Upper Campbell lake*, *Vancouver island* (Pr. Com. W. J. Sutton).
 QUEEN CHARLOTTE MINING DIVISION.—A massive lodestone occurs at *Jedway*.

ONTARIO.—

HASTINGS COUNTY.—A granular magnetite, exhibiting polarity, has been observed in *Madoc, 11-V* (Ont. Bur. Min., 1900, 201).

YUKON.—

Magnetite grains in the sands of the *Pelly river* sometimes exhibit marked polarity (Mines, G.S.Br., Sum. Rep., 1908, 169).

Loganite.

(*Hydrous silicate of aluminum and magnesium.*)

ONTARIO.—

LANARK COUNTY.—Replacing the septa of *eozone canadense* of *North Burgess* (G.S.C., 1863-66, 230-231); replacing apatite in *9, 10-V* in the same township (G.S.C., 1863-66, 224): *North Elmsley* (Geol. Can., 1863, 491).

QUEBEC.—

PONTIAC COUNTY.—*Calumet Falls* (G.S.C., N.S., IV, 43T).
For analyses see Hunt (Geol. Can., 1863, 490-91, and Can. Nat., Ser. 2, Vol. II, 123).

Louisite.

(*Hydrous silicate of calcium.*)

NOVA SCOTIA.—

KINGS COUNTY.—*Blomidon* (N.S. Inst., Nat. Sci., Vol. V, 15).
Analysis of louisite by Louis Honeyman (N. S. Inst., Nat. Sci., Vol. V, 15).

SiO ₂	Al ₂ O ₃	FeO	MnO	CaO	MgO	K ₂ O	Na ₂ O	H ₂ O	Sp. Gr.
63.74	0.57	1.25	tr.	17.27	0.38	3.38	0.08	12.96—99.63	2.41

Lollingite.

(*Arsenide of iron.*)

ONTARIO.—

PETERBOROUGH COUNTY.—With pyrrhotite and quartz in *Galway, 16-XIV* (G.S.C., N.S., VI, 19R).
Analysis of lollingite by Johnston (Hoffmann, G.S.C., N.S., VI, 19R).

As	S	Fe	Co	Ni	Sp. Gr.
70.85	0.81	24.67	2.88	0.79—100.00	7.028

Macfarlanite.

(*Composition doubtful. Antimonide of silver.*)

ONTARIO.—

THUNDER BAY DISTRICT.—*Silver Islet mine, Lake Superior* (G.S.C., N.S., IV, 18T).

Magnesite.*(Carbonate of magnesium.)***BRITISH COLUMBIA.—**

ATLIN MINING DIVISION.—Magnesite carrying pyrite and often traversed by veins and strings of quartz occurs on *Boulder, Birch, Pine, and Ruby creeks, Atlin lake* and on *Taku inlet, Tagish lake* (G.S.C., N.S., XII, 21B).

GREENWOOD MINING DIVISION.—Magnesite is found in one of the *B. C. Mines, Summit Camp* (G.S.C., N.S., XV, 123A).

OMINECA MINING DIVISION.—With dolomite and serpentine inter-banded with green ash rock near *Germansen creek, Omineca river* (G.S.C., N.S., VII, 25C).

REVELSTOKE MINING DIVISION.—Magnesite occurs in small quantities near *Illecillewaet* (G.S.C., N.S., IX, 96S).

NEW BRUNSWICK.—

ST. JOHN COUNTY.—Magnesite is found in a vein near *West Beach* (G.S.C., 1870-71, 237).

ONTARIO.—

THUNDER BAY DISTRICT.—A blue, ferruginous magnesite associated with pyrite has been reported from *Lac des Mille Lacs* (G.S.C., N.S., 1, 22M).

QUEBEC.—

Magnesite is found in beds sometimes with feldspar and green mica, at different localities in the Eastern Townships of this province.

It is also met with at one or two localities in the Grenville series.

ARGENTEUIL COUNTY.—Extensive beds of magnesite in association with dolomite cut by diorite-porphyrite have been found in *Grenville, 15-IX; 18-XI*, and adjoining lots; for analyses see Hoffmann (G.S.C., N.S., Vol. XIII, 14-19R).

BEAUHARNOIS COUNTY.—*Valleyfield* (Pr. Com. T. L. Walker).

BROME COUNTY.—*Bolton, 17, 24-IX* (G.S.C., N.S., VII, 95S): *Sutton 12-VII* (G.S.C., N.S., IV, 111K).

MEGANTIC COUNTY.—In crystal-incrustations on serpentine in *Coleraine 24, 25, 26-A Donald* (Can. Rec. Sci., V., 1892-93, 137).

RICHMOND COUNTY.—An ophiolite from *Melbourne, 15-I*, afforded Dr. Harrington 15.50 per cent of ferri-ferrous magnesite (breunerite) (G.S.C., 1874-75, 309).

YUKON.—

Beds of magnesite up to 10 feet or more in thickness intercalated in dolomites and slates of the *Orange group, Stony Fork of the Black river, Yukon river* (Mines, G.S.Br., Sum. Rep., 1911, 33); also on the *Yukon river* itself about 1½ miles above *Indian river*, and on the *Big Salmon river*, just below *Island lake, Lewes river* (G.S.C., N.S., XI, 15, 16R).

Analyses of Magnesite.

	2	3	4	5
MgCO ₃	83.35	33.00	59.13	59.72
FeCO ₃	9.02	19.35	8.32	10.31
Insol.....	8.03	45.90	32.20	29.90
Al ₂ O ₃.....	.....	0.50	.....	.....
	99.40	98.75	99.65	99.93

1.	MgO	FeO	CO ₂	SiO ₂	Loss	
	21.70	5.10	27.00	45.68	0.52	-100.00

1. From Atlin (G.S.C., N.S., XII, 21B).

2 and 3. From Sutton, 12-VII.

4 and 5. From Bolton, 17-IX, by Hunt (Geol. Can., 1863, 457-458).

Magnetite.¹

(Sesquioxide and protoxide of iron.)

ALBERTA.—

Magnetite is found near *Pincher creek* (G.S.C., N.S., XV, 187AA):
Pine creek, Waterton river (G.S.C., N.S., V, 38R).

BRITISH COLUMBIA.—

ATLIN MINING DIVISION.—Magnetite occurs with copper ore near
William creek (G.S.C., N.S., XIII, 55A).

BOUNDARY DISTRICT.—Commonly found throughout this district
(G.S.C., N.S., XIV, 62-63A).

KAMLOOPS MINING DIVISION.—*Cherry and Battle Bluffs, Kamloops lake* (G.S.C., N.S., VII, 341B).

LILLOET MINING DIVISION.—A 20-foot vein is reported near
Watkinson, 23 miles above Lytton (G.S.C., N.S., VII, 343B).

NANAIMO MINING DIVISION.—A large body of magnetite is known
to occur on *Texada island* (Pr. Com. W. J. Sutton); *West Redonda island* (G.S.C., N.S., VI, 35R).

NELSON MINING DIVISION.—Magnetite is found at *Iron King group, Slocan Crossing* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW WESTMINSTER MINING DIVISION.—Magnetite occurs half a
mile below *Nicoamen* (G.S.C., N.S., VII, 343B).

¹(T) after a locality indicates that the ore is titaniferous.

QUEEN CHARLOTTE MINING DIVISION.—*Skincuttle inlet* (G.S.C., N.S., III, 101R).

SIMILKAMEEN MINING DIVISION.—Magnetite is found with copper ores at *Voight's camp, Copper mountain*, near *Princeton* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SOUTHERN INTERIOR.—Commonly found throughout this area.

VICTORIA MINING DIVISION.—Magnetite is found with the sulphides of iron and copper at *East Sooke peninsula, Juan de Fuca strait* (G.S.C., N.S., XV, 90A).

MANITOBA.—

Magnetic sand is found at *Big George island*; and massive magnetite with interbanded jaspers and slates at *Monigotagan river, Lake Winnipeg* (Pr. Com. R. C. Wallace).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Magnetite occurs in scattered crystals and small beds or veins in connexion with some of the Pre-Cambrian rocks at the *Lepreau river, Deer island*, and at other places in this county (G.S.C., N.S., X, 17 M).

GLOUCESTER COUNTY.—*Millstream* (G.S.C., N.S., V, 56, 57A).

NORTH WEST TERRITORIES.—

Nastapoka islands (G.S.C., N.S., XI, 128A).

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Magnetite occurs in beds in slate in *Clementsport* (G.S.C., N.S., IV, 22-23R); and in granular, massive forms in *Nictaux* (G.S.C., N.S., XIII, 29, 30R): and *Torbrook* (Pr. Com. H. Piers).

CAPE BRETON COUNTY.—*Barachois mountain; Mira* (Pr. Com. H. Piers).

COLCHESTER COUNTY.—In the traps of *Gerrish mountain*; and elsewhere in this county (G.S.C., N.S., I, 61E).

DIGBY COUNTY.—*Digby Neck* (G.S.C., N.S., VI, 67A).

INVERNESS COUNTY.—Near *Whycocomagh* (Pr. Com. H. Piers).

KINGS COUNTY.—*North Mountain range* (G.S.C., N.S., I, 22A).

RICHMOND COUNTY.—*Cleveland* (G.S.C., N.S., XIII, 29, 30R).

ONTARIO.—

Albany river and its tributaries (G.S.C., N.S., II, 14G).

CARLETON COUNTY.—*Fitzroy, 6-X* (G.S.C., 1879-81, 15H); 2, 5-XII (T).

FRONTENAC COUNTY.—*Bedford, 2, 5-II; 2, 3, 5, 6-III; 1, 4, 7, 8, 9-IV* (Ont. Bur. Min., 1900, 202); *28-IV* (G.S.C., N.S., III, 24T); *1, 3, 7 to 11-V; 2-VI; 2, 3, 4, 7-VII; 21-IX* (Ont. Bur. Min.,

- 1900, 202): *Barrie*, 5, 6, 7-XII: *Oso*, 15-V (G.S.C., N.S., XIII, 30R): *Palmerston*, 3, 4-IX (G.S.C., N.S., VIII, 24R); 27, 28-XI (G.S.C., N.S., XII, 32-I): *Portland*, 4-IX (G.S.C., N.S., VIII, 26R); 7-X (Ont. Bur. Min., 1892, 81); 5-XIII (G.S.C., N.S., VIII, 26R); *Storrington*, 20-X (Ont. Bur. Min., 1900, 104).
- HALIBURTON COUNTY.—*Dudley*, 15-III (G.S.C., Mem. 6, p. 205): *Glamorgan*, 35-IV (Ont. Bur. Min., 1900, 201): *Lutterworth*, 5-V, and VI; 16-VII (Ont. Bur. Min., 1900, 202): *Minden*, 11-I (Ont. Bur. Min., 1900, 202).
- HASTINGS COUNTY.—*Carlow*, 6, 7-XVI (Ont. Bur. Min., 1900, 202): *Dungannon*, 30-XIII (G.S.C., N.S., XIII, 128A); 25-XIV (Ont. Bur. Min., 1900, 202); in coarse crystals, some of very large dimensions; one over four hundred pounds in weight, in *Faraday* (Mines, G.S.Br., Sum. Rep., 1908, 167): *Madoc*, 18-I; 2, 12-IV; 11-V; 10-VI; 9-VII: *Marmora*, 7-1; 13-II; 12-III; 6, 9-IX: *Wollaston*, 15, 16-II; 16, 17, 18, 19-VIII; 9, 10-XV (Ont. Bur. Min., 1900, 202): *Tudor*, 12-XVIII; 18-XVIII (Ont. Bur. Min., 1900, 202); 19-XVIII; 7-XIX (Ont. Bur. Min., 1900, 202).
- LANARK COUNTY.—*Bathurst*, 11, 12-VIII and IX (T): *Darling*, 22-III; 22-IV (Ont. Bur. Min., 1900, 202); 25-V (G.S.C., N.S., VIII, 26R): *Lavant*, 13-III; 4-VII (Ont. Bur. Min., 1900, 202): *South Sherbrooke*, 3, 14-I (G.S.C., N.S., VIII, 20R); 17, 18, 19-III (Ont. Bur. Min., 1900, 202).
- LEEDS COUNTY.—*North Crosby*, 1-VI (G.S.C., N.S., VIII, 21R): *South Crosby*, 26, 27-VI (T) (Ont. Bur. Min., 1900, 202).
- NIPISSING DISTRICT.—*Airy* (G.S.C., N.S., VIII, 19R): *Grant*, 55, 57-III.
- PETERBOROUGH COUNTY.—*Belmont*, 8, 19-I (Ont. Bur. Min., 1900, 202).
- RAINY RIVER DISTRICT.—Extensive deposits of magnetite occur at the *Aiikokan river* and small deposits are found elsewhere in this district (G.S.C., N.S., V, 38R).
- RENFREW COUNTY.—*Bagot*, 14-VII (Ont. Bur. Min. 1900, 202); 27-VII; 16, 21-VIII; 16-IX; 23-X; 16, 18, 22-XI (Ont. Bur. Min., 1900, 202): *Gratton*, 31-XII (G.S.C., N.S., XIII, 30R): *Rolph*, 24-XII; 25-XIII: *Ross*, 14-III: *Stafford*, 24-II.
- SUDBURY DISTRICT.—Titaniferous magnetite with the copper and nickel ores of *Murray mine*, *McKim*, 11-V (G.S.C., N.S., XIV, 106H): with quartz in veins in *Moncrieff*, 1-I (G.S.C., N.S., V, 40F): titaniferous magnetite at the *Clarabelle mine*, *Snider*, 1-IV (G.S.C., N.S., XIV, 106H).
- THUNDER BAY DISTRICT.—Magnetite is found in greater or less abundance at *Algonquin lake*, *Kaministikwia river*: *Moss* (G.S.C., N.S., VI, 36R): *Strange* (G.S.C., N.S., XIII, 31, 32R).
- VICTORIA COUNTY.—*Dalton*, 26-XII and elsewhere (G.S.C., N.S., VI, 6 J): *Digby*, 15-VIII (G.S.C., N.S., VI, 7J).

QUEBEC.—

- ABITIBI TERRITORY.—Grains and crystals in chloritic rock at *Paint mountain* (G.S.C., N.S., I, 28D).
- ARGENTEUIL COUNTY.—*Grenville, 3-IV, V* (G.S.C., N.S., XII, 111J).
- ASHUANUPI TERRITORY.—*Ashuanipi river* (G.S.C., N.S., VII, 18R).
- BERTHIER COUNTY.—*St. Gabrielle de Brandon* (G.S.C., N.S., XI, 52J).
- BROME COUNTY.—*Bolton, 26-VII; 2-XIV: Brome, 12-XIII*.
- CHICOUTIMI COUNTY.—*Kenogami lake (T)* (G.S.C., N.S., VIII, 27R).
- CHAMPLAIN COUNTY.—Masses of non-titaniferous magnetite occur in pegmatite about one mile above the *Mattawin river*, other deposits in this district are usually titaniferous (G.S.C., N.S., V, 83SS).
- JOLIETTE COUNTY.—*Kildare, French lake*.
- MEGANTIC COUNTY.—*Inverness* (G.S.C., N.S., IV, 19K); near *Kinnears Mills* (G.S.C., N.S., III, 23T): *Leeds, 7-V* (G.S.C., N.S., IV, 19K).
- MONTCALM COUNTY.—*Rawdon, 2-11* (G.S.C., N.S., VII, 16R).
- NEW QUEBEC TERRITORY.—Magnetite is found associated with garnetiferous rocks and hematite on the *Kokoak river* (G.S.C., N.S., VII, 17R).
- OTTAWA COUNTY.—*Cameron, 39, 40-II: Hull, 13-VI; 11-VII; 2-X; 1-XI* (G.S.C., N.S., XII, 110-111J): *Mulgrave: Templeton, 28-VI* (G.S.C., N.S., XII, 111J): *Wright, 12-V*.
- PONTIAC COUNTY.—*Bristol, 22-II* (G.S.C., N.S., IV, 12K): *Litchfield, 12-I; 14-VIII* (G.S.C., N.S., XII, 63R): *5, 27-X*.
- PORTNEUF COUNTY.—Magnetite is found between *St. Catharines* and *Lake Sargent, Fossambault Seigniory* (G.S.C., N.S., V, 16L).
- RICHMOND COUNTY.—Near *Richmond* (Pr. Com. T. L. Walker).
- SAGUENAY COUNTY.—A yellow gneiss carrying large quantities of granular magnetite is found on the *Bersimis river* and elsewhere in this county, regarded by Low as being a probable source of the beds of yellow sand and black magnetic sand found in abundance along the *St. Lawrence* and *Gulf coast* (G.S.C., N.S., I, 11A); and on the portage to *Lake Matonipi* on the *Outardes river* (G.S.C., N.S., VIII, 104A).
- SHERBROOKE COUNTY.—Slaty magnetite occurs in veins in chloritic schists in *Ascot, 8-IX: Orford, 3-B*.
- TERREBONNE COUNTY.—Coarse crystalline magnetite occurs on *North river*, near *St. Jerome* (G.S.C., N.S., II, 16T): *Wexford, 7-I* (G.S.C., N.S., VII, 16R).
- TIMISKAMING COUNTY.—*Quinze river*.
- WOLFE COUNTY.—Magnetite occurs in serpentine on lots *19 and 20* in the *gore of South Ham* (G.S.C., N.S., IV, 19T): with copper pyrites in schists in *Wolfstown, 1-VIII* (G.S.C., N.S., XIII, 30R).

YUKON.—

Magnetite is of common occurrence in grains or fragments in the wash of many of the streams entering into the *Peel river* (G.S.C., N.S., XVI, 46CC).

WHITEHORSE MINING DIVISION.—Magnetite is found in basic dykes in this division (G.S.C., N.S., XIII, 51A).

Malachite.

(Basic carbonate of copper.)

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Malachite is found in crystal and massive forms with iron and copper minerals in limestones and porphyries at the head of *Copper creek*, *Boundary creek* (G.S.C., N.S., XIII, 21R).

NELSON MINING DIVISION.—Malachite is found at the *Eureka mine* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NICOLA MINING DIVISION.—Malachite has been observed in fine, radiating groups of small acicular crystals with specular iron, chalcopyrite, and pyrite in veins in the volcanic rocks of *Iron mountain* (G.S.C., N.S., XVI, 80A).

SOUTHERN INTERIOR AND BOUNDARY DISTRICTS.—Malachite is met with in connexion with copper ores generally in these districts.

NEW BRUNSWICK.—

CHARLOTTE, ST. JOHN, AND WESTMORLAND COUNTIES.—Malachite is met with in small quantities in connexion with the copper-bearing minerals of these counties (G.S.C., 1870-71, 226-227).

NOVA SCOTIA.—

Malachite is found associated with copper ores in various parts of the province (Pr. Com. H. Piers).

CUMBERLAND COUNTY.—*Two Islands* (Pr. Com. T. L. Walker).

PICTOU COUNTY.—Malachite is found in nodules or associated with plant remains in certain parts of the Permian sandstones in this county (G.S.C., N.S., XIV, 37M).

ONTARIO.—

ALGOMA DISTRICT.—Malachite occurs with copper ore in this district (G.S.C., N.S., IV, 44T).

HASTINGS COUNTY.—*Dungannon* (G.S.C., N.S., XIV, 236A): *Madoc* and *Marmora* (Ont. Bur. Min., 1900, 202).

PARRY SOUND DISTRICT.—*Foley township*.

THUNDER BAY DISTRICT.—Malachite occurs with copper ores in this district (G.S.C., N.S., IV, 44T).

TIMISKAMING DISTRICT.—Malachite occurs in small amounts in rusty cavities on *Matthias island*, *Lake Timagami* (G.S.C., N.S., X, 145-I).

QUEBEC.—

BROME COUNTY.—*Sutton, 9-IX.*

LOTBINIÈRE COUNTY.—In small fibrous masses in a drusy calcite at the *Black River mines, St. Flavien* (G.S.C., N.S., IV, 44T).

Malacolite.

(*Diopside.*)

(*Pyroxene.*)

(*Silicate of calcium and magnesium.*)

NOVA SCOTIA.—

INVERNESS COUNTY.—White malacolite occurs at *Lewis mountain, Whycocomagh* (Pr. Com. H. Piers).

Maltha.

(*Hydrocarbon.*)

ALBERTA AND SASKATCHEWAN.—

In the northern parts of these provinces drained by the *Athabaska* and *Peace rivers*, are immense areas of country overlaid by fine-grained sand rock saturated with semi-inspissated petroleum. This mineral on exposure becomes thickened, thus forming a mineral tar or maltha (G.S.C., N.S., IV, 82SS).

BRITISH COLUMBIA.—

QUEEN CHARLOTTE ISLANDS.—*Tar island* (G.S.C., N.S., III, 161R).

NEW BRUNSWICK.—

WESTMORLAND COUNTY.—The oxidation of small quantities of petroleum rising to the surface has given rise to deposits of maltha at *Dover* and probably elsewhere in this province (G.S.C., N.S., X, 71M).

Manganite.

(*Hydrous sesquioxide of manganese.*)

NEW BRUNSWICK.—

KINGS COUNTY.—Manganite is found in the carboniferous rocks of *Markhamville* (G.S.C., N.S., X, 45M).

NOVA SCOTIA.—

COLCHESTER COUNTY.—Manganite is found in the carboniferous rocks of *Black Rock, Clifton.*

HANTS COUNTY.—*Walton* (G.S.C., N.S., IV, 44T): *Tennycap* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—Near *Wallaback lake, New Ross* (Pr. Com. H. Piers).

PICTOU COUNTY.—*Bridgeville* (Pr. Com. H. Piers).

ONTARIO.—

ALGOMA DISTRICT.—Manganite associated with quartz, calcite, and a little fluorite, occurs in a vein in trappean rock at *Batchawana bay* (Geol. Can., 1863, 751).

QUEBEC.—

MAGDALEN ISLANDS.—*Amherst island* (G.S.C., N.S., IV, 44T); and *Grindstone island*.

Marcasite.

(Sulphide of iron.)

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Marcasite is found in some of the mines at the head of *Kettle river* (G.S.C., N.S., XV, 131A),

MANITOBA.—

Marcasite is found on the banks of the *Assiniboine river* (G.S.C., N.S., XV, 121A); it was also noted by Tyrrell in the form of nodules in white sandstone boulders on *Pemmican island* and elsewhere in *Lake Winnipegosis* (G.S.C., N.S., V, 153E).

ONTARIO.—

FRONTENAC COUNTY.—*Hinchinbrooke* (Ont. Bur. Min., 1900, 203).
THUNDER BAY DISTRICT.—*Silver islet: Neebing, 25-V* (Ont. Bur. Min., 1900, 203); *O'Connor (Beaver mine)* (Pr. Com. T. L. Walker).

Martite.

(Sesquioxide of iron.)

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Two Islands* (Pr. Com. T. L. Walker).
DIGBY COUNTY.—Martite has been met with in the Triassic traps of *North mountain* (G.S.C., N.S., IV, 45T); *Digby Neck* (Pr. Com. T. L. Walker).

ONTARIO.—

LANARK COUNTY.—*Dalhousie, 1-IV (Dalhousie mine)* (Ont. Bur. Min., 1900, 203).
SIMCOE COUNTY.—Martite has been noted in a gneissoid boulder at *Bass lake* a few miles north of *Orillia* (G.S.C., N.S., IV, 45T).
THUNDER BAY DISTRICT.—*Black Sturgeon lake*, south of *Lake Nipigon* (Pr. Com. T. L. Walker).

Melaconite.*(Oxide of copper.)*

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—Melaconite is found at the *True Blue Mining Claim*, near *Kaslo* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

GREENWOOD MINING DIVISION.—Melaconite occurs with copper bearing and other minerals at the head of *Copper creek* (G.S.C., N.S., XV, 125A).

QUEBEC.—

Melaconite is found in traces in some of the copper deposits of the Eastern Townships (G.S.C., N.S., IV, 45T).

Melanterite.*(Hydrated sulphate of iron.)*

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Melanterite is found in a ledge between *Big creek and Chilcotin river*.

MANITOBA.—

Township 44, range XXVIII, west of the 1st meridian (Mines, G.S.Br., Sum. Rep., 1908, 166).

NOVA SCOTIA.—

CAPE BRETON COUNTY.—Melanterite has been found in heaps of shale and slack coal at the *Glace Bay Coal mines* (G.S.C., N.S., IV, 45T).

ONTARIO.—

Melanterite has been found at times in connexion with some of the mineral veins in Algoma district; Hastings county; Peterborough county, and Thunder Bay district (Ont. Bur. Mines, 1900, 203).

Melilite.*(Silicate of aluminum, iron, calcium, magnesium, and sodium.)*

QUEBEC.—

JACQUES CARTIER COUNTY.—Observed by Adams as a characteristic constituent of alnoite at *Ste. Anne-de-Bellevue* (G.S.C., N.S., XIV, 24-O).

Meneghinite.*(Sulphide of lead and antimony.)*

ONTARIO.—

FRONTENAC COUNTY.—Meneghinite is found with quartz and dolomite in *Barrie, 5, 9-IX* (Ont. Bur. Min., 1900, 203).

HASTINGS COUNTY.—*Marmora, S. Emmons lot* (Pr. Com. F. D. Adams). Analysis of meneghinite from Barrie by Harrington (Trans. R.S.C., Vol. I, Sec. 3, p. 79).

S	Sb	As	Pb	Cu	Fe	Ag	Sp. Gr.
16.81	19.37	tr.	61.45	1.36	0.07	0.08	—99.14 6.33

Mercury.

BRITISH COLUMBIA.—

ALBERNI MINING DIVISION.—*Vancouver island*, in minute globules scattered through a thin vein of cinnabar, traversing a greenish, felsitic rock at *Sechart channel, Barkley sound* (G.S.C., N.S., V, 65R).

YALE MINING DIVISION.—Mercury is found in globules in some parts of the silver-ore of *Silver peak*, near *Hope* (G.S.C., N.S., V, 65-66R).

ONTARIO.—

TIMISKAMING DISTRICT.—Mercury is found in connexion with the silver-cobalt ores of the *Nipissing mine, Coleman township*, but the mode of occurrence, whether in the native condition or as a compound, has not yet been made clear (Eng. and Min. Journ. Sept. 30, 1911, 647).

Mesole.*(See Thompsonite.)**(Hydrated silicate of aluminum, calcium, and sodium.)***Mesolite.***(Hydrous silicate of aluminum, calcium, and sodium.)*

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—Mesolite is found at *North mountain and Port George* (G.S.C., N.S., IV, 45T).

KINGS COUNTY.—Mesolite is found at *Cape Blomidon* (Pr. Com. T. L. Walker).

ONTARIO.—

THUNDER BAY DISTRICT.—Mesolite is said to have been found with epidote in the amygdaloid of *Mamainse, Lake Superior* (Ont. Bur. Min., 1900, 203).

Analyses of Mesolite.

	1	2	3
SiO ₂	46.84	46.48	46.71
Al ₂ O ₃	25.92	27.04	26.68
CaO.....	9.63	9.63	9.55
Na ₂ O.....	5.21	4.45	5.68
H ₂ O.....	12.11	12.40	11.42
	99.71	100.00	100.04

Analysis by How (Am. Jour. Sci., Ser. 2, XXVI, p. 32).

1. From Port George.
2. From North mountain.
3. Sample dried over H₂SO₄.

Metacinnabarite.

(Sulphide of mercury.)

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—Metacinnabarite is found with cinnabar in cavities in quartz on the west side of *Read island* (G.S.C., N.S., V, 66R).

Meymacite.

The term "Meymacite" formerly applied to naturally occurring hydrated tungstic oxide has, at the suggestion of T. L. Walker (Am. Journ. Sci., Vol. XXV, 1908, 269), been discarded in favour of the name "Tungstite," which see.

Micaceous Iron Ore.

(See Hematite.)

(Oxide of iron.)

Mica.

See under its varieties—Biotite, Lepidolite, Muscovite, and Phlogopite.

Michel-Levyte.

(Sulphate of barium.)

QUEBEC.—

OTTAWA COUNTY.—Barium sulphate found in *Templeton, 12-XII*, supposed by Lacroix to be monoclinic, but according to Dana agreeing with ordinary barite in optical properties. It possesses certain peculiarities in cleavage, which are regarded by the latter authority as being due to pressure (G.S.C., N.S., IV, 66-67T).

Microcline.*(Silicate of aluminum and potassium.)***ONTARIO.—**

CARLETON COUNTY.—Microcline occurs with quartz and albite in *March, 6-III* (G.S.C., N.S., X, 220S).

FRONTENAC COUNTY.—Microcline occurs in large masses in *Bedford, 1-II* (*Richardson mine*) (Ont. Bur. Min., 1911, 107).

NIPISSING DISTRICT.—Amazonite, in good cleavable masses, is found in *Cameron, 7-B* (G.S.C., N.S., VI, 70AA).

RENFREW COUNTY.—A pale green amazonite occurs at *Mount St. Patrick*; and *Sebastopol* (G.S.C., N.S., IV, 17T).

QUEBEC.—

NEW QUEBEC TERRITORY.—Fine, cleavable amazonite occurs in pegmatite veins cutting schistose traps on some of the islands of *Paint Hills group* (G.S.C., N.S., XII, 19R).

OTTAWA COUNTY.—Microcline occurs in pegmatite in different parts of the townships of *Hull* (G.S.C., N.S., IV, 17T): *Templeton* (G.S.C., N.S., X, 124A): *Villeneuve* and *Wakefield* (G.S.C., N.S., IV, 17T).

SAGUENAY COUNTY.—*Block G, Bergonnes* (G.S.C., N.S., X, 220S). Analysis of microcline from *Bedford* (*Richardson*) (Ont. Bur. Min., 1911, 107).

SiO ₂	Al ₂ O ₃	CaO	K ₂ O	Na ₂ O	H ₂ O
65.87	19.10	0.20	12.24	2.56	0.64—100.61

Millerite.*(Sulphide of nickel.)***ONTARIO.—**

SUDBURY DISTRICT.—Millerite is found in crystals in the *Copper Cliff mine* (G.S.C., N.S., XIV, 13H): and at the *Vermilion mine* (Pr. Com. T. L. Walker).

TIMISKAMING DISTRICT.—Millerite occurs in some of the *Cobalt mines* (Pr. Com. F. D. Adams).

QUEBEC.—

SHERBROOKE COUNTY.—In small grains and prismatic crystals with chromiferous garnet disseminated through white, cleavable calcite in a vein in *Orford, 6-XII* (Geol. Can., 1863, 738).

Mineral Coat.*(See Coal.)*

Mineral Resin.

(Hydrocarbon.)

Mineral resin is frequently found disseminated through some of the coals and lignites of the *northwest provinces and territories* and *British Columbia* (G.S.C.; N.S., IV, 47T). See also Amber.

Mineral Tar.(See *Maltha*.)

(Hydrocarbon.)

Mirabilite.

(Glauber salt.)

(Hydrated sulphate of sodium.)

BRITISH COLUMBIA.—

OMINECA MINING DIVISION.—Mirabilite occurs as an efflorescence with epsomite on cliffs of shale at *Fort St. John, Peace river* (G.S.C., N.S., IV, 47T).

NOVA SCOTIA.—

HANTS COUNTY.—Mirabilite is found associated with gypsum at the *Clifton quarry, near Windsor* (G.S.C., N.S., IV, 47T): in the old *McDonald* and *Allison quarries* at *Avondale*, glauher salt has been found associated with rock salt, calcspar, aragonite, carbonate, and oxide of iron (Mines, Min. Br., No. 84, 150).

SASKATCHEWAN.—

Mirabilite occurs as an efflorescence in *township 36, range 16, west of the 3rd meridian*.

For analysis see Epsomite.

Mispickel.(See *Arsenopyrite*.)

(Sulph-arsenide of iron.)

Molybdenite.

(Sulphide of molybdenum.)

BRITISH COLUMBIA.—

Molybdenite is very commonly found associated with copper ores throughout the province (Pr. Com. W. J. Sutton).

BOUNDARY DISTRICT.—Molybdenite is frequently met with in connexion with the copper ores of this district (G.S.C., N.S., XIV, 62A).

KAMLOOPS MINING DIVISION.—Very fine specimens of molybdenite are found at a point 3 miles southwest of Grande Prairie (G.S.C., N.S., VIII, 14R).

LILLOOET MINING DIVISION.—*Lillooet river* (G.S.C., N.S., III, 157R).

NANAIMO MINING DIVISION.—Small quantities of molybdenite have been found in quartz veins near *Carrington bay*, *Cortex islands*, *Strait of Georgia* (G.S.C., N.S., II, 23B); in a copper bearing vein at *Malaspina* (G.S.C., N.S., III, 157R); *Texada island* (Pr. Com. W. J. Sutton).

NELSON MINING DIVISION.—Molybdenite is found at *Bear creek*, a branch of *Sheep creek* and at the *Dendney group* on *Lost creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW WESTMINSTER MINING DIVISION.—Molybdenite is found with the copper ores of Salmon Arm (G.S.C., N.S., III, 157R).

TRAIL CREEK MINING DIVISION.—A massive granular form has been noted at the *Giant claim* (G.S.C., N.S., XII, 23R).

VICTORIA MINING DIVISION.—*Vancouver island*, molybdenite is found on the north side of *Mount Buttle* (G.S.C., N.S., X, 122A).

YALE MINING DIVISION.—Fine specimens of molybdenite are found at *Spuzzum creek* (G.S.C., N.S., III, 157R).

MANITOBA.—

NELSON RIVER.—In pegmatite veins with pyrite and magnetite at *Little Playgreen lake* (G.S.C., N.S., XI, 10F).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Molybdenite is found in a granular quartz-rock in *Pensfield*, and in granites near *St. Stephen* (G.S.C., N.S., X, 126M).

GLOUCESTER COUNTY.—Molybdenite is found on the *Nipisiguit river* near *Bathurst* (G. S.C., N.S., X, 126M).

YORK COUNTY.—*Burnt Hill brook*, *Southwest Miramichi river* (Mines, G.S.Br., Sum. Rep., 1911, 361, G.S.C., 1979-81, 45D).

NOVA SCOTIA.—

CAPE BRETON COUNTY.—Near *Eagle head* (Pr. Com. H. Piers).

HALIFAX COUNTY.—Drift boulders containing molybdenite have been found between *Hammonds Plains* and *Bedford* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—Molybdenite occurs in pegmatite in *New Ross* (G.S.C., N.S., XV, 186AA).

SHELburne COUNTY.—*Jordan river* (G.S.C., N.S., IX, 146M).

ONTARIO.—

- ADDINGTON COUNTY.—*Sheffield*, 5-XIV (G.S.C., M.R.C., No. 872, p. 9).
- CARLETON COUNTY.—In a dyke of feldspar cutting limestone in *March*, 6-VI (G.S.C., M.R.C., No. 872, p. 9).
- FRONTENAC COUNTY.—*Miller*, 3-VIII (G.S.C., M.R.C., No. 872, p. 9); 5 *North-east Range* (Mines, Min. Br., Rep. 93, 44).
- HALIBURTON COUNTY.—Harcourt, 2, 3-I (G.S.C., N.S., XI, 111A); 2, 3-II (Mines, Min. Br., Rep. 93, p. 40); *Lutterworth*, 23-V (G.S.C., N.S., VI, 8J); 7-X (Mines, Min. Br., Rep. 93, 40).
- HASTINGS COUNTY.—Molybdenite occurs in the elaeolite-syenites of *Dungannon* (Can. Rec. Sci., Vol. VII, 228): *Monteagle*, 26, 27-VI (G.S.C., M.R.C., No. 872, 9).
- KENORA DISTRICT.—In small veinules traversing granitoid gneiss on *Quarry island*, and in the area between *Rossland* and *Lake of the Woods* (G.S.C., N.S., I, 144C).
- LEEDS COUNTY.—*North Crosby*, 14-V (G.S.C., M.R.C., No. 872, 9).
- NIPISSING DISTRICT.—Molybdenite occurs as an occasional constituent of quartz veins in the district about *Lake Nipissing* (G.S.C., N.S., X, 159-I).
- PATRICIA DISTRICT.—In crystals in pegmatite dykes cutting granite near the head of *Cross lake*, *Cat river* (G.S.C., N.S., XV, 207A).
- RENFREW COUNTY.—*Bagot*, 15-X (G.S.C., M.R.C., No. 872, pp. 9 and 10): *Brougham*, 16-I (G.S.C., N.S., XII, 23R); 7, 8-X: 8-XI, XII (Mines, Min. Br., Rep. 93, 47): *Lyndoch*, 5, 6-VIII (Mines, Min. Br., Rep. 93, 45, 46): *Raglan*, 6-XVIII (Mines, Min. Br., Rep. 93, 46): *Ross*, 22-II; 7-IX (G.S.C., M.R.C., 872, 9).
- VICTORIA COUNTY.—Molybdenum occurs in veins in granitoid gneiss in *Digby*, 16-VII (G.S.C., N.S., VI, 7J).

QUEBEC.—

- CHICOUTIMI COUNTY.—*Laterriere*, 7, 8-XIII (Pr. Com. T. C. Denis).
- MEGANTIC COUNTY.—In veins of quartz and bitter spar in *Leeds* (Geol. Can., 1863, 755).
- OTTAWA COUNTY.—*Eardley*, 2-VIII (G.S.C., M.R.C., 872, 15): *Egan*, 69-IV (G.S.C., N.S., IX, 17R): *Hull*, 12-XI; 23-XV: fine specimens in quartz from *Masham*, 35, 36-VII: *Templeton*, 12-XII (G.S.C., M.R.C., No. 872, p. 8): Wakefield (Pr. Com. F. D. Adams).
- PONTIAC COUNTY.—*Aldfield*, 2-III: *Alleyn*, 1-II (G.S.C., M.R.C., No. 872, 15): *Litchfield*, 5-IV; 21-XI (G.S.C., M.R.C., No. 872, 16).
- SAGUENAY COUNTY.—*Manikuagan bay* (Geol. Can., 1863, 504).
- TERREBONNE COUNTY.—*St. Jerome* (Geol. Can., 1863, 504).
- TIMISKAMING COUNTY.—*Kewagama river* and *lake* (Pr. Com. F. D. Adams); *Kinojevis river*.

Molybdate.*(Hydrated molybdate of iron.)*

Molybdate may be looked for at any of the molybdenite occurrences.

Monazite.*(Phosphate of cerium, lanthanum, didymium, sometimes with silicate of thorium.)***BRITISH COLUMBIA.—**

QUESNEL MINING DIVISION.—Monazite occurs sparingly in the black sand of *Quesnel river* about 8 miles above its junction with the *Fraser river*.

NOVA SCOTIA.—

LUNENBURG COUNTY.—Monazite occurs in small quantities in a pegmatite dyke near *Lake Ramsay, New Ross* (Mines, G. S. Br., Sum. Rep., 1907, 82).

QUEBEC.—

OTTAWA COUNTY.—In coarse pegmatite at the *Villeneuve mine*, in *Villeneuve, 30-1* (G.S.C., N.S., IV, 48T).

Analysis of monazite from Villeneuve by Genth (Am. Journ. Sci., Ser. 3, Vol. XXXVIII, 203).

P ₂ O ₅	Ce ₂ O ₃	(LaDi) ₂ O ₃	(YeR ₂)O ₃	Fe ₂ O ₃	ThO ₂	CaO	MgO	SiO ₂	H ₂ O
26.86	24.80	26.41	4.76	1.07	12.60	1.54	0.04	0.91	0.78
		Sp. Gr.							
-99.77		5.2333							

Mordenite.*(Hydrated silicate of potassium, sodium, calcium, and aluminum.)**(See Steeleite.)***NOVA SCOTIA.—**

ANNAPOLIS COUNTY.—*Margaretville* (Pr. Com. F. D. Adams).

KINGS COUNTY.—Mordenite occurs embedded in trap some 2 or 3 miles east of *Morden* (G.S.C., N.S., IV, 48T).

Analysis of mordenite from Morden by How (Journ. Chem. Soc., Vol. II, 1864, p. 100).

SiO ₂	Al ₂ O ₃	CaO	Na ₂ O	H ₂ O	Sp. Gr.
68.40	12.77	3.46	2.35	13.02	2.08

Morenosite.*(Hydrated sulphate of nickel.)*

ONTARIO.—

ALGOMA DISTRICT.—Morenosite was observed by Hunt as an efflorescence of minute acicular, greenish-white crystals on the nickel ore at *Wallace mine, Lake Huron* (G.S.C., N.S., IV, 48T).

SUDBURY DISTRICT.—Morenosite occurs as a greenish-white and pale, apple-green incrustation on associated gersdorffite, niccolite, chalcopyrite, and pyrrhotite at the *O'Connor claim in Denison, 12-III*; and on some of the nickel ore of the *Worthington mine, Drury, 2-II* (G.S.C., N.S., VI, 27R).

Moss Agate.*(See Agate.)**(Silicon dioxide.)***Mountain Cork and Mountain Leather.***(Amphibole.)**(Silicate of magnesium, calcium, and iron.)*

NOVA SCOTIA.—

COLCHESTER COUNTY.—Mountain cork is found at *Lower Five Islands* (G.S.C., N.S., XII, 194A).

ONTARIO.—

THUNDER BAY DISTRICT.—Mountain leather occurs at the *Beaver mine, O'Connor township* (G.S.C., N.S., IV, 21T).

QUEBEC.—

OTTAWA COUNTY.—Mountain leather was formerly found in a railway cutting near *Kirk Ferry, Hull township* (G.S.C., N.S., XII, 40G); *Wakefield, 23-II (Lake Girard mine)* (G.S.C., N.S., VI, 26R): mountain cork is found in *Buckingham, 18-XII (Grant mine)* (Can. Rec. Sci., 1890-91, IV, 228); *19-XII (Emerald mine)* (G.S.C., N.S., IV, 21T).

Analysis of mountain cork from Grant mine, Buckingham, 18-XII by Sidney Calvert (Can. Rec. Sci., 1890-91, IV, 228).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	CaO	MgO	Loss (ign.)
53.99	0.55	1.00	10.99	2.19	12.53	16.25	2.56—100.06

Muscovite.

(*Hydrous silicate of potassium and aluminum.*)

BRITISH COLUMBIA.—

Muscovite is found in various places in pegmatite dykes.

CARIBOO MINING DIVISION.—*Tete Jaune Cache* (G.S.C., N.S., VIII, 121A).

GOLDEN MINING DIVISION.—*Ice river, Beaverfoot river* (G.S.C., N.S., XI, 165A): sericite constitutes over 60 per cent of a foliated schist from *Waitabit creek, Columbia river* (G.S.C., N.S., VI, 21R).

YALE MINING DIVISION.—*Skuzzy creek*.

MANITOBA.—

NELSON RIVER.—Muscovite occurs with tourmaline, biotite, etc., in coarse pegmatite dykes, cutting hornblende schists in the neighbourhood of *Cross lake* (G.S.C., N.S., XIII, 26F).

NOVA SCOTIA.—

Muscovite occurs in most of the granite throughout the province, but is seldom found in large plates.

VICTORIA COUNTY.—Baddeckite occurs in fine, copper-red scales in connexion with a highly plastic clay near *Baddeck* (G.S.C., N.S., IX, 11R).

ONTARIO.—

Muscovite occurs at many points in connexion with the crystalline rocks of the province.

ALGOMA DISTRICT.—Chromiferous mica occurs on *Aird island, Lake Huron* (Am. Journ. Sci., Ser. 3, XXXIII, 284).

FRONTENAC COUNTY.—*Miller, 4, 5-XI* (G.S.C., N.S., V, 70AA).

HASTINGS COUNTY.—*Dungannon, 20-X* (G.S.C., N.S., VII, 98A): *Faraday, 26-B* (G.S.C., Mem. 6, 206).

LEEDS COUNTY.—*Yeo island* (Geol. Can., 1863, 494).

NIPISSING DISTRICT.—*Calvin, 16-II* (G.S.C., N.S., VI, 72AA): *Mattawa*.

PARRY SOUND DISTRICT.—*Ferguson, 2-II* (G.S.C., N.S., XIII, 173A).

RAINY RIVER DISTRICT.—*Lake of the Woods* (Ont. Bur. Min., 1900, 205).

RENFREW COUNTY.—A bright, emerald-green muscovite forms the principal constituent of a mica schist in the township of *Matawatchan* (G.S.C., N.S., V, 21R): near *Pembroke* (G.S.C., N.S., IV, 48T): *Raglan*, at the corundum mines at *Craigmont*, some very beautiful curved muscovite has been obtained. While the cleavage is perfect the curved surfaces are always concave-convex (Pr. Com. T. L. Walker).

QUEBEC.—

- BROME COUNTY.—Chromiferous muscovite occurs in the magnesite of *Sutton, 12-VIII*: and also in the dolomites of *Bolton, 17-X*.
 CHARLEVOIX COUNTY.—*Lac du Pied des Monts* (G.S.C., N.S., X, 120A).
 CHICOUTIMI COUNTY.—*21 Road Range North, Jonquiere* (G.S.C., 1882-84, 9D).
 OTTAWA COUNTY.—*Masham, 8-VII: Villeneuve, 31, 32-I: Wakefield, 14-VII* (G.S.C., N.S., X, 220S).
 PONTIAC COUNTY.—*Litchfield, 21-X*.
 SAGUENAY COUNTY.—*McGie mine, Bergonnes* (G.S.C., M. R. C., 869, 7).

YUKON.—

- KLONDIKE RIVER.—Sericite occurs in the quartz drift of *Bonanza creek* (G.S.C., N.S., XII, 24R).

Analyses of Muscovite.

	1	2	3	4
SiO ₂	45.49	43.72	46.05	48.96
Al ₂ O ₃	31.08	35.51	38.36	13.85
Fe ₂ O ₃	trace	2.94	0.97	25.82
Cr ₂ O ₃	3.09	1.26	.....	.....
MnO.....	.....	0.26	.....	.....
CaO.....	0.51	4.46	2.40	1.17
MgO.....	3.36	1.36	0.47	2.65
K ₂ O.....	9.76	8.88	6.19	3.47
Na ₂ O.....	0.90	0.39	2.98	0.22
Li ₂ O.....	.....	.....	0.34	.....
Cs ₂ O.....	.....	.....	0.03	.....
H ₂ O.....	5.85	3.68	2.48	3.78
	100.04	102.46	100.27	99.92
Sp. Gr.....		2.93		3.252

1. Chromiferous mica from Aird island by Cairns (Chester, Am. Journ. Sci., Ser. 3, Vol. XXXIII, p. 284).
2. From Matawatchan by Wait (Hoffmann, G.S.C., N.S., V, 21R).
3. Sericite from Waitabit creek by Johnston (Hoffmann, G.S.C., N.S. VI, 21-22R).
4. Baddeckite by Johnston (Hoffmann, G.S.C., N.S., IX, 11R).

Nail-Head-Spar.*(See Calcite.)**(Carbonate of calcium.)***Natroalunite.**

BRITISH COLUMBIA.—

QUATSINO MINING DIVISION.—*Easy cove, Kyuquot sound*, west coast of *Vancouver island*, (information from Mr. C. H. Clapp).

Natrolite.*(Hydrated silicate of sodium and aluminum.)*

BRITISH COLUMBIA.—

TRAIL CREEK MINING DIVISION.—Natrolite occurs in small quantities at the *Josie mine, Rossland*.

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—*Gates mountain* (G.S.C., N.S., IV, 48T); *Margaretville* (G.S.C., 1882-84, 25L); *Port George* (G.S.C., 1882-84, 25L).

CUMBERLAND COUNTY.—Handsome specimens of natrolite are found at *Cape d'Or* (How, Mineralogy of Nova Scotia, 202); *Five Islands*; *Horse Shoe Cove*; *Swan creek* and *Two islands* (G.S.C., 1882-84, 28L).

KINGS COUNTY.—*Cape Blomidon* (G.S.C., N.S., III, 78S); *Cape Split* (How, Mineralogy of Nova Scotia, 203) and *Stronach brook* (G.S.C., 1882-84, 25L).

ONTARIO.—

THUNDER BAY DISTRICT.—Natrolite is found in small quantities in some of the amygdaloidal traps of *Lake Superior* (Ont. Bur. Min., 1900, 205).

QUEBEC.—

HOCHELAGA COUNTY.—Natrolite occurs with analcite in dykes cutting Trenton limestones at the *reservoir extension, Montreal* (G.S.C., N.S., IV, 48T); also at *Corporation Quarry, Outremont* (Pr. Com. F. D. Adams).

Analyses of Natrolite.

	1	2
SiO ₂	47.40	45.74
Al ₂ O ₃	26.38	28.38
CaO.....	0.48	0.27
Na ₂ O.....	16.48	14.23
K ₂ O.....	0.57	1.16
H ₂ O.....	9.75	10.11
	101.06	99.89
Sp. Gr.....	2.22	.....

1. From Montreal, by Harrington (G.S.C., 1874-75, 303).

2. From Cape Blomidon, by Marsh (Dana, Sys. Min., 6th Ed., 303).

Natron.*(Hydrated carbonate of sodium.)*

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Natron occurs at *Goodenough lake*, where it forms on the bottom during the winter, sometimes to a thickness of 14 inches (G.S.C., N.S., XI, 12-13R).

Analysis of natron, by Johnston (Hoffmann, G.S.C., N.S., XI, 12-13R).

CO ₂ (expelled on ignition)	CO ₂ (in ignited residue)	Na ₂ O	H ₂ O		
0.29	15.17	21.36	63.03		
NH ₃	SO ₃	P ₂ O ₅	B ₂ O ₃	Cl	SiO ₂
undet.	0.08	0.01	tr.	0.01	0.01—99.96

Nephelite.*(Silicate of aluminum and sodium.)*

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—Nephelite occurs as a constituent of the nepheline-syenite on *Ice river*, *Beaverfoot river* (G.S.C., N.S., I, 123B).

ONTARIO.—

HALIBURTON COUNTY.—Nephelite forms a prominent constituent in some of the syenites of this county (G.S.C., N.S., XIV, 148A).

HASTINGS COUNTY.—*Dungannon, 12-XI; 25-XIV* (G.S.C., N.S., IX, 50A).

PETERBOROUGH COUNTY.—Nephelite forms a prominent constituent in some of the syenites of this county (Ont. Bur. Min., 1900, 205).

RAINY RIVER DISTRICT.—*Poohbah lake* (Ont. Bur. Min., 1900, 205).

RENFREW COUNTY.—Nephelite forms a prominent constituent in some of the syenites of this county (Ont. Bur. Min., 1900, 205).

THUNDER BAY DISTRICT.—Nephelite occurs in large, orange-red grains with black hornblende in white feldspar boulders on *Pic island*, *Lake Superior* (Geol. Can., 1863, 480); and on the main shore in the vicinity of *Port Coldwell* (Pr. Com. T. L. Walker).

QUEBEC.—

BROME COUNTY.—*Brome mountain* (G.S.C., N.S., IV, 49T).

HOCHELAGA COUNTY.—Nephelite occurs in the syenite of *Montreal* (G.S.C., N.S., IV, 49T).

ROUVILLE COUNTY.—*Beloil* (G.S.C., N.S., IV, 49T).

YAMASKA COUNTY.—*Yamaska mountain* (G.S.C., N.S., XVI, 36H).

Analysis of nephelite from York river, Dungannon, Hastings county, by Harrington (Am. Journ. Sci., Vol. XLIII, 1894, p. 17: and G.S.C., Mem. 6, p. 236).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	K ₂ O	Na ₂ O	Loss (ign.)	Sp. Gr.
43.51	33.78	0.15	0.16	tr.	5.40	16.94	0.40—100.34	2.625

Nickel Gymnite.

(See *Genthite*.)

(*Hydrated silicate of nickel, aluminum, calcium, etc.*)

Nitre.

(*Nitrate of potassium.*)

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—*Big Bar, Fraser river* (G.S.C., N.S., III, 161R).

QUESNEL MINING DIVISION.—Nitre occurs as a white, granular powder filling holes and cavities formed from the decay of sticks and logs, which have subsequently been occupied by marmots in the travertine of *Nazco river*, about 5 miles below the mouth of the *Clisabako river* (G.S.C., 1875-76, 264-265).

Nitrogen.

BRITISH COLUMBIA.—

VICTORIA MINING DIVISION.—Nitrogen forms the principal constituent of a natural gas issuing from a bore-hole 1,100 feet deep at a rate of 100 cubic feet per minute on *Pender island, Strait of Georgia* (Pr. Com. W. F. Robertson).

Analysed by D. McIntosh and F. M. G. Johns, McGill University Montreal.

Nitrogen.....	94.0
Carbon dioxide.....	6.0
Heavy hydrocarbon.....	....
Ethylene.....	....
Carbon monoxide.....	....
Oxygen.....	trace
Hydrogen.....	....
Methane.....	....

Ochre.

(See *Iron Ochre*.)

(*Hydrated oxide of iron.*)

Octahedrite.

(*Oxide of titanium.*)

NOVA SCOTIA.—

GUYSBOROUGH COUNTY.—Octahedrite is stated by Professor How to occur in small, but fine crystals in quartz at *Sherbrooke* (Min. N.S., 209).

Oligoclase.*(Silicate of aluminum, sodium, and calcium.)***ONTARIO.—**

Oligoclase occurs in connexion with the diorites of the south central part of the province.

LANARK COUNTY.—*South Sherbrooke, 14-I (Fournier mine) (G.S.C., 1873-74, 198).*

SUDBURY DISTRICT.—*Dryden, 8-III.*

QUEBEC.—

IBERVILLE COUNTY.—Oligoclase occurs with black hornblende in the intrusive diorite of *Mount Johnson (G.S.C., N.S., IV, 50T).*

OTTAWA COUNTY.—Oligoclase occurs in more or less perfect crystals in groups in *Hull, 12-XVI.*

Analyses of Oligoclase.

	1	2
SiO ₂	58.58	62.05
Al ₂ O ₃	24.78	22.60
Fe ₂ O ₃	trace	0.75
CaO.....	4.84	3.96
MgO.....	0.20	....
Na ₂ O.....	6.63	7.95
K ₂ O.....	2.15	1.80
H ₂ O.....	1.85	0.80
	99.03	99.91
Sp. Gr.....	2.63-2.64	2.631

1. From South Sherbrooke, by Harrington (G.S.C., 1873-74, 198).

2. From Mount Johnson, by Hunt (Geol. Can., 1863, 477).

Olivine.*(See Chrysolite.)**(Silicate of magnesium and iron.)***Ontariolite.****ONTARIO.—**

PETERBOROUGH COUNTY.—Described by C. U. Shepard (Am. Journ. Sci., Ser. 3, Vol. XX, p. 54), from a specimen from *Galway*; a glossy scapolite, often black from inclusions, probably of graphite. It may probably, as suggested by Shepard, belong with mizozonite and dipyre (G.S.C., N.S., IV, 50T).

Opal.*(Hydrated oxide of silicon.)**(See also Cacholong and Hyalite.)***BRITISH COLUMBIA.—**

ASHCROFT MINING DIVISION.—White, pale greenish-white and apple-green opal occurs in the Tertiary agglomerate of *Savona mountain* (G.S.C., N.S., V, 16R).

QUESNEL MINING DIVISION.—Finely laminated, massive opal occurs with Tertiary argillite and sandstones at the *Horse Fly mine*, *Horse Fly river* (G.S.C., N.S., VII, 14R).

SIMILKAMEEN MINING DIVISION.—Semi-opal occurs at *Agate mountain* (Journ. Can. Min. Inst., 1911, Vol. XIV, 606).

SLOCAN MINING DIVISION.—Common opal has been found in the neighbourhood of *Fourmile creek*, *Slocan lake* (G.S.C., N.S., VI, 29R).

NOVA SCOTIA.—

LUNENBURG COUNTY.—Girasol and common opal have been found in granite between *New Ross* and *Lake Ramsay* (N.S. Inst. Nat. Sci., XII, pt. 4, p. 446).

Orthite.*(See Allanite.)**(Silicate of aluminum, iron, cerium, didymium, calcium, etc.)***Orthoclase.***(Silicate of aluminum and potassium.)***BRITISH COLUMBIA.—**

VERNON MINING DIVISION.—Well formed crystals of orthoclase are found at the south end of *Okanagan lake* (Pr. Com. T. L. Walker).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—*New River* (G.S.C., 1870-71, 238).

KINGS COUNTY.—Stated by Bailey and Matthews to occur in crystals at *Clifton* and *Lands End* (G.S.C., 1870-71, 238).

NOVA SCOTIA.—

Orthoclase occurs as a constituent of granite in many parts of the province in pegmatite—sometimes in large crystals (Pr. Com. H. Piers).

ONTARIO.—

Orthoclase is a constituent of many igneous and metamorphic rocks in this province. It is also one of the principal constituents of perthite, and the sub-variety micropertthite is frequently mistaken for it. Fine examples have been found at the localities given below.

HALIBURTON COUNTY.—Orthoclase occurs in reticulating veins with other minerals cutting the iron ore-body in *Lutterworth*, 5-V, VI (G.S.C., N.S., VI, 8J).

HASTINGS COUNTY.—*Dungannon*, 25-XIV (G.S.C., Mem. 6, 241): lot 18, west of *Old Hastings Road*, in the township of *Herschell*, north of *Bird creek* (G.S.C., Mem. 6, 143): *Wicklów*, 2-III.

LANARK COUNTY.—*Bathurst*, 20-IX: *North Burgess* (Ont. Bur. Min., 1900, 205).

RENFREW COUNTY.—Fine examples of orthoclase have been found in *Sebastopol*, 31-XI, 23-XII: *Ross*, 13-VI (G.S.C., 1882-84, 6L).

QUEBEC.—

ARGENTEUIL COUNTY.—Orthoclase is sometimes found in large * crystals in *Grenville* and *Chatham townships* (G.S.C., N.S., IV, 50T).

BROME COUNTY.—Orthoclase is a constituent of the micropertthite of this county (G.S.C., N.S., IV, 50T).

CHAMBLY COUNTY.—Orthoclase is a constituent of the micropertthite of this county (G.S.C., N.S., IV, 50T).

MEGANTIC COUNTY.—Orthoclase occurs in veins cutting altered slates in *Leeds* and *Inverness* (G.S.C., N.S., IV, 50T).

OTTAWA COUNTY.—Good specimens of this mineral are sometimes found in connexion with the apatite-bearing rocks of *Hull*, *Templeton*, and *Buckingham* (G.S.C., 1877-78, 30G): it also occurs with the graphite deposits in *Buckingham* (G.S.C., 1876-77, 511-12).

RICHMOND COUNTY.—*Cleveland* (Geol. Can., 1863, 606).

SAGUENAY COUNTY.—*Mingan seigniory*, where large quantities of orthoclase are found in pegmatite veins (Pr. Com. T. C. Denis).

SHEFFORD COUNTY.—Orthoclase is a constituent of the micropertthite of this county (G.S.C., N.S., IV, 50T).

Analyses of Orthoclase.

	1	2	3	4
SiO ₂	64.140	63.460	65.75	63.00
Al ₂ O ₃	18.620	18.780	19.40	18.93
Fe ₂ O ₃	0.374	0.374	.....	0.59
MnO.....	tr.	tr.	.....	.....
CaO.....	0.740	1.280	0.45	0.08
MgO.....	0.065	0.216	.....	0.09
K ₂ O.....	14.868	13.923	13.60	12.08
Na ₂ O.....	1.766	2.173	0.69	3.67
H ₂ O (ign.).....	0.406	0.466	0.25	1.00
	100.979	100.692	100.14	99.44
Sp. Gr.....	2.5364	2.578	2.56	2.558

- 1 and 2. From Buckingham, 27-VI (Hoffmann, G.S.C., 1876-77, 511-512).
3. From Riviere Rouge, Argenteuil county, by Hunt (Geol. Can., 1863, p. 474).
4. From Dungannon by Harrington (Am. Journ. Sci., Ser. 3, Vol. XLVIII, p. 19).

Osmiridium.*(Alloy of osmium and iridium.)***BRITISH COLUMBIA.—**

QUESNEL MINING DIVISION.—Osmiridium has been found in small quantities in connexion with the platinum of the *Quesnel river* and its tributary the *Horse Fly river* (G.S.C., N.S., XV, 190S).

SIMILKAMEEN MINING DIVISION.—Osmiridium has been found with platinum on the *Tulameen* and *Upper Similkameen rivers* (G.S.C., N.S., III, 104R).

QUEBEC.—

BEAUCE COUNTY.—Mentioned by Hunt as occurring with the platinum of the *Riviere-du-Loup, Chaudiere river* (G.S.C., N.S., 11, 5T).

YUKON.—

The presence of osmiridium with gold from the *Klondike river* has been detected by Mr. Carmichael of the Provincial Department of Mines, Victoria, B.C. (G.S.C., N.S., XIV, 64B).

Ottrelite.*(See Chloritoid.)**(Silicate of aluminum, iron, and magnesium.)***Oxalite.***(See Humboldtine.)**(Hydrous oxalate of iron.)***Ozocerite.***(Mineral wax.)**(Carbon and hydrogen.)*

BRITISH COLUMBIA.—

QUEEN CHARLOTTE MINING DIVISION.—Ozocerite occurs at several points on Graham island (Pr. Com. W. F. Robertson and Wm. Thomlinson).

Pargasite.*(Hornblende.)**(Amphibole.)**(Silicate of magnesium, iron, and aluminum.)*

ONTARIO.—

RENFREW COUNTY.—Pargasite is found in finely terminated crystals, sometimes one inch in diameter, with greenish white pyroxene at the *High falls* and the *Ragged chute* on the *Madawaska* in *Bliethfield* (Geol. Can., 1863, 466).

Analysis of paragasite by Hunt (Geol. Can., 1863, p. 466).

SiO ₂	Al ₂ O ₃	FeO	CaO	MgO	Vol.	Sp. Gr.
55.05	4.50	5.85	13.44	20.95	0.35—100.14	3.050—3.058

Pectolite.*(Hydrous silicate of sodium and calcium.)*

ONTARIO.—

THUNDER BAY DISTRICT.—Pectolite occurs in radiated, fibrous aggregations at *McKellar point*, *Thunder bay* (G.S.C., N.S., IV, 51T).

QUEBEC.—

MEGANTIC COUNTY.—Pectolite occurs in acicular crystals and massive forms at the *King mine*, *Thetford*, 26-V (Pr. Com. Eug. Poitevin).

Pearl Spar.

(See Dolomite.)

(Carbonate of calcium and magnesium.)

Pentlandite.

(Sulphide of nickel and iron.)

ONTARIO.—

SUDBURY DISTRICT.—Pentlandite occurs in *Blezard, 5-I (Stobie mine)* (G.S.C., N.S., XIV, 94H); *Denison, 5-IV (Vermilion mine)* (Pr. Com. F. D. Adams); *Drury, 2-II (Worthington mine)*; *McKim, 12-II (Copper Cliff mine)*; *6-VI (Frood mine)*; *Snider, 1-I (Evans mine)*; *10-I (Creighton mine)* (G.S.C., N.S., XIV, 94H).

Analyses of Pentlandite.

	1	2	3	4	5	6	7	8	9
S.....	33.42	32.90	32.30	33.30	34.35	33.50	33.90	35.43	33.55
Fe.....	30.25	30.00	29.17	30.04	29.80	30.30	29.90	29.95	29.60
Ni.....	34.23	34.82	33.70	34.98	35.05	35.00	34.70	34.12	34.90
Co.....	0.85	0.84	0.78	0.85	....	....	....	....	....
Insol.....	0.67	....	....	....	....	....	....	....	....
	99.42	98.56	95.95	99.17	99.20	98.80	98.50	99.50	98.05
Sp. Gr.	4.94	....	....	....	....	....	....	....	....

- 1. By Penfield (Am. Journ. Sci., Ser. 3, XLV, 493-494).
 - 2. From Creighton mine
 - 3. From Worthington mine
 - 4. From Frood mine
 - 5. and 6. From Copper Cliff mine
 - 7. From the Scobie mine
 - 8. From the Evans mine
 - 9. From the Evans mine
- } (By Dickson, Trans. Amer. Inst.,
Min. Eng., February, 1903).
- } (By Brown, Eng. and Min. Journ.,
Vol. LVI, 566).

Peristerite.

(Albite.)

(Silicate of aluminum and calcium.)

ONTARIO.—

LANARK COUNTY.—This variety of albite, so named from its beautiful, bluish opalescence, is found in crystals and large cleavable masses in the Grenville strata of *Bathurst, 19-IX* (Geol. Can., 1863, 833).

PETERBOROUGH COUNTY.—Peristerite is found in a vein made up of a fine-grained mixture of reddish-white albite and quartz on the north shore of *Stoney lake*, near the mouth of *Eel creek*, *Burleigh* (G.S.C., N.S., III, 75S).

RENFREW COUNTY.—Peristerite was reported to occur in *Bromley* (G.S.C., N.S., VI, 70A).

QUEBEC.—

OTTAWA COUNTY.—Fine specimens of peristerite said to have been found in *Buckingham* have been brought to the writer for examination: good specimens at the *Villeneuve mine*, *Villeneuve*, 31-I. Analysis of peristerite from Bathurst by Hunt (Geol. Can., 1863, p. 477).

SiO ₂	Al ₂ O ₃	K ₂ O	Na ₂ O	CaO	MgO	Fe ₂ O ₃	Vol.
66.80	21.80	0.58	7.00	2.52	0.20	0.30	0.60—99.80
Sp. Gr.							
2.625							

Perthite.

(*Interlaminated feldspars.*)

(*Silicate of aluminum and alkalis.*)

ONTARIO.—

HASTINGS COUNTY.—Perthite occurs in masses in *Dungannon*, 20-X (G.S.C., N.S., VII, 98A).

LANARK COUNTY.—*North Burgess*, 3-VI (Geol. Can., 1863, 833); 4-VI (Ont. Bur. Min., 1900, 206).

NIPISSING DISTRICT.—This form of feldspar, consisting of parallel intergrowths of orthoclase and albite, is found associated with amazonite in *Cameron*, 7 B (G.S.C., N.S., X, 160-1).

QUEBEC.—

BROME COUNTY.—An interesting micropertthite occurs in the trachytes of *Brome mountain* (Geol. Can., 1863, 474-476).

SHEFFORD COUNTY.—Micropertthite also occurs in the trachytes of *Shefford mountain* (Geol. Can., 1863, 474-476).

Analyses of Perthite.

	1	2	3
SiO ₂	66.44	65.70	65.15
Al ₂ O ₃	18.35	20.80	20.55
Fe ₂ O ₃	1.00	.....	.....
CaO.....	0.67	0.84	0.73
MgO.....	0.24	.....	.....
K ₂ O.....	6.37	6.43	6.39
Na ₂ O.....	5.56	6.52	6.67
Vol.....	0.40	0.50	0.50
	99.03	100.79	99.99
Sp. Gr.....	2.57—2.58	2.575	2.561

1. From North Burgess.
2. From Brome mountain.
3. From Shefford mountain, by Hunt (Geol. Can., 1863, 474-476).

Petalite.

(Silicate of aluminum, lithium, and sodium.)

ONTARIO.—

YORK COUNTY.—According to Dr. Bigsby this mineral was found with tremolite in a large boulder on the lake shore at *Toronto* (Geol. Can., 1863, 481).

Petroleum.

(Hydrocarbon.)

ALBERTA.—

Athabaska river (G.S.C., N.S., V, 66D); *Peace river* (G.S.C., N.S., IV, 14A); *Pincher creek* (G.S.C., N.S., V, 9AA).

BRITISH COLUMBIA.—

FORT STEELE MINING DIVISION.—In some of the tributaries of the *Flat Head river* (G.S.C., N.S., V, 12AA).

QUEEN CHARLOTTE MINING DIVISION.—A thickened petroleum is mentioned by Ells as filling cavities in diabase on the west shore of *Graham island* (G.S.C., N.S., XVI, 46B).

MANITOBA.—

MARQUETTE COUNTY.—The dark shales on *Vermilion* and *Ochre rivers* contain a small quantity of petroleum (G.S.C., N.S., III, 16A).

NEW BRUNSWICK.—

ALBERT COUNTY.—The Albert shales of Albert county yield on distillation considerable quantities of oil (G.S.C., N.S., XV, 363A).

WESTMORLAND COUNTY.—Petroleum has been found in some quantity in the vicinity of *Memramcook* and *Dover* (G.S.C., N.S., IV, 81SS).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—Petroleum has been noted in the *Aberdeen slope*, *Springhill* (Pr. Com. H. Piers).

HANTS COUNTY.—Petroleum occurs in gypsum at *Cheverie* (Pr. Com. H. Piers).

INVERNESS COUNTY.—Petroleum has been observed in a thick stratum of sand-rock about *Lake Ainslie*; the same material has been observed elsewhere on *Cape Breton island* (G.S.C., N.S., X, 102-103A).

PICOU COUNTY.—Petroleum has been observed dripping from the roof of the workings of the *Vale colliery*, *Thorburn* (Pr. Com. H. Piers).

ONTARIO.—

LAMBTON COUNTY.—Important springs occur in *Enniskillen* (G.S.C., N.S., IV, 51T).

MANITOULIN DISTRICT.—Petroleum is found in small quantities on *Manitoulin island* (G.S.C., N.S., IV, 81SS).

MIDDLESEX COUNTY.—*Mosa* (G.S.C., N.S., IV, 51T).

OXFORD COUNTY.—*Dereham*, *Oxford* (G.S.C., N.S., IV, 51T).

YUKON.—

The slates and associated limestones occurring on the *Upper and Lower canyons* of the *Peel river* are more or less petroliferous (G.S.C., N.S., XVI, 47CC).

Petzite.

(Telluride of silver and gold.)

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Petzite occurs with hessite, native copper, and other minerals at the *Enterprise claim*, *Long lake* (G.S.C., N.S., VIII, 12R).

OYOYOOS MINING DIVISION.—Petzite occurs with hessite, native gold, and other minerals in a vein at the *Calumet claim*, *Kruger mountain* (G.S.C., N.S., VIII, 12R).

QUEBEC.—

TIMISKAMING COUNTY.—Petzite is found in quartz-ankerite veins cutting the Keewatin porphyrite and Huronian breccia and associated dykes north of *Lake Opasatika* (Min. Oper. in Quebec, 1910, 83).

Phenacite.

(*Silicate of beryllium.*)

QUEBEC.—

TIMISKAMING COUNTY.—Phenacite is found in small quantities associated with beryl, fluorite, molybdenite, etc., in pegmatite at the *Kewagama river* (*Height of Land Mining Company*). This mineral was collected by J. A. Bancroft in 1911, and examined and identified by R. P. D. Graham (Pr. Com. F. D. Adams).

Phlogopite.

(*Hydrous silicate of aluminum, magnesium, iron, and potassium.*)

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—North shore of *Hudson strait* opposite *Upper Savage island*.

ONTARIO.—

This variety of mica is found in greater or less abundance in connexion with the Grenville limestones and pyroxenic gneisses in the south-central and eastern parts of the province.

FRONTENAC COUNTY.—*Bedford*, 5-II, 6-VIII; *Loughborough* (G.S.C., N.S., XIV, 238A): 11-VII, 13-VIII, 1-IX and X (Mines, Min. Br., 118, 290).

HALIBURTON COUNTY.—*Monmouth and Cardiff* (G.S.C., N.S., XI, 161A).

LANARK COUNTY.—*North Burgess*, 8, 9, 13, 16-V; 10, 20-VI; 1, 2, 4, 5, 7-VIII; 6, 17-IX (Mines, Min. Br., 118, 290).

LEEDS COUNTY.—*South Burgess* (Geol. Can., 1863, 494-495); *South Crosby* 9-V (Mines, Min. Br., 118, 290).

QUEBEC.—

ARGENTEUIL COUNTY.—*Augmentation of Grenville*, 1-II: *Grenville*, 9-VI; 17-VII, 1-X; 2-X.

OTTAWA COUNTY.—*Derry*, 9-I (G.S.C., N.S., XIV, 239A); *Aylwin* (G.S.C., N.S., IV, 49A); *Blake*, 43-IV (Mines, Min. Br., 118, 290); *Hull*, 10-V (G.S.C., N.S., V, 69AA); 13-XI (G.S.C., N.S., VI, 71AA); 19-XII (G.S.C., N.S., VI, 70A); *Hull*, 19-VII, 10-XII, 13a-XIII (Mines, Min. Br., 118, 290); 13-XV (G.S.C.,

N.S., V, 68AA): *Masham, 1-IV: Portland, 1, 2-I* (G.S.C., N.S., XIV, 238A); *19-VIII; 15, 16-X* (G.S.C., N.S., VI, 69A): *Portland West, 24-III* (Mines, Min. Br., 118, 290): *Templeton, 15-VIII; 16, 17-VIII* (G.S.C., N.S., VIII, 122A); *17-IX* (Mines, Min. Br., 118, 290); *10-X; 9-XI: Wakefield, 7-I; 16-I; II* (G.S.C., M.R.C., 869, p. 15): *Wright, 15-II* (G.S.C., N.S., XI, 162A).

PONTIAC COUNTY.—*Calumet island: Carwood, 22-II.*

Analysis of phlogopite from South Burgess by Clark and Schneider (Am. Journ. Sci., Ser. 3, Vol. XL, 410).

SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	BaO	Na ₂ O	K ₂ O
39.66	0.56	17.00	0.27	0.20	26.49	0.62	0.60	9.97
H ₂ O	F	P ₂ O ₅	Less O=F					
2.99	2.24	trace	—100.60—0.94—99.66					

Phosphorite.

(See *Apatite*.)

(*Fluo-phosphate of calcium*.)

Pickeringite.

(*Hydrated sulphate of aluminum and magnesium*.)

NOVA SCOTIA.—

HANTS COUNTY.—Pickeringite occurs as an efflorescence on the shale of a sheltered cliff on the banks of the *Meander river, Newport* (G.S.C., N.S., IV, 52T).

Analysis of pickeringite by How (Journ. Chem. Soc., N.S., Vol. I, p. 200, 1863).

SO ₃	Al ₂ O ₃	FeO	MnO	NiO	CoO	CuO	MgO	K ₂ O	H ₂ O	Insol.
36.33	10.64	0.13	0.45	0.14	0.06	0.02	4.79	0.23	46.06	0.72

Picrolite.

(*Serpentine*.)

(*Hydrous silicate of magnesium*.)

ONTARIO.—

RENFREW COUNTY.—Picrolite occurs in long fibrous aggregates flanking a vein of chrysotile in *Ross, 9-VIII; 8-IX* (G.S.C., 1882-84, 14L).

QUEBEC.—

BEAUCE COUNTY.—*Broughton, East Broughton mines* (Pr. Com. T. C. Denis).

BROME COUNTY.—*Bolton* (G.S.C., N.S., IV, 52T).

PONTIAC COUNTY.—This variety of serpentine occurs in *Duhamel, 18-VI*.

RICHMOND COUNTY.—*Shipton, 6-XV*.

SHERBROOKE COUNTY.—*Orford*.

WOLFE COUNTY.—*Big island, Lake Nicolet, South Ham* (G.S.C., 1880-82, 8GG).

Analysis of picrolite from Bolton by Hunt (Geol. Can., 1863, 472).

SiO ₂	MgO	FeO	NiO	Cr ₂ O ₃	H ₂ O	Sp. Gr.
43.70	40.68	3.51	undet.	undet.	12.45	—100.34 2.607

Pinite.

(*Hydrated silicate of aluminum and potassium.*)

NOVA SCOTIA.—

ANTIGONISH COUNTY.—*Arisaig* (Pr. Com. T. L. Walker).

Pitchblende.

(*See Uraninite.*)

(*Uranate of uranium, lead, thorium, yttrium, lanthanum, etc.*)

Plagioclase.

(*Silicates of aluminum, calcium, sodium.*)

See under different varieties—albite, oligoclase, etc.

Platinum.

ALBERTA.—

Native platinum has been found in association with gold on the bars of the *North Saskatchewan river* in the neighbourhood of *Edmonton* (G.S.C., N.S., V, 66AA).

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Platinum occurs with gold, magnetite, quartz, and pyrite in the sands of *Rock creek, Kettle river* (G.S.C., N.S., VI, 14R).

KAMLOOPS MINING DIVISION.—Platinum occurs in fine scales with gold at different places along the *Fraser and Tranquille rivers* (G.S.C., N.S., IV, 52T).

LARDEAU MINING DIVISION.—Platinum has been found in sands near *Ferguson*.

LIARD MINING DIVISION.—Finely divided platinum is found in some abundance in the black sands of *Thibert creek* on the headwaters of *Dease river* (Mines, B.C., 1912, 63 and 78).

NELSON MINING DIVISION.—*Salmon river*.

QUESNEL MINING DIVISION.—Platinum was noted in black sand from *Quesnel river* (Mines, G.S.Br., Sum. Rep., 1908, 169).

SIMILKAMEEN MINING DIVISION.—Platinum is found in grains and nuggets on *Cedar*, *Granite*, and *Slate creeks*—*Tulameen river* (G.S.C., N.S., IV, 52T): and has also been observed in fine grains in the peridotites of *Olivine mountain* (Mines, G.S.Br., Sum. Rep., 1910, 263).

Platinum has also been observed with gold in the sands of some of the streams of the northern portion of the province.

ONTARIO.—

See Sperrylite.

QUEBEC.—

BEAUCE COUNTY.—Platinum has been observed by Dr. Hunt in association with iridosmine in the gold washings of *Rivière-du-Loup* and *Rivière des Plantes* (G.S.C., N.S., IV, 52T).

Analyses of Platinum.

	1	2
Platinum.....	68.19	78.43
Palladium.....	0.26	0.09
Rhodium.....	3.10	1.70
Iridium.....	1.21	1.04
Osmium.....	.....	.....
Copper.....	3.09	3.89
Iron.....	7.87	9.78
Osmiridium.....	14.62	3.77
Gangue (embedded chromite).....	1.95	1.27
	100.29	99.97
Sp. Gr.....	17.017	16.095

1. Non-magnetic platinum.
2. Magnetic platinum from Granite creek by Hoffmann (Trans. R.S.C., Vol. V, Sec. 3, p. 17; and G.S.C., N.S., II, 6 and 7T).

Polycrase.

(*Niobate and titanate of yttrium, erbium, cerium, uranium, etc.*)

ONTARIO.—

NIPISSING DISTRICT.—Polycrase occurs in a coarse granite vein composed of quartz, feldspars, muscovite, and biotite cutting hornblende gneiss in *Calvin, 19-IX* (G.S.C., N.S., XI, 14R).

Polydimite.

(*Sulphide of nickel, generally with small amounts of cobalt, iron, antimony, and arsenic.*)

ONTARIO.—

SUDBURY DISTRICT.—Polydimite occurs with chalcopyrite, possibly some pyrite, and a very little quartz at the *Vermilion mine, Denison, 5, 6-IV* (G.S.C., N.S., XIV, 11H).

Analyses of Polydimite.

	1	2
S.....	40.80	38.43
Ni.....	41.96	36.85
Fe.....	15.57	18.70
Cu.....	0.62	4.47
Insol.....	1.02	.....
	99.97	98.45
Sp. Gr.....	4.541	.....

1. By Clarke and C. Catlett (Am. Journ. Sci., Ser. 3, Vol. XXXVII, 373-374).
2. By Browne (Eng. and Min. Journ., LVI, 566).

Prehnite.

(*Hydrous silicate of aluminum and calcium.*)

BRITISH COLUMBIA.—

TRAIL CREEK MINING DIVISION.—Fine green prehnite occurs at the *Le Roi mine, Rossland.*

NEW BRUNSWICK.—

RESTIGOUCHE COUNTY.—*Dalhousie.*

NORTH WEST TERRITORIES.—

BAFFIN ISLAND.—A fine, green prehnite accompanied by quartz and calcite occurs in veins traversing intrusives at *Adams sound*, *Admiralty inlet* (Victoria Memorial Museum, Bull. No. I, p. 94).

Prehnite occurs with native copper in trap at the *Copper mountain* (G.S.C., N.S., II, 25R).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—Fine specimens of prehnite have been found at *Clark head* (G.S.C., N.S., III, 77S).

HANTS COUNTY.—*Clifton* (G.S.C., N.S., III, 77S).

KINGS COUNTY.—*Black Rock* (G.S.C., N.S., III, 77S).

ONTARIO.—

THUNDER BAY DISTRICT.—Prehnite occurs in trap rock on *Slate river*, *Kaministikwia river*; and with native copper near *St. Ignace* and elsewhere along the north shore of *Lake Superior* (G.S.C., N.S., IV, 53T).

QUEBEC.—

OTTAWA COUNTY.—Prehnite has been found in *Portland West, 7-VIII* (*High Rock mine*) (Pr. Com. F. D. Adams): this mineral has been noted in a cavity in *Templeton, 16-XII* (G.S.C., 1877-78, 34G); 23-XIII (Mines. Min. Br., 118, 291).

Analyses of Prehnite.

	1	2	3	3a
SiO ₂	43.41	42.82	44.35	41.86
Al ₂ O ₃	23.80	23.86	19.44	20.36
Fe ₂ O ₃	1.26	1.42	6.58	6.89
Mn ₂ O ₄	0.53	.....	.....	.....
MnO.....	.....	0.10	.....	.....
CaO.....	26.62	27.64	25.50	26.70
MgO.....	.....	0.09	.....	.....
H ₂ O.....	4.14	4.82	4.00	4.19
	99.76	100.75	99.87	100.00
Sp. Gr.	2.882	2.891	2.924	

1. From *Slate river* by Chapman (Can. Journ., Ser. 2, XII, 267).

2. From *Templeton* by Harrington (G.S.C., 1877-78, 34G).

3. From *Adams sound*, *Admiralty inlet* by Johnston (ferroprehnite) (Victoria Memorial Museum, Bull. No. 1, 97).

3a. Centesimal composition of No. 3 after deducting an excess of 4.38 admixed quartz.

Proustite.*(Sulpharsenite of silver.)***BRITISH COLUMBIA.—**

GREENWOOD MINING DIVISION.—*Elkhorn mine*, near *Greenwood* (Pr. Com. T. L. Walker).

SLOCAN CITY MINING DIVISION.—Proustite is found on *Tennile creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

ONTARIO.—

TIMISKAMING DISTRICT.—In some of the silver mines in the township of *Coleman* particularly the *Cobalt Lake*, *O'Brien*, and *University mines* (Pr. Com. T. L. Walker).

Przibramite.*(See Goethite.)**(Hydrated sesquioxide of iron.)***Psilomelane.***(Hydrous manganate of manganese.)**(See also Pyrolusite.)***NEW BRUNSWICK.—**

ALBERT COUNTY.—Psilomelane occurs with pyrolusite at *Gowland* and *Shepody mountains* in *Elgin* (G.S.C., N.S., XV, 164S).

NOVA SCOTIA.—

COLCHESTER COUNTY.—Psilomelane is found with manganite at *Onslow* (G.S.C., N.S., X, 157S).

HANTS COUNTY.—This mineral is found with pyrolusite at *Douglas* (G.S.C., N.S., IV, 55T), and doubtless at other manganese localities in this county.

Pyralloite.*(Hydrous silicate of magnesium.)***ONTARIO.—**

GRENVILLE COUNTY.—*Charleston lake* (Geol. Can., 1863, 470).

HASTINGS COUNTY.—*Rawdon* (Geol. Can., 1863, 470).

LANARK COUNTY.—Pyralloite occurs in beds in limestone in *Ramsay*, 8-VI (Geol. Can., 1863, 798).

QUEBEC.—

ARGENTEUIL COUNTY.—Pyralloite occurs in beds in the crystalline limestone of *Grenville* (Geol. Can., 1863, 470).

PONTIAC COUNTY.—*Portage du Fort* (G.S.C., 1876-77, 484): *Clarendon* (G.S.C., N.S., IV, 53T).

Analyses of Pyralloite.

	1	2	3
SiO ₂	61.90	61.60	61.33
FeO.....	1.45	1.53	0.67
CaO.....	.....	.....	trace
MgO.....	30.42	31.06	31.78
H ₂ O.....	6.54	5.60	5.85
	100.31	99.79	99.63
Sp. Gr.....	2.644	2.757	2.743

1. From Charleston Lake.
2. From Grenville by Hunt (Geol. Can., 1863, p. 471).
3. From Portage du Fort by Harrington (G.S.C., 1876-77, 484).

Pyrrargyrite.*(Sulphantimonite of silver.)***BRITISH COLUMBIA.—**

GRAND FORKS MINING DIVISION.—Pyrrargyrite is found in ores from *Union mine, Franklin camp* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

GREENWOOD MINING DIVISION.—Pyrrargyrite is found in small quantities in a metalliferous quartz vein at the *Providence mine* near *Greenwood* (G.S.C., N.S., XV, 130A).

SKEENA MINING DIVISION.—Pyrrargyrite is found with pyrite and quartz at *Red Bluff* and *Alice Arm, Observatory inlet* (Mines, G.S. Br., Sum. Rep., 1911, 49 and 50).

SLOCAN MINING DIVISION.—In beautiful crystals and crystal groups at the *Hewitt mine, Silverton* (Mines, G.S.Br., Sum. Rep., 1911, 362); pyrrargyrite was observed in small aggregations scattered through a purplish-bluish-grey, very fine granular galena at the *Dardanelles claim*, 5 miles south of *Bear lake* (G.S.C., N.S., VI, 27R).

ONTARIO.—

TIMISKAMING DISTRICT.—Fine specimens of pyrrargyrite have been found at the *O'Brien mine*, and other mines in the *Cobalt area, Coleman township*.

Pyrite.

(*Sulphide of iron.*)

ALBERTA.—

Pyrite is commonly found in the form of nodular concretions in the Cretaceous shales of the *Peace river* and elsewhere (G.S.C., N.S., VI, 70A).

BRITISH COLUMBIA.—

Pyrite is widely distributed throughout this province. Some of the more important localities are:—

GRAND FORKS MINING DIVISION.—The *B. C. Copper mines (Wellington Camp)* (Mines, G.S. Br., Sum. Rep., 1910, 265).

SKEENA MINING DIVISION.—At the head of *Ecstall river*, tributary of the *Skeena river* (G.S.C., N.S., V, 67R).

MANITOBA.—

Pyrite frequently replaces carbonate of lime in the fossil *Inocerami* and other shells in the Cretaceous shales of western Manitoba; large crystals are found at the *Gabrielle mine, Rice lake*, near *Wanipigow river*, east of *Lake Winnipeg* (Pr. Com. R. C. Wallace).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—*Polson lake* (Pr. Com. H. Piers).

HALIFAX COUNTY.—Fine crystals have been obtained from *Guysborough road* to the southeast of *Oldham* (Pr. Com. H. Piers).

HANTS COUNTY.—*Sevenmile plain* (G.S.C., N.S., IV, 53T).

INVERNESS COUNTY.—*Pleasant bay* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—Fine crystals are found at *Lahave* (G.S.C., N.S., IV, 53T).

ONTARIO.—

Pyrite is widely distributed throughout this province and some of the deposits have been worked commercially. Some of the more important localities are:—

FRONTENAC COUNTY.—*Bedford, 3-VI* (G.S.C., 1882-84, 10L):

Loughborough, 6-VIII (Mines, Min. Br., 118, 292).

HASTINGS COUNTY.—*Hungerford* (Ont. Bur. Min., 1900, 207): *Madoc, 11-V* (G.S.C., 1873-74, 203); *11-XI* (G.S.C., 1863-66, 106):

Marmora, 6-VIII (G.S.C., 1873-74, 194).

LANARK COUNTY.—*Dalhousie, 1-IV: Darling, 5-IV:*

North Burgess 21-V (Mines, Min. Br., 118, 292).

LEEDS COUNTY.—*Elizabethtown, 19-II* (Geol. Can., 1863, 747).

MANITOULIN DISTRICT.—Fine granular pyrite is found at the *Helen mine, Michipicolen* (G.S.C., N.S., XIII, 116A).

PETERBOROUGH COUNTY.—*Dummer, 40-X* (G.S.C., N.S., VI, 71AA).

RAINY RIVER DISTRICT.—*Nickel lake* (Ont. Bur. Min., 1894, 74).

RENFREW COUNTY.—*Ross, V-I; 7-IX* (G.S.C., 1882-84, 8L).

SUDBURY DISTRICT.—A nickeliferous variety of pyrite is found at the *Murray mine, McKim township* (G.S.C., N.S., XIV, 108H): *Graham, 12-III* (Ont. Bur. Min., 1900, 207).

THUNDER BAY DISTRICT.—Near *Schreiber* (G.S.C., N.S., X, 195S).

QUEBEC.—

LOTBINIERE COUNTY.—*Ste. Catherine, lot 27* (Pr. Com. T. L. Walker).

OTTAWA COUNTY.—*Blake, 23-IX* (Mines, Min. Br., 118, 292). Good specimens of pyrite have been obtained from *Hull, 7-X: Portland West, 7-VIII (High Rock mine)* (Pr. Com. F. D. Adams): *Templeton, 15-I: Villeneuve, 31-I: Wakefield, 12-I* (G.S.C., 1882-84, 18L).

PONTIAC COUNTY.—*Alleyn, 10-II* (Mines, Min. Br., 118, 292).

RICHMOND COUNTY.—Pyrite is found with copper ore in *Melbourne* (G.S.C., N.S., IV, 54T).

SHERBROOKE COUNTY.—Pyrite is found with chalcopyrite in *Ascot, 8-VIII* (Mines, G.S.Br., Sum. Rep., 1907, 101).

WOLFE COUNTY.—*Garthby, 22-I* (Mines, G.S.Br., Sum. Rep. 1909, 199): *Stratford, 8-VI: Weedon (McDonald mine)* (Min. Oper. in Quebec, 1911, 1912, pp. 22, 23).

Pyrolusite.

(Oxide of manganese.)

NEW BRUNSWICK.—

ALBERT COUNTY.—*Shepody and Gowland mountains, Elgin* (G.S.C., N.S., XV, 164S).

GLOUCESTER COUNTY.—*Tetagouche falls* (G.S.C., N.S., X, 97A).

KINGS COUNTY.—The most important deposit of pyrolusite in the province is at *Markhamville* in the parish of *Upham* (G.S.C., N.S., IV, 54T); there is a somewhat similar deposit at *Jordan mountain* (G.S.C., N.S., V, 94S).

ST. JOHN COUNTY.—*Quaco* (G.S.C., N.S., X, 117A).

NOVA SCOTIA.—

COLCHESTER COUNTY.—*Wasson bluff: manganese mines near Salmon river* (G.S.C., N.S., V, 45P): and *Onslow* (G.S.C., N.S., IV, 54T).

CUMBERLAND COUNTY.—Pyrolusite has been noted at *Salem near Amherst* (G.S.C., N.S., IV, 54T).

HALIFAX COUNTY.—*Musquodoboit* (G.S.C., N.S., IV, 54T).

HANTS COUNTY.—Extensive deposits of pyrolusite have been found in *Cheverie* (G.S.C., N.S., VI, 63AA); *Kennetcook Corners, Minesville* (Pr. Com. H. Piers): *Tennycape* (G.S.C., N.S., VI, 64AA): and *Walton* (G.S.C., N.S., VI, 63AA).

KINGS COUNTY.—*Horton mountain; Morristown; North Alton river near Kentville; Prospect; South mountain (South of Berwick)* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—*Wallaback lake* near *New Ross* (G.S.C., N.S., XV, 186AA).

PICTOU COUNTY.—*Bridgeville* (Pr. Com. H. Piers) :*S pringville, East river* (G.S.C., N.S., IV, 54T).

RICHMOND COUNTY.—*Loch Lomond* (G.S.C., N.S., VI, 89S).

QUEBEC.—

GASPE COUNTY.—Pyrolusite occurs in veins on *Amherst island, Magdalen islands* (N.S. Inst., Nat. Sci., V, 136).

Pyromorphite.

(*Chloro-phosphate of lead.*)

BRITISH COLUMBIA.—

FORT STEELE MINING DIVISION.—A yellow and a green variety of pyromorphite occur in fine crystals with galena and cerussite in fractured zones at the *Society Girl claim, Moyie* (Am. Journ. Sci., Ser. 4, Vol. XXVIII, 40-44).

Analyses by Bowles (Am. Journ. Sci., Ser. 4, Vol. XXVIII, 40-44).

Analyses of Pyromorphite.

	Yellow	Green
P ₂ O ₅	16·12	15·65
As ₂ O ₅	0·41	0·90
Cl.....	2·52	2·59
PbO.....	80·20	80·13
CaO.....	0·59	0·56
FeO.....	0·86	0·46
CaF ₂	tr.	.....
Insol.....	0·08	0·05
	100·78	100·34
Less O=Cl.....	0·57	0·59
	100·21	99·75
Sp. Gr.....	7·031	7·051

Pyroxene.

(*Silicate of calcium, magnesium, and iron.*)

BRITISH COLUMBIA.—

KAMLOOPS MINING DIVISION.—The green sands on the shores of *Kamloops lake* near *Copper creek* consist for the most part of more or less worn small crystals of pyroxene (G.S.C., N.S., VII, 167B).

NICOLA MINING DIVISION.—Small crystals of pyroxene occur at *Aspen Grove* (G.S.C., N.S., XVI, 75, 76A).

ONTARIO.—

Fine crystals of pyroxene are obtainable at many places in the crystalline rocks of the province. The following are some of the more important localities:—

FRONTENAC COUNTY.—*Bedford*, 6-II (G.S.C., 1873-74, 204).

HASTINGS COUNTY.—*Carlow* (G.S.C., N.S., IX, 107A); *Herschell*, 3-IV (G.S.C., N.S., X, 118A); *Monieagle*, 24, 25-VI (G.S.C., N.S., VII, 98A).

LANARK COUNTY.—*North Burgess*, 2-IX (Ont. Bur. Min., 1900, 207).

RENFREW COUNTY.—*Sebastopol*, 31-XI (G.S.C., 1882-84, 6L); 32-XII: *Island D*, *Lake Clear*: *Ross*, 20-IV, 7-IX.

QUEBEC.—

Fine specimens of pyroxene occur in the Grenville series of this province.

ARGENTEUIL COUNTY.—*Grenville*, 10-V.

OTTAWA COUNTY.—*Buckingham*, 19-XII: *Hull*, 19-VI, 12a-XIII (Mines, Min. Br., 118, 293); 16-XVI (G.S.C., 1882-84, 17L): *Portland*, 6-I: *Templeton*, 28-VI: *Wakefield*, 6, 7-I; 12-I; 18-II; 22, 24-V (G.S.C., 1882-84, 18, 19L); 24-II (Mines, Min. Br., 118, 293).

PONTIAC COUNTY.—*Grand falls*, *Calumet island*.

See also augite, coccolite, diallage, diopside, fassaite, malacolite, sahlite, etc.

Pyrrhotite.

(Sulphide of iron.)

BRITISH COLUMBIA.—

Pyrrhotite occurs in considerable abundance at many localities in this province. Many samples have been examined at different times and by different analysts with a view to ascertaining if any of them contained any appreciable amount of nickel. Of the long series which have been examined in the laboratory of the Geological Survey a great majority showed either none at all or for the most part only a few tenths of a per cent of nickel, the highest recorded, an exceptional case from CLAYOQUOT MINING DIVISION—the *Two Sisters* and *Crow claim*, *Deer creek*, *Clayoquot* yielded 1.7 per cent nickel (G.S.C., N.S., XI, 41R). The following localities are given as illustrating in a general way the distribution of the mineral in this province:—

GRAND FORKS; GREENWOOD; KAMLOOPS; NELSON: SLOCAN and TRAIL CREEK MINING DIVISIONS, and other mining divisions in the southern part of the province.

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Pyrrhotite is found associated with copper ore at *Letite* (G.S.C., N.S., V, 40R); and *Mascareen* (G.S.C., 1870-71, 223); a nickeliferous variety is found near *St. Stephen* (G.S.C., N.S., V, 39R).

NOVA SCOTIA.—

CAPE BRETON COUNTY.—*Barachois Harbour* (G.S.C., N.S., V, 39R):
Leitche creek (G.S.C., N.S., VI, 37R).

INVERNESS COUNTY.—*Faribault brook* near *Cheticamp* (Pr. Com. H. Piers).

VICTORIA COUNTY.—*Boularderie Centre* (G.S.C., N.S., XIII, 33R).

ONTARIO.—

Important deposits of pyrrhotite occur at many localities in this province. In the SUDBURY DISTRICT owing to the replacement of a portion of the iron by nickel, pyrrhotite becomes the principal ore of this metal; in other portions of the province, the nickel usually occurs only in traces or in such small amounts as to be of no importance commercially. The following are some of the more important localities throughout the province:—

RAINY RIVER DISTRICT.—*Darlington bay, Lake of the Woods* (G.S.C., N.S., V, 46R).

SUDBURY DISTRICT.—*Blesard, 5-1 (Stobie mine)* (G.S.C., N.S., V, 50F): *Denison, 6-II* (G.S.C., N.S., V, 42, 43R): *Drury, 3-II* (G.S.C., N.S., V, 42R); *3-V (Travers mine)* (G.S.C., N.S., XIV, 35H): a nickeliferous variety occurs in *2-II (Worthington mine)* (G.S.C., N.S., XIV, 33-34H): *Hyman, 6-I* (G.S.C., N.S., VI, 40R): *Levack, 7-II, 3-IV* (G.S.C., N.S., V, 43R): *Lorne, 11-V* (G.S.C., N.S., V, 42R); *9-VI: McKim, 12-II (Copper Cliff mine)* (G.S.C., N.S., V, 67A); *11-V (Murray mine)* (G.S.C., N.S., V, 52F): *Snider, 10-I (Creighton mine)* (G.S.C., N.S., XIV, 118H); *1-I (Evans mine)* (G.S.C., N.S., V, 68A), and at other points in this district.

THUNDER BAY DISTRICT.—Near *Schreiber* (G.S.C., N.S., V, 46R):
Jackfish bay (G.S.C., N.S., VI, 41R).

Pyrrhotite, either non-nickeliferous or at the most containing a fraction of a per cent of nickel, occurs at other localities in this province, amongst which may be noted:—

ADDINGTON COUNTY.—*Anglesea, 15-A* (G.S.C., N.S., XIV, 159H).

FRONTENAC COUNTY.—*Olden, 10-IV* (G.S.C., N.S., XIII, 35R).

HALIBURTON COUNTY.—*Twelvemile lake, Minden* (G.S.C., N.S., XIV, 159H).

HASTINGS COUNTY.—*Marmora, 6-VIII* (G.S.C., 1873-74, 194).

LEEDS COUNTY.—*Elizabethtown, 19-II*, where interesting crystals of this mineral have been found (G.S.C., 1874-75, 304).

PETERBOROUGH COUNTY.—*Galway, 12-III; 18-IV; 16-XIV* and *XV* (G.S.C., N.S., XIV, 159H).

QUEBEC.—

BEAUCE COUNTY.—*St. Francis* (G.S.C., N.S., IV, 54T).

BROMONTY COUNTY.—*Bolton* (G.S.C., N.S., IV, 54T): *Potton (Memphremagog mine)* (Pr. Com. T. C. Denis): and *Sutton, XI* (G.S.C., 1879-1880, 21H).

GASPE COUNTY.—*Magdalen river* (G.S.C., 1882-84, 21F).

OTTAWA COUNTY.—*Aylwin, 14-VI* (G.S.C., N.S., XI, 39R): pyrrhotite containing little or no nickel occurs in *Eardley, 2-VIII* (G.S.C., N.S., XIV, 161H): *Portland West, 7-VIII (High Rock Mine)* (Pr. Com. F. D. Adams): small crystals of pyrrhotite have been observed with grossularite in *Wakefield, 6-I* (G.S.C., N.S., VII, 14R).

PONTIAC COUNTY.—Nickeliferous pyrrhotite occurs in *Calumet 6-II; 12-IX* (G.S.C., N.S., XIV, 154H): *Clarendon, 24-VII* (G.S.C., N.S., V, 40R).

STANSTEAD COUNTY.—*Barford* (G.S.C., N.S., IV, 54T).

TERREBONNE COUNTY.—*St. Jerome* (G.S.C., N.S., IV, 54T).

Analyses of Pyrrhotite.

	1	2	3
S.....	39.020	39.24	38.91
Fe.....	60.560	59.88	56.39
Co.....	0.111	.....	.....
Ni.....	0.112	.....	4.66
Mn.....	0.060	.....	.....
Cu.....	0.145	.....	.....
Insol.....	0.036	1.01	.....
	100.044	100.13	99.96
Sp. Gr.....	4.622	4.642	4.51

1. From Elizabethtown by Harrington.
2. From the same locality by Smith (G.S.C., 1874-75, 306).
3. From Sudbury by MacKenzie (Dana, System of Mineralogy, 6th Edition, p. 74).

Quartz.

(*Oxide of silicon.*)

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—Quartz crystals with included crystals of stibnite, are found on the east side of *Duncan lake*, north of *Kootenay lake* (Pr. Com. W. F. Robertson).

NANAIMO MINING DIVISION.—Quartz occurs in peculiar spherical forms with bornite on the west side of *Valdez islands, Strait of Georgia* (G.S.C., N.S., IX, 17R).

REVELSTOKE MINING DIVISION.—Many fine samples of rock crystals are found near *Illecillewaet* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—Fine groups of slender transparent to translucent crystals of quartz have been found in vugs in siderite at the *Ohio claim* (Mines, G.S.Br., Sum. Rep., 1910, 266).

NOVA SCOTIA.—

Quartz is of frequent occurrence throughout the province.

ANNAPOLIS COUNTY.—Crystals of smoky quartz are found at *Paradise*, etc., (Pr. Com. H. Piers).

DIGBY COUNTY.—Crystals of quartz in geodes are found at *Sandy cove*, *St. Mary bay* (Jackson and Alger, Mem. Amer. Acad. IX, Aug. 1831).

HALIFAX COUNTY.—Crystals of smoky quartz occur near *Paces lake*, near head of *Musquodoboit harbour* (Pr. Com. H. Piers).

KINGS COUNTY.—Smoky quartz crystals are found at *Ross creek* (Pr. Com. H. Piers).

LUNENBURG COUNTY.—Morion quartz and quartz crystals of large dimensions occur at *Joe Bell brook*, *Chester*, and near *Lake Ramsay* (G.S.C., N.S., XVI, 344A): one crystal from *Lake Ramsay* in the Provincial Museum, Halifax, measures $26\frac{3}{4}$ inches in length (Pr. Com. H. Piers).

SHELburne COUNTY.—Rose quartz is found near *Shelburne* (G.S.C., N.S., III, 69S).

ONTARIO.—

LANARK COUNTY.—Cellular quartz occurs in *Dalhousie*, 19-VII.

SUDBURY DISTRICT.—Quartz for fluxing purposes has been mined in *Waters*, 8-IV (Ont. Bur. Min., 1907, 64).

TIMISKAMING DISTRICT.—A brecciated, green chalcedony occurs at the outlet of *White Beaver lake*, *Montreal river* (Ont. Bur. Min., 1901, 93).

QUEBEC.—

DRUMMOND COUNTY.—Small, transparent crystals in *Kingsey*, 8-III (Mines, G.S.Br., Sum. Rep., 1909, 250).

OTTAWA COUNTY.—*Bouchette*, 44-VI, in crystals with concave faces (Ferrier, Can. Rec. Sci., Vol. IV, 475): quartz occurs in clear crystals in *Egan*, 15-I: an opaque, greasy quartz occurs in *Templeton*, 12-XII: a massive, translucent quartz occurs in *Villeneuve*, 31-I (Mines, G.S.Br., Sum. Rep., 1909, 252).

See also agate, amethyst, carnelian, chalcedony, heliotrope, hornstone, jasper, and prase.

Raphilite.*(See Tremolite.)**(Silicate of magnesium and calcium.)***Realgar.***(Sulphide of arsenic.)***BRITISH COLUMBIA.—**

CLINTON MINING DIVISION.—Realgar is found in small quantities with native arsenic near *Watson Bar creek, Fraser river* (Mines, G.S.Br., Sum. Rep., 1909, 250).

ONTARIO.—

HASTINGS COUNTY.—Very small quantities of bright red realgar occur associated with orpiment and mispickel in *Faraday, Jeffrey's lot, concession IX* (G.S.C., Mem. 6, 211).

YUKON.—

Realgar is found in small quantities distributed through an andesite dyke traversed by small quartz stringers on *Pan creek, Upper White river* (Pr. Com. D. D. Cairnes).

Rensselaerite.*(Hydrated silicate of magnesium.)***ONTARIO.—**

LEEDS COUNTY.—*Charleston lake*, 400 paces northeast from head of *Peninsula bay* (Pr. Com. F. D. Adams).

Retinalite.*(Serpentine.)**(Hydrous silicate of magnesium.)***QUEBEC.—**

ARGENTEUIL COUNTY.—*Grenville* (Geol. Can. 1863, 471).

PONTIAC COUNTY.—*Calumet island* (Geol. Can., 1863, 471).

Analyses of Retinalite.

	1	2
SiO ₂	39.34	41.20
MgO.....	43.02	43.52
Fe ₂ O ₃	1.80	0.80
H ₂ O.....	15.09	15.40
	99.25	100.82
Sp. Gr.....	2.47—2.52	2.36—2.38

1. From Grenville.

2. From Calumet island, by Hunt (Geol. Can., 1863, 471-472).

Rhodocrosite.

(Carbonate of manganese.)

ONTARIO.—

Silver islet and McKellar island, Lake Superior (G.S.C., N.S., III, 27H).

QUEBEC.—

Found in some parts of the altered strata of the Eastern Townships (G.S.C., N.S., IV, 55T).

Ripidolite.

(*Clinochlore.*)

(Hydrous silicate of aluminum and magnesium.)

QUEBEC.—

OTTAWA COUNTY.—A foliated, chloritic mineral, which occurs with quartz, pyrite, and calcite in some of the apatite veins of *Templeton* and *Buckingham*, may be referable to this variety (G.S.C., N.S., IV, 55T).

Analysis from Templeton, 18-IX, by Harrington (G.S.C., 1877-78, 34G).

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	H ₂ O	Sp. Gr.
35.80	13.18	4.28	10.18	22.80	12.64—98.88	2.61

Rock Crystal.*(See Quartz.)**(Silicon dioxide.)***Rutile.***(Oxide of titanium.)*

NOVA SCOTIA.—

HALIFAX COUNTY.—A prismatic and massive form of black rutile, possibly referable to nigrine or ilmenorutile occurs in auriferous quartz veins at the *Irving lead, Mooseland* (G.S.C., N.S., XI, 16R).

KINGS COUNTY.—Rutile occurs in the form of needles in quartz at *Scot bay* (G.S.C., N.S., IV, 56T).

ONTARIO.—

ALGOMA DISTRICT.—Rutile has been found in the form of delicate, acicular crystals in quartz crystals at the *Wallace mine, Lake Huron* (G.S.C., N.S., IV, 56T).

HASTINGS COUNTY.—In crystals in crystalline limestone on *Green island, Moira lake, Madoc* (G.S.C., N.S., IV, 56T).

TIMISKAMING DISTRICT.—Rutile is mentioned by Barlow as occurring in the form of very minute slender needles penetrating the biotite of some of the Archæan rocks of *Lake Timagami* (G.S.C., N.S., X, 86-I).

QUEBEC.—

BEAUCE COUNTY.—Rutile occurs in minute grains in the auriferous gravels of the *Rivière-du-Loup* a branch of the *Chaudiere river* (G.S.C., N.S., IV, 56T).

BROME COUNTY.—Rutile occurs in small, red flattened crystals in the chloritic schists of *Sutton* (G.S.C., N.S., IV, 56T).

CHARLEVOIX COUNTY.—Rutile occurs in small, orange-red grains in ilmenite at *St. Urbain, Bay St. Paul* (G.S.C., N.S., IV, 56T).

OTTAWA COUNTY.—Rutile has been found in good crystals in *Templeton, 12-XI* and *13-XIII*.

Sagenite.

NOVA SCOTIA.—

KINGS COUNTY.—A transparent quartz penetrated with needles of rutile is stated by Professor How to have been found at *Scot bay* (G.S.C., N.S., IV, 56T).

Sahlite.*(Silicate of calcium, magnesium, and iron.)***QUEBEC.—**

OTTAWA COUNTY.—This is perhaps the commonest variety of pyroxene found in connexion with the apatite deposits of *Buckingham; Hull; Templeton; Wakefield* and other townships in this county (G.S.C., N.S., IV, 56T).

Sal ammoniac.*(Chloride of ammonium.)***ALBERTA.—**

PEACE RIVER.—Sal ammoniac occurs with native sulphur as a deposit from the *bocannes* of *Smoky hills, Smoky river* (G.S.C., 1875-76, 420).

Analysis of sal ammoniac by Hoffmann (G.S.C., 1875-76, 420).

S (Native)	NH ₄ Cl	(NH ₄) ₂ SO ₄	K ₂ SO ₄	Na ₂ SO ₄	CaSO ₄
46.517	50.422	1.807	0.035	0.274	0.146
FeSO ₄	MgSO ₄	Imp.			
0.014		0.922—100.137			

Samarskite.*(Niobate and tantalate of iron, calcium, uranium, cerium, and yttrium.)***QUEBEC.—**

BERTHIER COUNTY.—*Maisonneuve, 1, 2-II* (G.S.C., N.S., IV, 56T).

CHARLEVOIX COUNTY.—*Pied des Monts* (Min. Oper. in Quebec, 1906, 42).

ONTARIO.—

RENFREW COUNTY.—Samarskite is found in *Lyndoch, 23-XV*.

Analysis of samarskite from *Maisonneuve* by Hoffmann (G.S.C., 1880-82, 1. H).

Nb ₂ O ₅	Ta ₂ O ₅	WO ₃	SnO ₂	Y ₂ O ₃	Ce ₂ O ₃	UO ₃	MnO	FeO
55.41	—	—	0.10	14.34	4.78	10.75	0.51	4.83
CaO	MgO	K ₂ O	Na ₂ O	F	H ₂ O		Sp. Gr.	
5.38	0.11	0.39	0.23	trace	2.21—99.04		4.9478	

Saponite.*(Hydrous silicate of magnesium and aluminum.)***ONTARIO.—**

THUNDER BAY DISTRICT.—The *Beaver mine* and others in the *Port Arthur group* (G.S.C., N.S., III, 126-127H).

PRINCE EDWARD ISLAND.—

PRINCE COUNTY.—Saponite occurs in cavities in the trap on *St. George island, Malpeque bay* (G.S.C., N.S., IV, 56T).

Saponite is found on *Hog island* on the northeast coast of this island (Pr. Com. T. L. Walker).

QUEBEC.—

OTTAWA COUNTY.—Saponite occurs as an alteration of amphibole in the township of *Egan* (Mines, G.S. Br., Sum. Rep., 1910, 260).

Analyses of Saponite.

	1	2
SiO ₂	42.76	43.91
Al ₂ O ₃	4.32	6.47
Fe ₂ O ₃	2.57	1.23
CaO.....	1.92	0.59
MgO.....	25.30	27.18
H ₂ O.....	23.13	19.64
	100.00	99.02
Sp. Gr.	2.162	2.23-2.27

1. From Egan by Johnston (Mines, G.S. Br., Sum. Rep., 1910, 259-260).
2. From St. George island by Harrington (Can. Nat., Ser. 2, Vol. VII, 179-180).

Sapphirine.*(Silicate of aluminum, magnesium, and iron.)***QUEBEC.—**

CHARLEVOIX COUNTY.—Sapphirine is intimately associated with plagioclase, rutile, and ilmenite at *St. Urbain* (Am. Journ. Sci. Ser. 4, Vol. XXXIII, 267).

Analysis of sapphirine by Warren (Am. Journ. Sci., Ser. 4, Vol. XXXIII, p. 267).

SiO ₂	Al ₂ O ₃	FeO	MgO	Sp. Gr.
13.44	62.98	9.08	15.28—100.78	3.5+

Scapolite.(See *Wernerite*.)

(Chlorosilicate of calcium, aluminum, and sodium.)

Scheelite.

(Tungstate of calcium.)

BRITISH COLUMBIA.—

CARIBOO MINING DIVISION.—Scheelite occurs with tungstite at *Hardscrabble creek* (G.S.C., N.S., XVI, 348A): and in the placer deposits of *Antler creek*, *Lownes*, and *China Creek claims* (Mines, Min. Br., No. 25, 42.)

NELSON MINING DIVISION.—Scheelite occurs with tungstite and wolframite at the *Kootenay Belle mine*, *Sheep creek*, and also at the *Granite-Poorman mines* (Mines, Min. Br., No. 25, pp. 37, 38, 39).

SLOCAN CITY MINING DIVISION.—*Meteor mines*, *Springer creek* (Mines, Min. Br., No. 25, p. 39).

NOVA SCOTIA.—

HALIFAX COUNTY.—Scheelite is abundant in quartz veins at *Scheelite* (Mines, G.S. Br., Sum. Rep., 1911, 334): *Stillwater brook* (Mines, Min. Br., No. 25, p. 25): *Moose river*, *Waverley* (Mines, G.S. Br., Sum. Rep., 1911, 334).

LUNENBURG COUNTY.—Scheelite occurs with cassiterite, copper pyrites, and zinc blende in quartz porphyry on the *Wallaback stream*, *New Ross* (Mines, G.S. Br., Sum. Rep., 1908, 154); and at *Huey lake* near *Baker settlement* (Mines, G.S. Br., Sum. Rep., 1911, 339).

QUEENS COUNTY.—Scheelite occurs with arsenopyrite and pyrite in a quartz lead intersecting the main auriferous vein at the *Ballou* or *Old American mine*, *Malaga* (G.S.C., N.S., VII, 14R): also at *Fifteenmile brook* (Mines, G.S. Br., Sum. Rep. 1911, 334).

ONTARIO.—

SADBURY DISTRICT.—Scheelite is found in small fragments with very vitreous lustre, sometimes translucent, at the *Victoria mine*, *Denison*, 8-II, III, and IV (Journ. Can. Min. Inst., 1908, XI, 370).

TIMISKAMING DISTRICT.—*Porcupine mining division*, scheelite is found at the *Jupiter mine* and elsewhere in this division.

QUEBEC.—

FRONTENAC COUNTY.—Scheelite is found in quartz veins cutting Cambrian slates in *Marlow*, 1-VII (G.S.C., N.S., V, 74AA).

YUKON.—

DUNCAN CREEK MINING DIVISION.—Scheelite is found in the gold washings of *Dublin gulch*, *Haggard creek*, and *McQuesten river*; *Hight creek*, *Minto creek*, *Mayo river*, and *Stewart river* (G.S.C., N.S., XVI, 340A).

Analyses of Scheelite.

	1	2	3	4	5
WO ₃	73.68	76.79	79.36	79.90	79.01
MoO ₃	0.66	1.06	.....	.....	.....
CO ₂.....	.....	.....	.....	.....	0.71
CaO.....	20.00	18.90	19.96	19.37	19.80
FeO.....	.....	.....	.....	0.70	.....
Insol.....	.....	.....	.....	0.29	0.11
	94.34	96.75	99.32	100.26	99.63
Sp. gr.....	.....	.....	.....	6.059	6.002

1. From Hardscrabble creek by Walker (Mines, Min. Br., Rep. No. 25, 41).
2. From Nugget gulch (loc. cit., p. 42).
3. From Victoria mine (loc. cit. p. 34).
4. From Marlow by Johnston (Hoffmann, G.S.C., N.S., V, 21R).
5. From Molega by Johnston (Hoffmann, G.S.C., N.S., VIII, 9R).

Schorlomite.*(Titano-silicate of calcium, iron, and titanium.)*

BRITISH COLUMBIA.—

GOLDEN MINING DIVISION.—In masses of considerable size in the nepheline syenite of *Ice river*, *Beaverfoot river* (G.S.C., N.S., XII, 12, 13R).

Analysis of schorlomite by Wait (G.S.C., N.S., XII, 13R).

SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	Ti ₂ O ₃	MnO	CaO	MgO	Sp. Gr.
25.77	10.83	3.21	18.59	8.23	0.76	31.76	1.22	—100.37 3.802

Scolecite.*(Hydrated silicate of calcium, and aluminum.)*

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Cape d'Or* and *Two islands* (N.S., Inst., Nat. Sci., Vol. V, 293).

QUEBEC.—

MEGANTIC COUNTY.—*Black lake* (G.S.C., N.S., V, 68A).

Scorodite.*(Hydrated arsenate of iron.)***ONTARIO.—**

HASTINGS COUNTY.—A deep green scorodite is found associated with quartz, mispickel, and realgar on a lot owned by William Jeffrey, about 7 miles west of *L'Amable station* on the Central Ontario railway, in *concession IX* of the township of *Faraday* (G.S.C., Mem. 6, 205).

TIMISKAMING DISTRICT.—Scorodite occurs in very minute crystals associated with erythrite, etc., at the *Nipissing mine, Vein 49, Cobalt area* (Trans. R.S.C., Vol. VII, Section 4, p. 7).

YUKON.—

DUNCAN CREEK MINING DIVISION.—Hydrous arsenate of ferric iron is found coating a quartz ledge, which occurs between the heads of two small streams known as *Twenty pup* and *Forty pup*, which flow into *Dublin gulch*, a tributary of *Haggart creek* (G.S.C., N.S., XVI, 38, 39A).

Analysis of scorodite from Nipissing mine, Vein No. 49, by R. P. D. Graham (Trans. R.S.C., Vol. VII, Section 4, p. 7).

As ₂ O ₅	FeO	NiO	CoO	H ₂ O (By diff.)
41.09	21.55	8.87	4.57	23.92

Selenite.*(Gypsum.)**(Hydrous sulphate of calcium.)*

Selenite is commonly associated with other varieties of gypsum at many of the deposits mentioned under that species, particularly in the provinces of New Brunswick and Nova Scotia.

NEW BRUNSWICK.—

WESTMORLAND COUNTY.—Selenite is especially abundant at *Petitcodiac* (G.S.C., N.S., IV, 57T).

NOVA SCOTIA.—

CUMBERLAND COUNTY.—*Oxford, River Philip* (G.S.C., N.S., IV, 57T): *Springhill; Canfield creek* near *Pugwash* (Pr. Com. H. Piers).

HALIFAX COUNTY.—*Dutch Settlement* near *Elmsdale* (Pr. Com. H. Piers).

HANTS COUNTY.—Near *Windsor: Horn Settlement* near *Enfield* (Pr. Com. H. Piers).

INVERNESS COUNTY.—*Cheticamp*.

RICHMOND COUNTY.—*River Bourgeoise* (Pr. Com. H. Piers).

Senarmontite.

(*Oxide of antimony.*)

QUEBEC.—

WOLFE COUNTY.—Senarmontite occurs with native antimony, stibnite, valentinite, and kermesite in *South Ham* (G.S.C., N.S., IV, 57T).

Sericite.

(*See Muscovite.*)

(*Hydrous silicate of potassium and aluminum.*)

Serpentine.

(*Hydrated silicate of magnesium.*)

BRITISH COLUMBIA.—

Serpentine occurs as an alteration of the peridotites in the *ATLIN*, *CLINTON*, *OMINECA*, *SIMILKAMEEN*, and other mining divisions of the province.

GRAND FORKS MINING DIVISION.—Serpentine is found on the mountain east of *Cascade City* (Pr. Com. W. F. Robertson and Wm. Thomson).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Serpentine occurs with schistose diorites near *St. Stephen* (G.S.C., N.S., X, 29M).

ST. JOHN COUNTY.—A pale green variety of serpentine occurs in the limestones of *Portland*: at *Lily lake* and *Lorneville* (formerly *Pisarinco*) (G.S.C., 1870-71, 238).

ONTARIO.—

FRONTENAC COUNTY.—*Thirtyisland lake: Bedford*, 6-III (Ont. Bur. Min., 1900, 209).

HASTINGS COUNTY.—*Marmora*, 13-IX (Ont. Bur. Min., 1900, 209).

LANARK COUNTY.—*North Burgess*, 2-VIII (Ont. Bur. Min., 1900 209).

PETERBOROUGH COUNTY.—Serpentine occurs in small amounts in some of the iron ore beds of *Belmont* (G.S.C., 1873-74, 204).

RAINY RIVER DISTRICT.—Massive and fibrous forms of serpentine occur at *Clearwater* and *Despair lakes* (Ont. Bur. Min., 1894, 76).

TIMISKAMING DISTRICT.—*Abitibi lake* (G.S.C., 1872-73, p. 128).

QUEBEC.—

Serpentine is particularly abundant amongst the metamorphic rocks of the Eastern Townships and Gaspé peninsula, where it forms vast masses, sometimes free from admixture, and at others encloses diallage, actinolite, garnet, and chromite or intermixed with carbonate of lime, dolomite, and occasionally ferruginous magnesite. It is also of frequent occurrence in the Grenville series.

ARGENTEUIL COUNTY.—*Grenville, 16-III.*

BEAUCE COUNTY.—*Broughton* (G.S.C., N.S., IV, 57T).

BROME COUNTY.—*Bolton, 10-IX.*

GASPE COUNTY.—*Mount Albert, Shickshock mountains, and Mount Serpentine* near *Gaspé bay* (G.S.C., N.S., IV, 57T).

MEGANTIC COUNTY.—Amongst other forms of serpentine the variety "porcellophite" occurs in *Coleraine* and *Thetford* (G.S.C., N.S., IV, 57T).

OTTAWA COUNTY.—*Hull, 14-IX: Wright, 17-VII.*

PONTIAC COUNTY.—*Calumet island* (Geol. Can., 1863, 471-472).

RICHMOND COUNTY.—*Melbourne* (G.S.C., N.S., IV, 57T): and *Ship-ton* (G.S.C., N.S., II, 67J).

SHEFFORD COUNTY.—*Stukely, 28-VIII.*

SHERBROOKE COUNTY.—*Orford, 10-XVIII.*

WOLFE COUNTY.—*Garthby: South Ham* (G.S.C., N.S., IV, 57T).

YUKON.—

Serpentine occurs at various localities as an alteration product, probably of peridotite, on the *Pelly river* (G.S.C., N.S., III, 125B): *Klondike* (G.S.C., N.S., XIV, 28B): *Yukon* and other streams (G.S.C., N.S., XIII, 44A).

For other varieties see chrysotile, picrolite, retinalite, etc.

Analyses of Serpentine.

	1	2	3	4	5
SiO ₂	40.30	42.90	43.40	43.94	38.48
Al ₂ O ₃}.....	.....	.....	.....	} 5.69	4.15
Fe ₂ O ₃.....	.....	.....	.....		.....
FeO.....	7.02	7.47	3.60	.....	9.24
NiO.....	0.26	0.15	.....	.....	0.28
Cr ₂ O ₃	tr.	0.25	.....	0.67	.....
MgO.....	39.07	36.28	40.00	34.80	35.73
CaO.....	.....	.....	.....	1.22	.....
H ₂ O.....	13.35	13.14	13.00	14.54	11.60
Chromic iron.....	.....	.....	.....	.....	0.51
	100.00	100.19	100.00	100.86	99.99
Sp. Gr.....	2.597	.....	2.546	.....	2.77

1. and 2. From Orford.

3. From South Ham by Hunt (Geol. Can., 1863, p. 472).

4. From Bolton and Melbourne by Harrington (G.S.C., 1874-75, p. 304).

5. From Abitibi lake by Harrington (G.S.C., 1872-73, 299-300).

Seybertite.

(*Hydrous silicate of aluminum, calcium, and magnesium.*)

QUEBEC.—

JOLIETTE COUNTY.—Seybertite is mentioned by Dr. Hunt as occurring with small crystals of blue spinel in the seigniory of *Daillebout* (G.S.C., N.S., IV, 57T).

Siderite.

(*Carbonate of iron.*)

BRITISH COLUMBIA.—

BOUNDARY DISTRICT.—Siderite occurs with the copper ores of some of the mines of this district.

OMINECA MINING DIVISION.—Siderite occurs as a gangue in some of the silver-lead ores at *Hazellton* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

QUESNEL MINING DIVISION.—Large deposits of siderite occur with pyrrhotite and pyrite on *Harvey creek, Swamp river* (G.S.C., N.S., III, 46C).

SLOCAN MINING DIVISION.—Siderite is very common in the *Slocan lead-silver mines* (Pr. Com. W. J. Sutton): fine crystalline siderite is found in the *Ohio claim* (Mines, G.S. Br., Sum. Rep., 1910, 266): and the *Whitewater mine* (Pr. Com. T. L. Walker).

NEW BRUNSWICK.—

CARLETON COUNTY.—A manganiferous variety occurs 2 miles south of *Woodstock* (G.S.C., N.S., XI, 162A).

ST. JOHN COUNTY.—Siderite occurs in thin veins in Huronian rocks in the *Nerepis valley* (G.S.C., N.S., IV, 57T).

NORTH WEST TERRITORIES.—

Siderite has been noted in considerable quantity on *Flint island* and other islands of the *Nastapoka group*, east coast of *Hudson bay* (G.S.C., N.S., IV, 57T).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—Siderite occurs with chalcopyrite at *Polson lake* (Pr. Com. H. Piers).

GLOUCESTER COUNTY.—Important deposits of siderite, often altered to hematite, occur at the *Acadia mines, Londonderry* (G.S.C., 1873-74, 223).

PICTOU COUNTY.—Siderite occurs in thick beds in the Millstone Grit of *Sutherland brook* (G.S.C., N.S., IV, 57T).

QUEBEC.—

NEW QUEBEC TERRITORY.—Siderite has been noted in considerable quantities at the *First Fall, Little Whale river*.

See also Sideroplesite.

Analyses of Siderite.

	1	2	3
FeCo ₃	52.70	65.61	57.40
MnCo ₃	24.64	7.98	8.29
CaCo ₃	tr.	2.67	4.02
MgCo ₃	11.81	3.23	5.66
Fe ₂ O ₃.....	.....	16.98	20.52
H ₂ O (Hyg).....	.....	0.76	1.43
S.....	.....	0.00	undet.
P.....	.....	0.013	undet.
Organic.....	.....	tr.	.....
Insol.....	10.94	3.76	2.38
	100.09	101.003	99.70

1. From *Flint island* by Harrington (G.S.C., 1877-78, 47G).

2 and 3. From *Sutherland brook* by Broome (G.S.C., 1866-69, 442).

Sideroplesite.*(Carbonate of iron and manganese.)*

NOVA SCOTIA.—

COLCHESTER COUNTY.—This variety of siderite occurs in masses and interlacing veins with the ankerite of the *West mines, Londonderry* (G.S.C., N.S., IV, 58T).

Analyses of Sideroplesite.

	1	2	3	4
FeCo ₃	67.96	69.20	68.47	68.15
MnCo ₃	2.19	1.37	2.08	1.87
MgCo ₃	27.87	28.73	26.02	28.06
CaCo ₃	1.03	0.59	3.14	1.92
Fe ₂ O ₃.....	....	0.08	....	....
Insol.....	0.43	0.47	0.25	....
	99.48	100.44	99.96	100.00
Sp. Gr.	3.523			

1, 2, 3, and 4, the last being an average of a number of analyses by Louis. (N.S. Inst. Nat. Sci., Vol. V, 58-62).

Silicified Wood.

(This term includes all those substances in which the woody fibre of plants and trees has been replaced by siliceous substances such as opal and quartz with the retention in part or in whole of the original structure of such fibre.)

ALBERTA.—

MEDICINE HAT DIVISION.—Fine specimens of silicified wood have been found in the neighbourhood of *Ross coulée* and in the vicinity of the *Elbow of South Saskatchewan river* (G.S.C., N.S., IV, 53T).

BRITISH COLUMBIA.—

SIMILKAMEEN MINING DIVISION.—Fine specimens of silicified wood have been found on *Agate mountain* (Mines, G.S. Br., Sum. Rep., 1907-98): on the *Similkameen river* and on *Wolf creek*.

Sillimanite.*(Var. Fibrolite.)**(Silicate of aluminum.)***ONTARIO.—**

SUDBURY DISTRICT.—*Dryden, 9-II* (Pr. Com. T. L. Walker): in the first cutting east of *Wanapitei* (Pr. Com. F. D. Adams).

QUEBEC.—

SAGUENAY COUNTY.—Prominent in gneiss at the mouth of the *Olo-manoshibo river* (Pr. Com. T. L. Walker).

Silver.*(Native.)***BRITISH COLUMBIA.—**

Native silver is frequently found in pellets, more rarely in nuggets, in connexion with the gold washings of many of the streams of the province.

AINSWORTH MINING DIVISION.—Filiform silver has been found in the mines of this division (G.S.C., N.S., IV, 48-54B). Native silver is found at *Krao mine* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

BOUNDARY DISTRICT.—Native silver is an occasional associate, in small quantities, of the copper ores of this district.

FORT STEELE MINING DIVISION.—*North Star mine* provided specimens of moss silver and filiform silver (Pr. Com. W. F. Robertson).

NANAIMO MINING DIVISION.—*Texada island (Vananda mine)*, considerable quantities of native silver associated with bornite at a depth of 800 to 1,000 feet (Pr. Com. W. F. Robertson).

OMINECA MINING DIVISION.—Native silver occurs with bornite and tetrahedrite at *Hudson Bay mountains* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN CITY MINING DIVISION.—Native silver is found at several properties on *Springer creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—Native silver occurs in some of the deposits in the vicinity of *Bear lake* (G.S.C., N.S., VI, 25R).

NOVA SCOTIA.—

INVERNESS COUNTY.—In drift at *MacKenzie river* (How, Mineralogy of Nova Scotia, 58).

ONTARIO.—

THUNDER BAY DISTRICT.—Native silver occurs with argentite in *Duncan mine* (G.S.C., N.S., III, 56H): *Lybster* (G.S.C., N.S., XII, 24R): *McIntyre* (G.S.C., N.S., III, 66H): *MacGregor* (G.S.C., N.S., III, 64H): *Paipoonge* (G.S.C., N.S., III, 66H): *Prince location* (G.S.C., N.S., III, 51H): *Silver islet* (G.S.C., N.S., III, 26H): *Spar island* (G.S.C., N.S., III, 41H): *Thunder Bay mine* (G.S.C., N.S., III, 54H).

TIMISKAMING DISTRICT.—Fine specimens of mossy and filiform silver have been found in this district. *Casey township, Casey mine*: native silver has been found in abundance in sheets and scattered masses of various sizes, sometimes many pounds in weight in the mines of the *Cobalt area, Coleman township* (G.S.C., N.S., XVI, 200-212A): also in greater or less abundance in *James, Willett*, and other townships in this district (Mines, G.S. Br., Sum. Rep., 1908, 166).

QUEBEC.—

PONTIAC COUNTY.—Native silver has been found in thin laminæ in a mixture of quartz and diabase underlying a deposit of sphalerite in *Calumet, 10-IV* (G.S.C., N.S., VI, 25R).

SHERBROOKE COUNTY.—*Sherbrooke (Suffield mine)* (Pr. Com. F. D. Adams).

Silver Glance.

(See *Argentite*.)

(*Sulphide of silver*.)

Smaltite.

(*Arsenide of cobalt generally with small quantities of iron and nickel*.)

ONTARIO.—

HASTINGS COUNTY.—Smaltite has been noted in the iron ore at the *Dominion mine, Madoc, 2-II* (G.S.C., N.S., VIII, 128, 129A).

SUDBURY DISTRICT.—Smaltite occurs with chalcopyrite in *McKim* (G.S.C., N.S., II, 11T).

TIMISKAMING DISTRICT.—Smaltite is commonly found in large masses in the mines of the *Cobalt area, Coleman township* (G.S.C., N.S., XVI, 201A).

QUEBEC.—

TIMISKAMING COUNTY.—Small veins of smaltite have been reported in *Fabre*, near *Lake Timiskaming* (Min. Oper. in Quebec, 1907, 57).

Smectite.*(See Halloysite.)**(Hydrated silicate of aluminum.)***Smithsonite.***(Carbonate of zinc.)***BRITISH COLUMBIA.—**

SLOCAN MINING DIVISION.—Smithsonite was found accompanying sphalerite, galena, siderite, tetrahedrite, pyrite, and pyrargyrite in a gangue composed of crushed and brecciated slate, calcite, and quartz in the *Alamo mine*, at the head of *Hauser creek* (G.S.C., N.S., VIII, 14R).

Soapstone.*(See Steatite.)**(Hydrous silicate of magnesium.)***Sodalite.***(Silicate of aluminum, with chloro-aluminate of sodium.)***BRITISH COLUMBIA.—**

GOLDEN MINING DIVISION.—Fine blue sodalite occurs in the nepheline-syenite and also in a quartzose-gneissic rock near *Ice river*, *Beaverfoot river* (G.S.C., N.S., I, 123-124B).

ONTARIO.—

HALIBURTON COUNTY.—Sodalite occurs in greater or less abundance in this county (Ont. Bur. Min., 1900, 209).

HASTINGS COUNTY.—Sodalite occurs in masses and stringers in the nepheline-syenite of *Dungannon*, 25-XIV (G.S.C., N.S., VII, 98A); and 29-XIII (Pr. Com. F. D. Adams).

PETERBOROUGH AND RENFREW COUNTIES.—Sodalite occurs in greater or less abundance in these counties (Ont. Bur. Min., 1900, 209).

QUEBEC.—

BROME COUNTY.—Sodalite occurs in the nepheline-syenite of *Brome* (G.S.C., N.S., IV, 58T).

HOCHELAGA COUNTY.—*Montreal* (G.S.C., N.S., IV, 58T).

ROUVILLE COUNTY.—*Beloeil* (G.S.C., N.S., IV, 58T).

Analyses of Sodalite.

	1	2	3
SiO ₂	37.50	37.52	36.58
Al ₂ O ₃	31.82	31.38	31.05
Fe ₂ O ₃	0.01	tr.	.....
FeO.....	.....	.....	0.20
CaO.....	.....	0.35	.....
MgO.....	.....	tr.	.....
Na ₂ O.....	19.34	19.12	24.81
K ₂ O.....	0.27	0.78	0.79
Na.....	4.61	4.48	.....
Cl.....	7.12	6.91	6.88
SO ₂.....	.....	.....	0.12
H ₂ O.....	.....	.....	0.27
Insol.....	.....	.....	0.80
	100.67	100.54	101.50
Less O = Cl.....	.....	.....	1.55
			99.95

1. From Ice river.
2. From Montreal by Harrington (Trans. R.S.C., Vol. IV, Sec. III, 81).
3. From Dungannon by Harrington (Am. Journ. Sci., Ser. 3, Vol. 48, p. 17).

Souesite.(See *Awaruite*.)

(Alloy of nickel and iron.)

Specularite.(See *Hematite*.)

(Oxide of iron.)

Sperrylite.

(Arsenide of platinum.)

ONTARIO.—

SUDBURY DISTRICT.—Sperrylite occurs with chalcopyrite in *Denison, 6-IV (Vermilion mine)* (G.S.C., N.S., IV, 59T) and (Am. Journ. Sci., XV, 1903, 450-458).

Analysis of sperrylite from Vermilion mine by Wells (Am. Journ. Sci., Ser. 3, Vol. XXXVII, 67-73).

As	Sb	Pt	Rh	Pd	Fe	SnO ₂	Sp. Gr.
40.98	0.50	52.57	0.72	tr.	0.07	4.62—99.46	10.602

Spessartite.*(Garnet.)**(Silicate of aluminum, iron, and manganese.)*

ONTARIO.—

PARRY SOUND DISTRICT.—Spessartite occurs in fine crystals with magnetite and other minerals in a coarse pegmatite vein occurring in the township of *Proudfoot* (G.S.C., N.S., XII, 25R).

QUEBEC.—

OTTAWA COUNTY.—Spessartite occurs with black tourmaline, uraninite, monazite, etc., in a coarse pegmatite vein in *Villeneuve, 31-I* (G.S.C., N.S., IV, 59T).

Analysis of spessartite by Harrington from the Villeneuve mica mine (Can. Rec. Sci., IV, 1890-91, 226).

SiO ₂	Al ₂ O ₃	FeO	MnO	CaO	NgO	Loss (ign.)
36.30	19.20	10.66	30.06	3.07	0.43	0.31—100.03

Sphaerosiderite.*(Var. Siderite.)**(Carbonate of iron.)*

BRITISH COLUMBIA.—

QUESNEL MINING DIVISION.—This variety of siderite occurs in massive globular concretions filling amygdaloidal cavities in basalt on *Mussel creek, Horsefly river* (G.S.C., N.S., VII, 14, 15R).

Sphaerostilbite.*(Var. Stilbite.)**(Hydrous silicate of aluminum and calcium.)*

NOVA SCOTIA.—

KINGS COUNTY.—*Halls Harbour* (G.S.C., N.S., IV, 59T).

Sphalerite.*(Sulphide of zinc.)*

ALBERTA.—

BANFF DIVISION.—*South Fork of Red Deer river, Copper mountain.*

BRITISH COLUMBIA.—

Sphalerite is of very general occurrence throughout the province in more or less paying quantities (Pr. Com. W. J. Sutton).

AINSWORTH MINING DIVISION.—Sphalerite is found at *Glengarry* and *United mines* and also at the *U.S. mine*, head of *Jackson basin* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

ATLIN MINING DIVISION.—Zinc blende occurs amongst the ores of the *Lake View group* (G.S.C., N.S., XII, 70A).

BOUNDARY DISTRICT.—Sphalerite occurs in the mines of this division (G.S.C., N.S., XIII, 77A).

FORT STEELE MINING DIVISION.—Sphalerite is found in many of the mines of this division (G.S.C., N.S., XI, 92, 95, 96A).

LARDEAU MINING DIVISION.—Sphalerite is found in the mines of this district (G.S.C., N.S., XV, 58-77A).

SLOCAN MINING DIVISION.—Sphalerite occurs in all the silver-lead mines of this district (Pr. Com. W. J. Sutton): in fine, dark crystals at the *Lucky Jim mine* (Mines, G.S.Br., Sum. Rep., 1910, 266).

VANCOUVER MINING DIVISION.—Zinc blende occurs north of *Burrard inlet* (G.S.C., N.S., V, 66R).

NEW BRUNSWICK.—

ST. JOHN COUNTY.—Honey-yellow sphalerite occurs with galena in small veins traversing dolomite at *Frenchman creek, Lancaster* (G.S.C., N.S., X, 35M).

NOVA SCOTIA.—

INVERNESS COUNTY.—Zinc blende occurs in more or less abundance in a bed of sericite schist at *Faribault brook, Cheticamp river* (G.S.C., N.S., XV, 242S).

LUNENBURG COUNTY.—With cassiterite, etc., on *Wallaback stream* near *New Ross* (Pr. Com. H. Piers).

ONTARIO.—

BRUCE COUNTY.—Sphalerite occurs in the dolomites of *Albemarle, 29-III; 30-III* (Mines, G.S.Br., Sum. Rep., 1910, 265); *31-III* (Ont. Bur. Min., 1912, 166).

FRONTENAC COUNTY.—*Barrie, 5 to 9-IX* (Ont. Bur. Min., 1900, 209).

GREY COUNTY.—Sphalerite occurs in the dolomites of *Keppel, XV* (Mines, G.S.Br., Sum. Rep., 1911, 362); and also in dolomites elsewhere in the *Interlake peninsula*.

HALIBURTON COUNTY.—Zinc blende occurs in small amount associated with galena in *Cardiff, 13-V* (G.S.C., Mem. 6, 216).

HASTINGS COUNTY.—*Marmora, 1-XI* (Ont. Bur. Min., 1900, 209).

SUDBURY DISTRICT.—*Balfour, 6-I* (Ont. Bur. Min., 1900, 209).

THUNDER BAY DISTRICT.—Sphalerite occurs in the metalliferous veins of the mines along the east and north shores of *Lake Superior* (Geol. Can., 1863, 514).

WELLAND COUNTY.—At *Niagara Falls* it sometimes appears to replace fossils and at other times occurs in beautiful wax-yellow, cleavable masses embedded in nodules of gypsum (Geol. Can., 1863, 514).

QUEBEC.—

FRONTENAC COUNTY.—*Marlow, 1-VII: Risborough* (Pr. Com. W. F. Ferrier).

MISSISQUOI COUNTY.—*St. Armand.*

OTTAWA COUNTY.—*Bouchette, 41, 42-I and II* (G.S.C., N.S., XII, 25R): *Templeton, 17-IX* (Mines, Min. Br., 118, 298).

PONTIAC COUNTY.—*Calumet, 17-II; 10-IV.*

PORTNEUF COUNTY.—Zinc blende has been noted in some abundance in *Montauban, 37, 38-I* (Min. Oper. in Quebec, 1911, p. 27).

Sphene.

(*See Titanite.*)

(*Silico-titanate of calcium.*)

Spinel.

(*Aluminate of magnesium.*)

ONTARIO.—

LEEDS COUNTY.—Crystals of black spinel, sometimes an inch or even 2 inches in diameter, have been found in flesh-red limestone in *South Burgess, 10-I* (Ont. Bur. Min., 1900, 210).

RENFREW COUNTY.—Spinel occurs with fluorite, apatite, and white orthoclase in a vein of flesh-red calcite in *Ross* (G.S.C., N.S., IV, 59T).

QUEBEC.—

JOLIETTE COUNTY.—Small, translucent octahedrons of blue spinel are found in a bed of crystalline limestone in the *Seigniory of Daillebout* (G.S.C., N.S., IV, 59T).

MONTMORENCY COUNTY.—Spinel occurs with chondrodite in limestone at *Sault a la Puce.*

OTTAWA COUNTY.—Spinel is found in crystals in *Aylwin, 48-VI* (Can. Rec. Sci., 1890-91, IV, 475): *Bouchette, 3, 4, VI: Bigelow, 52-V* (Mines, G.S.Br., Sum. Rep., 1910, 266): *Portland, 16-X* (G.S.C., N.S., VI, 25, 26R): *Wakefield, 7-I.*

Spodumene.

(*Silicate of aluminum, lithium, and sodium.*)

ONTARIO.—

LANARK COUNTY.—Spodumene is mentioned by Hunt as having been observed in a small rolled mass of granite near *Perth* (G.S.C., N.S., IV, 59T).

QUEBEC.—

NEW QUEBEC TERRITORY.—Spodumene occurs in greyish-green, sub-translucent prisms in a micaless, orthoclastic, granitic veinstone cutting a syenite on *Walrus island, Paint Hills group*, east coast of *James bay* (G.S.C., N.S., XII, 15, 16R).

Staurolite.*(Hydro-alumino-silicate of aluminum and iron.)*

BRITISH COLUMBIA.—

SLOCAN MINING DIVISION.—Staurolite is found on the west side of *Slocan lake*, in area of rocks of Shuswap formation (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Staurolite occurs in mica schists near *Moore lake*, *Moore Mills* (G.S.C., 1870-71, 240).

NOVA SCOTIA.—

GUYSBOROUGH COUNTY.—*St. Mary*, *Salmon river* (G.S.C., N.S., II, 156P).

SHELburne COUNTY.—Staurolite occurs in schists at *Carleton* (G.S.C., N.S., IX, 58M): *Jordan river* (G.S.C., N.S., IX, 57M): *Pubnico harbour* (G.S.C., N.S., IX, 67M): *Red head* (G.S.C., N.S., IX, 58M), etc.

ONTARIO.—

SUDBURY DISTRICT.—In mica schists in *Drury*, *Murray falls*; and *Hyman*, 8-I.

Steatite.*(Talc.)**(Hydrous silicate of magnesium.)*

BRITISH COLUMBIA.—

YALE MINING DIVISION.—Steatite occurs at the mouth of the *Salmon river* (G.S.C., N.S., X, 226S).

NOVA SCOTIA.—

CAPE BRETON COUNTY.—*Eagle head*, *Gabarus bay* (G.S.C., N.S., VI, 25R).

ONTARIO.—

FRONTENAC COUNTY.—*Clarendon*, 14-II (Ont. Bur. Min., 1900, 210).

HASTINGS COUNTY.—*Elzevir*, 7-IV: *Grimsthorpe* (Ont. Bur. Min., 1900, 210).

LEEDS COUNTY.—*Elizabethtown* and *Rideau lakes* (Ont. Bur. Min., 1900, 210).

RAINY RIVER DISTRICT.—*Rock Island bay*, *Watten* (Ont. Bur. Min., 1894, 76).

THUNDER BAY DISTRICT.—Near *French Portage*, *Lake of the Woods* (G.S.C., N.S., I, 49CC).

QUEBEC.—

BEAUCE COUNTY.—*Broughton* (Pr. Com. T. L. Walker).

BROME COUNTY.—*Bolton*, 26-II (G.S.C., N.S., VII, 91J); 4, 24-IV (G.S.C., N.S., X, 225S); 24-VI (G.S.C., N.S., VII, 91J); 17-IX (G.S.C., N.S., X, 225S); *Potton*, 20-V; 24-VI: *Sutton*, 12-VII (G.S.C., N.S., X, 225S).

WOLFE COUNTY.—*Garthby*, 6-1: *Wolfestown*, 20-II (G.S.C., N.S., X, 225S).

Steeleite.

(Mordenite.)

(Hydrous silicate of aluminum, etc.)

NOVA SCOTIA.—

KINGS COUNTY.—This variety of mordenite is found embedded in red clay in cavities in trap at *Cape Split* (G.S.C., N.S., IV, 60T).

Stellarite.

(Hydrocarbon.)

NOVA SCOTIA.—

PICTOU COUNTY.—*Stellarton*; the name was given to this material by the late Professor How from its property of dropping "Stars of fire" when it has been held to a flame and removed. It was regarded by the late Sir Wm. Dawson as a fossil swamp muck or mud and possesses the character of an earthy bitumen (G.S.C., 1866-69, 377).

Analyses of Stellarite.

	1		2
Volatile matter.....	66.56	Carbon.....	80.96
Fixed carbon.....	25.23	Hydrogen.....	10.15
Ash.....	8.21	Nitrogen.....	0.68
	100.00		91.79
Sp. Gr.....	1.103		

Analyses by Anderson (How, Mineralogy of Nova Scotia, 1869, pp. 24 and 25).

1. Proximate analysis.
2. Ultimate analysis.

Stephanite.

(*Sulphantimonite of silver.*)

BRITISH COLUMBIA.—

GRAND FORKS MINING DIVISION.—Stephanite is found at *Waterloo Mining claim, Thunder Hill camp* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN CITY MINING DIVISION.—Stephanite is found at the *Arlington mine, Springer creek* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

ONTARIO.—

THUNDER BAY DISTRICT.—*Port Arthur district, Badger mine* (Ont. Bur. Min., 1900, 210).

TIMISKAMING DISTRICT.—Well formed crystals are found at the *Kerr Lake mine, Cobalt* (Pr. Com. T. L. Walker).

Stibnite.

(*Sulphide of Antimony.*)

BRITISH COLUMBIA.—

ALBERNI MINING DIVISION.—*Great Central lake, Vancouver island* (Pr. Com. W. J. Sutton).

ASHCROFT MINING DIVISION.—Stibnite is found at *Jamieson's claims, near Lytton* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

ATLIN MINING DIVISION.—*Lake Bennett, White Pass railway* (Pr. Com. W. J. Sutton).

KAMLOOPS MINING DIVISION.—Stibnite occurs in a gangue of dolomite and barite near the mouth of *Copper creek, Kamloops lake* (G.S.C., N.S., VII, 99A): and elsewhere with cinnabar in this division (G.S.C., N.S., XIII, 89S).

LILLOOET MINING DIVISION.—Stibnite occurs in fine granular and radiating columnar masses in quartz on *Cadwallader creek, Upper Bridge river* (G.S.C., N.S., XI, 16R): near *Foster bar, 23 miles from Lytton, Fraser river* (G.S.C., N.S., IV, 60T).

NANAIMO MINING DIVISION.—Stibnite occurs in connexion with a quartz vein at *Tailayoko lake, head of Homathko river* (Mines, B.C., 1910, 156).

OMINECA MINING DIVISION.—Stibnite is found with silver-lead ores at the *Silver Bell Mining claim, Hazelton* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—On north fork of *Carpenter creek (Alps-Alturas group)* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NEW BRUNSWICK.—

YORK COUNTY.—Stibnite occurs with native antimony in well-defined quartz veins filling lines of dislocation in highly tilted argillaceous slates and quartzites near *Lake George, Prince William* (G.S.C., N.S., IV, 60T).

NOVA SCOTIA.—

HANTS COUNTY.—Stibnite has been found in considerable abundance in quartzose, calcitic veins cutting talcose slates at *Rawdon and West Gore* (G.S.C., N.S., IV, 60T).

ONTARIO.—

ADDINGTON COUNTY.—*Sheffield, 28-I* (Ont. Bur. Min., 1900, 210).

ALGOMA DISTRICT.—Near *Echo lake* (Ont. Bur. Min., 1900, 210).

FRONTENAC COUNTY.—*Barrie, 21, 22, 23-VIII* (G.S.C., 1882-84, 12L).

HASTINGS COUNTY.—*Marmora* (G.S.C., N.S., IV, 60T).

QUEBEC.—

WOLFE COUNTY.—Stibnite occurs with antimony and other minerals in argillite in *South Ham, 56-I* (G.S.C., N.S., IV, 80K).

YUKON.—

DUNCAN CREEK MINING DIVISION.—Stibnite occurs with quartz on a small stream flowing into the *Stewart river* about 5 miles above *Gordon Landing* (G.S.C., N.S., XVI, 38A).

WHITEHORSE MINING DIVISION.—Stibnite occurs in small quantities with grossularite at the *Copper King* and *Anaconda claims* (G.S.C., N.S., XII, 25R).

Stilbite.

(*Hydrated silicate of aluminum, calcium, and sodium.*)

BRITISH COLUMBIA.—

ASHCROFT MINING DIVISION.—*Nicoamen Plateau*.

KAMLOOPS MINING DIVISION.—*Salmon river*, about 9 miles above *Grande Prairie*.

NOVA SCOTIA.

ANNAPOLIS COUNTY.—*Margareville* (G.S.C., N.S., IV, 60T); *Port George* (G.S.C., 1882-84, 25L).

CUMBERLAND COUNTY.—Stilbite is found in fine specimens and great variety at *Cape d'Or*, and *Horseshoe cove*; *Partridge island* (G.S.C., N.S., IV, 60T), and *Two Islands* (G.S.C., 1882-84, 28L).

KINGS COUNTY.—*Blomidon, Hall Harbour* (G.S.C., N.S., IV, 60T); and *Victoria Harbour* (G.S.C., 1882-84, 28L).

QUEBEC.—

OTTAWA COUNTY.—Stilbite, with garnet and epidote, has been found in *Wakefield, 18-II* (G.S.C., 1882-84, 18L).

Analysis of stilbite from Annapolis county by How (Phil. Mag., Ser. 5, Vol. 1, p. 134).

SiO ₂	Al ₂ O ₃	CaO	Na ₂ O	H ₂ O	
57.32	17.28	7.57	2.10	16.52	—100.79

Stilpnomelane.

(*Hydrous silicate of iron, aluminum, and magnesium.*)

NOVA SCOTIA.—

CUMBERLAND COUNTY.—Stilpnomelane has been observed in dark yellowish-green, plumose groupings on chalcedony on the west side of *Partridge island* (G.S.C., N.S., VII, 15R).

ONTARIO.—

HASTINGS COUNTY.—Chalcodite occurs in connexion with the iron ores of *Wallbridge mine, Madoc, 12-V* (G.S.C., N.S., IX, 107A).

Stromeyerite.

(*Sulphide of copper and silver.*)

BRITISH COLUMBIA.—

NELSON MINING DIVISION.—Stromeyerite occurs with bornite, chalcopyrite, pyrite, tetrahedrite, galena, sphalerite, and argentite in a feldspathic veinstone traversing schistose eruptives at the *Silver King mine, Toad mountain* (G.S.C., N.S., IX, 27A).

ONTARIO.—

TIMISKAMING DISTRICT.—A massive stromeyerite has been noted at the *Foster mine, Coleman township* (Mines, G.S.Br., Sum. Rep., 1907, p. 98).

Analysis of stromeyerite from Toad mountain by Johnston (Hoffmann, G.S.C., N.S., VIII, 12, 13R).

S	Ag	Cu	Fe		Sp. Gr.
15.74	52.27	31.60	0.17	—99.78	6.277

Strontianite.

(*Carbonate of strontium.*)

BRITISH COLUMBIA.—

QUESNEL MINING DIVISION.—*Horsefly mine* (G.S.C., N.S., VI, 30R).

ONTARIO.—

CARLETON COUNTY.—Radiating, crystalline, massive strontianite occurs in veins up to 6 inches in width traversing the Chazy limestone in *Nepean, 31-A* (G.S.C., N.S., XII, 44G).

QUEBEC.—

HOCHELAGA COUNTY.—Strontianite occurs in the form of white, fibrous tufts in cracks in concretionary limestone masses in the Utica slate of *St. Helen island* (G.S.C., N.S., IV, 61T).

Analysis of strontianite from Nepean by Johnston (Hoffmann, G.S.C., N.S., VI, 22-23R).

Co ₂	SrO	CaO	Insol.		Sp. Gr.
30.54	65.43	3.38	0.17	—99.52	3.704

Struvite.

(*Hydrated phosphate of ammonium and magnesium.*)

YUKON.—

DUNCAN CREEK MINING DIVISION.—Struvite has also been observed in the valleys between the cusps of a molar of a mammoth found on *McQuesten creek, Stewart river* (Mines, G.S.Br., Sum. Rep., 1913, 327).

Struvite was found with newberyite in the fossil tusk of a mammoth found on *Quartz creek, Indian river* (G.S.C., N.S., XII, 13, 14R). For analysis see "Newberyite."

Sulphatite.

(*Free sulphuric acid.*)

ONTARIO.—

The following springs are remarkable for containing a large proportion of free sulphuric acid:—

BRANT COUNTY.—The so-called *Sour Springs of Tuscarora* (G.S.C., N.S., IV, 61T).

LINCOLN COUNTY.—A spring in the southwest corner of *Niagara* and one at *St. Davids* in the same township (G.S.C., N.S., IV, 61T).

WELLAND COUNTY.—A spring about 1½ miles above *Chippawa* (G.S.C., N.S., IV, 61T).

For analysis see T. S. Hunt (Geol. Can., 1863, 545).

Sulphur.

ALBERTA.—

ATHABASKA RIVER.—Native sulphur has been found 3 miles above *Jasper lake* (G.S.C., N.S., XI, 162A); and in cones deposited by springs at *La Saline* (G.S.C., N.S., V, 35D).

PEACE RIVER.—Sulphur is found in crystals and compact fine-grained forms with sal ammoniac in bocannes on *Smoky river* (G.S.C., N.S., IV, 61T).

NORTH WEST TERRITORIES.—

Native sulphur occurs in small quantities as a deposit from the mineral springs on the south shore of *Great Slave lake* (G.S.C., N.S., IV, 31D).

NOVA SCOTIA.—

COLCHESTER COUNTY.—Scattered crystals of native sulphur have been noted in a gypsum quarry about 2 miles west of *Johnstons Road crossing* (Pr. Com. H. Piers).

ONTARIO.—

ADDINGTON COUNTY.—Sulphur occurs as a product of the decomposition of pyrite or chalcopyrite at various places, such as *Denbigh, 3-I* (G.S.C., N.S., VI, 27R).

INTERLAKE PENINSULA.—Sulphur occurs as a deposit about sulphurous springs in several localities in this area.

LANARK COUNTY.—*North Burgess, 2-V* (G.S.C., N.S., IX, 17R).

NORFOLK COUNTY.—*Charlottetown, 3-XII* (Ont. Bur. Min., 1900, 210).

WELLAND COUNTY.—Sulphur is found in earthy coatings and minute crystals in connexion with some of the limestones of *Niagara Falls* (Ont. Bur. Min., 1900, 210).

For analysis of sulphur from Smoky river and Peace river see "Sal ammoniac."

Sylvanite.

(Telluride of gold and silver.)

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—Sylvanite was found with pyrite at the *Geiler and Gold Thread claims, Valdez islands*.

SLOCAN MINING DIVISION.—According to Gwillim (Can. Rec. Sci., Vol. VI, 494-498), sylvanite is an occasional constituent of some of the gold and silver ores of this district.

ONTARIO.—

THUNDER BAY DISTRICT.—Sylvanite occurs with argentite and chalcopyrite in a gangue of white, subtranslucent quartz at the *Huronian gold mine, Moss, H-I* (G.S.C., N.S., X, 59H).

Symplesite.

(*Hydrated arsenate of iron.*)

YUKON.—

Radiated nuggets of green, acicular crystals occur sparingly associated with the new mineral "Yukonite" on a mining claim on the west side of *Windy arm of Tagish lake* (Trans. R.S.C., Vol. VII, Sec. 4, pp. 1-6).

Talc.

(*Hydrated silicate of magnesium.*)

NOVA SCOTIA.—

CAPE BRETON COUNTY.—*Kennington Cove* (G.S.C., N.S., VIII, 119A).

INVERNESS COUNTY.—*Brigand brook*, 3 miles from *Whycocomagh* (Pr. Com. H. Piers).

ONTARIO.—

FRONTENAC COUNTY.—A fine, snow-white talc is found in *Clarendon, 34-II* (G.S.C., N.S., V, 67R).

HASTINGS COUNTY.—A soft, flaky talc occurs with dolomite in *Elsevir* (Geol. Can., 1863, 469): a fine, foliated, greenish talc occurs in *Grimsthorpe, 8, 9-V* (G.S.C., N.S., VI, 18R); *10-V* (G.S.C., N.S., VI, 70A): white, scaly talc is found in *Huntingdon, 14-XIV* (G.S.C., N.S., XIII, 173A): *Madoc* (Pr. Com. F. D. Adams).

KENORA DISTRICT.—Fine specimens of talc are sometimes found on some of the islands of *Lake of the Woods* (G.S.C., N.S., I, 148CC).

LEEDS COUNTY.—*Elizabethtown* (Ont. Bur. Min., 1900, 210).

LENOX COUNTY.—*Kaladar, 8-I* (Ont. Bur. Min., 1900, 210).

RENFREW COUNTY.—*Bliethfield* (Ont. Bur. Min., 1900, 210).

QUEBEC.—

Talc occurs in connexion with the altered Silurian strata in portions of the Eastern Townships. Some of the more important localities are:—

BEAUCE COUNTY.—*Broughton* (Pr. Com. T. L. Walker).

BROME COUNTY.—*Bolton* (G.S.C., N.S., IV, 61T): *Potton, 17-V* (Geol. Can., 1863, 470): *Sutton* (G.S.C., N.S., IV, 61T).

MEGANTIC COUNTY.—*Ireland* (Pr. Com. T. C. Denis).

Analyses of Talc.

	1	2	3
SiO ₂	59.10	60.45	59.50
Al ₂ O ₃.....	.....	0.27	0.40
Fe ₂ O ₃.....	.....	0.78	.....
FeO.....	3.51	2.04	4.50
MnO.....	tr.	.....	.....
NiO.....	.....	0.50	tr.
CaO.....	.....	0.16	.....
MgO.....	29.05	29.84	29.15
H ₂ O.....	5.56	5.74	4.40
	97.22	99.78	99.95
Sp. Gr.....	.....	2.65	.....

Tellurium (native).

BRITISH COLUMBIA.—

NANAIMO MINING DIVISION.—Native tellurium has been found in small quantities associated with galena and copper pyrites in a quartz vein at the *Commodore claim* near *Vananda, Texada island* (G.S.C., N.S., XIII, 21R).

Tennantite.

(*Sulph-arsenide of copper.*)

BRITISH COLUMBIA.—

CLINTON MINING DIVISION.—Tennantite has been noted with iron pyrites and copper pyrites in quartz veins $2\frac{1}{2}$ miles above *Hat creek, Bonaparte river* (G.S.C., N.S., IX, 12R).

ONTARIO.—

FRONTENAC COUNTY.—Tennantite occurs with either quartz, quartzo-feldspathic rocks or fine granular dolomite in *Barrie, 6, 7, 8, 9-IX* (G.S.C., N.S., VI, 28R).

QUEBEC.—

SHERBROOKE COUNTY.—Tennantite occurs with chalcopyrite, pyrite, quartz, etc., at the *Crown mine, Ascot, 2-IX* (Trans. R.S.C., Vol. I, Sec. 3, p. 80).

Analysis of tennantite from Ascot by Harrington (Trans. R.S.C., Vol. I, Sec. 3, p. 80).

S	As	Sb	Cu	Fe	Zn	Pb	Ag	Insol.	Sp. Gr.
27.99	15.34	4.52	42.09	3.77	4.56	0.25	0.21	0.09	98.82 4.622

Tetradymite.*(Telluride of bismuth, sometimes with sulphide of bismuth.)***BRITISH COLUMBIA.—**

SLOCAN MINING DIVISION.—A sulphurous variety of tetradymite occurs in association with hessite and altaite at a point 6 miles north of *Liddle creek* (G.S.C., N.S., VIII, 9, 10R).

Analysis of tetradymite by Johnston (Hoffmann, G.S.C., N.S., Vol. VIII, 9, 10R).

Te	S	Se	Bi	Pb	Ag	Tl	Sp. Gr.
37.29	4.45	tr.	53.69	3.63	0.94	tr.	—100.00 7.184

Tetrahedrite.*(Sulphantimonite of copper.)***BRITISH COLUMBIA.—**

Tetrahedrite is very common throughout this province (Pr. Com. W. J. Sutton).

FORT STEELE MINING DIVISION.—Tetrahedrite occurs in small quantities with galena, chalcopyrite, pyrite, and sphalerite on *Luke creek, St. Mary river* (G.S.C., N.S., XII, 95A).

LARDEAU MINING DIVISION.—Tetrahedrite is found at times in the mines of this division (G.S.C., N.S., XV, 58AA).

LILLOET MINING DIVISION.—Considerable quantities of tetrahedrite have been found near *Watkinson's, Fraser river* (G.S.C., N.S., III, 154R).

NANAIMO MINING DIVISION.—*Queen Copper mine, Texada island.*

NELSON MINING DIVISION.—Tetrahedrite is found at times in the mines of this division (G.S.C., N.S., X, 60S).

OMINECA MINING DIVISION.—Tetrahedrite is found with silver-lead ore at *Hazellon* and with bornite at *Hudson Bay mountain* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—A plumbiferous variety of tetrahedrite is found at the *Antelope claim, Carpenter creek* (G.S.C., N.S., VII, 12R): *Whitewater mine* (Pr. Com. T. L. Walker).

NEW BRUNSWICK.—

ST. JOHN COUNTY.—Tetrahedrite occurs sparingly with sphalerite and galena in dolomite at *Frenchman creek, Lancaster* (G.S.C., N.S., X, 35M).

ONTARIO.—

HASTINGS COUNTY.—Interesting occurrences of tetrahedrite in fluorite are found in *Madoc, I-IV* (Mines, G.S.Br., Sum. Rep., 1909, 252): *Madoc village (the Empire mine)* (G.S.C., 1874-75, 161).

LANARK COUNTY.—*Lowant, 10, 11-V* (Mines, G.S.Br., Sum. Rep., 1908, 12).

THUNDER BAY DISTRICT.—*Silver Islet* (G.S.C., N.S., III, 27H).

TIMISKAMING DISTRICT.—*Coleman township, Cobalt* (Ont. Bur. Min., 1905, pt. 2, p. 22).

YUKON.—

WHITEHORSE MINING DIVISION.—Argentiferous tetrahedrite occurs in a coarse pegmatite at the *Arctic Chief mine*.

Analyses of Tetrahedrite.

	1	2
S.....	21.68	22.86
Sb.....	28.22	21.86
As.....	0.23	.....
Cu.....	22.14	36.04
Ag.....	11.20	.....
Pb.....	9.38	undet.
Zn.....	6.22	8.14
Fe.....	0.93	9.84
	100.00	98.74
Sp. Gr.....	5.082	

1. From Carpenter creek by Johnston (Hoffmann, G.S.C., N.S., Vol. VII, 12R).
2. From Cobalt by Burrows (Miller, Ont. Bur. Min., 1905, pt. 2, p. 22).

Thenardite.

(*Sulphate of sodium.*)

ALBERTA.—

Thenardite occurs at the bottom of a small lake near *Pozerville* (Mines, G.S.Br., Sum. Rep., 1909, 250).

Thinolite.

(*Pseudomorphous form of calcite.*)

NORTH WEST TERRITORIES.—

In a disintegrated clay shale of Cretaceous age immediately west of the delta of the *Mackenzie river* (G.S.C., N.S., XI, 16R).

Thompsonite.*(Hydrated silicate of aluminum, calcium, and sodium.)*

NOVA SCOTIA.—

ANNAPOLIS COUNTY.—*Margaretville* (G.S.C., N.S., VI, 70AA).KINGS COUNTY.—*North mountain* (G.S.C., N.S., IV, 62T); and *Cape Split* (Pr. Com. T. L. Walker).**Tiemannite.***(Selenide of mercury.)*

BRITISH COLUMBIA.—

KAMLOOPS MINING DIVISION.—Tiemannite has been found in crystals at *Hardie mountain, Copper creek* (Colquhoun, C. M. J., 2, 1899, p. 13).**Timiskamite.***(Arsenide of nickel.)*

ONTARIO.—

TIMISKAMING DISTRICT.—*Moose Horn mine, Elk lake* (Am. Journ., Sci., XXXVII, 170).

Analysis of timiskamite by Ellsworth (Walker, Am. Journ. Sci., XXXVII, 170).

As	S	Ni	Co	Fe	Bi	Sp. Gr.
46.34	1.03	49.07	1.73	tr.	0.55—98.72	7.901

Titanite.*(Silico-titanate of calcium.)*

BRITISH COLUMBIA.—

Titanite, in the form of small yellow crystals, is a common constituent of the granite of the Coast range (Pr. Com. W. J. Sutton).

ONTARIO.—

FRONTENAC COUNTY.—*Bedford, 19-VII* (Mines, Min. Br., 118, 299).HASTINGS COUNTY.—*Monteagle, 24, 25-VI* (G.S.C., N.S., VII, 98A).LANARK COUNTY.—*Bathurst, 20-IX* (G.S.C., 1882-84, 15L): in honey-yellow crystals in *North Burgess*: embedded in loganite in *North Elmsley* (G.S.C., N.S., IV, 62, 63T): it is also found in *South Sherbrooke*.RENFREW COUNTY.—Titanite is found in clove-brown or chocolate-brown crystals in the Grenville of *Island D, Lake Clear: Sebastopol, 31-X* (G.S.C., 1882-84, 7L); *32-XII* (Pr. Com. F. D. Adams): *Ross, 7-I, 7-IX* (G.S.C., 1882-4, 5, 8L).

QUEBEC.—

ARGENTEUIL COUNTY.—*Argenteuil* (G.S.C., N.S., IV, 62T); and *Grenville* (Geol. Can., 1863, 503).

BROME COUNTY.—Titanite occurs in amber coloured grains and small crystals in the trachytic rocks of *Brome mountain* (G.S.C., N.S., IV, 62T).

IBERVILLE COUNTY.—Titanite occurs in the diorites of *Mount Johnson* (G.S.C., N.S., IV, 62T).

OTTAWA COUNTY.—Titanite occurs in fine crystals in *Buckingham, Hull* (G.S.C., N.S., IV, *Hull, 12a-XIII* (Mines, Min. Br., 118, 299): 62T): *Templeton, 9-V*; and *Wakefield, 7-I* (G.S.C., 1880-82, 13 GG).

PONTIAC COUNTY.—Fine, lustrous contact twins of black titanite have been found with orthoclase, scapolite, pyroxene, and calcite in *Litchfield, 21-XI* (G.S.C., N.S., XI, 17R).

SHEFFORD COUNTY.—*Shefford mountain* (G.S.C., N.S., IV, 62T).

YAMASKA COUNTY.—*Yamaska mountain* (G.S.C., N.S., IV, 62T).

Analyses of Titanite.

	1	2	3
SiO ₂	30.58	31.83	32.09
TiO ₂	41.41	40.00	37.06
Fe ₂ O ₃	1.35	tr.	.....
Al ₂ O ₃	2.55	.....	.....
FeO.....	.....	.....	1.16
CaO.....	22.55	28.31	28.50
MgO.....	0.29	.....	.....
Ign.....	.....	0.40	0.66
	98.73	100.00	99.47
Sp. Gr.....	.....	3.495	.....

1. From Renfrew by Busz (Jb. Min. Beil, 5, 341, p. 87).
2. From Grenville by Hunt (Geol. Can., 1863, p. 503).
3. From Grenville by Harrington (G.S.C., 1877-78, 28G).

Topaz.*(Fluo-silicate of aluminum.)***ALBERTA.—**

Topaz has been observed in the gravel of a small river to the west of *Jasper House, Jasper Park* (G.S.C., N.S., IX, 18R).

BRITISH COLUMBIA.—

CARIBOO MINING DIVISION.—Topaz is found associated with large plates of mica at *Mica mountain, Tete Jaune Cache* (Pr. Com. W. J. Sutton).

NEW BRUNSWICK.—

YORK COUNTY.—Topaz occurs either as crystalline masses or as individual crystals ranging from those of minute dimensions to others having a diameter of three-quarters of an inch. The colour of these is generally milk-white, but in a few cases small translucent crystals of a smoke-grey colour have been observed in association with quartz, wolframite, molybdenite, and cassiterite in the neighbourhood of the mouth of *Burnt Hill brook, South-west Miramichi river* (Mines, G.S.Br., Sum. Rep., 1911, 13, 14). See also "Topaz in New Brunswick," Ellsworth (Mineralogical Magazine, XVII, No. 78, p. 39).

ONTARIO.—

THUNDER BAY DISTRICT.—Topaz has been observed by E. S. Moore in some of the hornblende syenite of the *Sturgeon Lake gold field* (Ont. Bur. Min., 1911, 155).

Tourmaline.*(Hydro-boro-silicate of aluminum, iron, magnesium, etc.)***BRITISH COLUMBIA.—**

AINSWORTH MINING DIVISION.—Tourmaline-bearing quartz occurs on *Fry creek*, northeast end of *Kootenay lake* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

NELSON MINING DIVISION.—Tourmaline is found in pegmatite at the west side of *Salmon river*, south of *Salmo* (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SKEENA MINING DIVISION.—Tourmaline has been noted in metamorphic rocks near *Prince Rupert* (Pr. Com. W. J. Sutton).

SLOCAN MINING DIVISION.—Tourmaline occurs between the *Slocan Crossing* and *Slocan lake* on the *Slocan River railway* (G.S.C., N.S., XI, 164A).

MANITOBA.—

Tourmaline occurs in the schists of *Windigo*, *Lac du Bonnet*, and with mica near *Nelson House* (Pr. Com. R. C. Wallace).

NOVA SCOTIA.—

Tourmaline occurs in various granitic districts throughout the province (Pr. Com. H. Piers).

ANNAPOLIS COUNTY.—Fine crystals of tourmaline occur in quartz near *Paradise* (G.S.C., N.S., IX, 149M).

ONTARIO.—

Tourmaline is of common occurrence in the rocks of the Grenville system. The crystals are generally black in colour, but brown coloured ones are not unknown. The following are some of the localities from which good specimens have been taken:—

ADDINGTON COUNTY.—*Verona* (Pr. Com. T. L. Walker).

CARLETON COUNTY.—*Fitzroy Harbour* (Geol. Can., 1863, 493).

FRONTENAC COUNTY.—*Bedford*, 17-IV (Mines, Min. Br., 118, 299).

HASTINGS COUNTY.—*Madoc* (Geol. Can., 1863, 493): *Tudor*, 34-II (G.S.C., 1882-84, 9L): *Wollaston*, 14-VI, 16-XII (G.S.C., Mem. 6, 215).

LANARK COUNTY.—*North Burgess* (G.S.C., N.S., IV, 63T): *Bathurst*, 18-IV (Geol. Can., 1863, 493): *Pakenham*.

LEEDS COUNTY.—*Charleston lake* (G.S.C., N.S., IV, 63T): *Yeo island*, *Thousand Islands* (G.S.C., N.S., III, 67S).

PETERBOROUGH COUNTY.—*Galway*, and *Stoney lake in Dummer* (G.S.C., N.S., IV, 63T).

RENFREW COUNTY.—*Bliethfield* near *High Falls*; *Ross*, 27-III (Ont. Bur. Min., 1900, 211).

QUEBEC.—

As in Ontario, tourmaline occurs frequently in rocks of the Grenville series:—

ARGENTEUIL COUNTY.—Brown crystals of tourmaline occur in *Chatham*, 10-XI: *Argenteuil* and *Grenville* (G.S.C., N.S., IV, 63T): *Lachute* (Pr. Com. F. D. Adams).

MASKINONGE COUNTY.—*Hunterstown* (G.S.C., N.S., IV, 63T).

OTTAWA COUNTY.—*Hull*, 18-XIV: *Villeneuve*, 31-I (Pr. Com. T. L. Walker): handsome specimens of pink and green tourmaline from *Wakefield*, 25-VII (G.S.C., N.S., XVI, 229A); 26-VII.

PONTIAC COUNTY.—Tourmaline occurs in crystals of a high degree of perfection at *Calumet Falls* in *Litchfield* (G.S.C., N.S., IV, 63T): *Clarendon* (G.S.C., N.S., IV, 63T).

Travertine.*(Calcite.)**(Carbonate of calcium.)***ALBERTA.—**

Banff Park: one-quarter mile west of *Brule lake*, *Jasper park*, in pale brown, stalactitic masses.

BRITISH COLUMBIA.—

AINSWORTH MINING DIVISION.—Travertine is found at different points in this division (Pr. Com. W. F. Robertson).

CLINTON MINING DIVISION.—Travertine, in process of formation with leaf impressions, occurs in a small cave near the town of *Clinton* (Pr. Com. W. F. Sutton).

PEACE RIVER MINING DIVISION.—A large deposit from springs near *Hudson Hope* (Pr. Com. W. F. Robertson).

SLOCAN CITY MINING DIVISION.—Travertine is found at many points in this division (Pr. Com. W. F. Robertson and Wm. Thomlinson).

SLOCAN MINING DIVISION.—Travertine is found at many points in this division (Pr. Com. W. F. Robertson and Wm. Thomlinson).

WINDERMERE MINING DIVISION.—Travertine is found at different points in this division (Pr. Com. W. F. Robertson).

NOVA SCOTIA.—

COLCHESTER COUNTY.—Calcareous tufa deposited on moss has been found at a spring at *Upper Stewiacke* (Pr. Com. H. Piers).

ONTARIO.—

Deposits from calcareous springs, the material of which is in some instances hard and solid, at other times porous and tufaceous, are abundant in many parts of western Ontario, being met with in the counties of Grey, Oxford, Simcoe, Wellington, Wentworth, York, etc. (G.S.C., N.S., IV, 63T).

Tremolite.*(Amphibole.)**(Silicate of magnesium and calcium.)***BRITISH COLUMBIA.—**

GREENWOOD MINING DIVISION.—Tremolite is found with calcite at the *Deadwood Camp* (G.S.C., N.S., XIII, 22R).

NANAIMO MINING DIVISION.—Tremolite occurs in connexion with the copper ores on *Texada island* (Pr. Com. W. J. Sutton).

VANCOUVER ISLAND.—Tremolite has been noted in several localities on *Vancouver island*, associated with limestone as a product of contact metamorphism (Pr. Com. W. J. Sutton).

ONTARIO.—

Tremolite is abundant in the Grenville limestone. The following are some of the localities at which it may be found:—

HASTINGS COUNTY.—*Lake, 8-V* (Pr. Com. T. L. Walker).

FRONTENAC COUNTY.—*Clarendon, 37-VII: Kennebec* (G.S.C., N.S., IX, 53R): *Bedford, 5-II; Loughborough, 1-X* (Mines, Min. Br., 118, 299).

LANARK COUNTY.—*Bathurst, 26-XII* (G.S.C., N.S., IX, 53R): *North Burgess* (Ont. Bur. Min., 1900, 211).

RENFREW COUNTY.—*Algona* (G.S.C., N.S., IV, 63T): *Bagot; Blithfield, 22, 23-IV; Ross, 23-IV* (G.S.C., N.S., IX, 53R).

QUEBEC.—

OTTAWA COUNTY.—*Hull*.

PONTIAC COUNTY.—*Alleyn, 4-II* (Mines, Min. Br., 118, 299): tremolite is abundant in the Grenville limestone at *Calumet Falls, Litchfield* (G.S.C., N.S., IV, 63T).

SAGUENAY COUNTY.—Tremolite is found in the limestone of the *Mushalagan river* (G.S.C., N.S., VIII, 241L).

Triphylite.

(*Phosphate of lithium, iron, and manganese*).

NOVA SCOTIA.—

LUNenburg COUNTY.—Triphylite has been found, according to Mr. H. Piers, near *Lake Ramsay, New Ross* (Department of the Museum, Halifax, 1906, 93).

Tungstite.

(*Oxide of tungsten*.)

Tungstite is generally met with in more or less abundance at the different scheelite localities.

BRITISH COLUMBIA.—

NELSON MINING DIVISION.—Massive tungstite with small druses lined with minute crystals of the same mineral occurs with gold and wolframite at the *Kootenay Belle mine, near Salmo* (Pr. Com. T. L. Walker).

QUEBEC.—

BEAUCE COUNTY.—Meymacite is found at times in some little quantity accompanying the scheelite found in *Marlow, I-VII* (G.S.C., N.S., VII, 14R).

Turgite.*(Hydrated oxide of iron.)*

NOVA SCOTIA.—

HANTS COUNTY.—Turgite occurs with brown hematite at *Tennycapc* (G.S.C., N.S., IV, 63T).

ONTARIO.—

HASTINGS COUNTY.—*Madoc* (Ont. Bur. Min., 1900, 211).

LANARK COUNTY.—*North Burgess* (Ont. Bur. Min., 1900, 211).

Analysis of turgite from Tennycapc by How (Phil. Mag., Ser. 4, XXXVII, p. 268).

Fe ₂ O ₃	H ₂ O
94.49	5.51—100.00

Ulexite.*(Hydrated borate of calcium and sodium.)*

NOVA SCOTIA.—

HANTS COUNTY.—Ulexite occurs with cryptomorphite, howlite, mirabilite, halite, aragonite, and selenite at *Brookville; Clifton Quarry; Newport Station; Three Mile Plains*, and *Wentworth* (G.S.C., N.S., IV, 63, 64T).

Analysis of ulexite by How (Phil. Mag., Ser. 4, Vol. XXXV, pp. 36-37, and Am. Journ. Sci., Vol. XXXII, p. 9).

B ₂ O ₃	CaO	Na ₂ O	H ₂ O
44.10	14.20	7.21	34.49—100.00

Ullmannite.*(Sulph-antimonide of nickel.)*

ONTARIO.—

TIMISKAMING DISTRICT.—*Cobalt, O'Brien mine.*

Uraconite.*(Sulphate of uranium.)*

ONTARIO.—

HALIBURTON COUNTY.—Uraconite was observed lining minute cavities in magnetite in *Snowdon, 20-I* (G.S.C., 1873-74, 205).

HASTINGS COUNTY.—Uraconite occurs lining fissures in magnetic iron ore in *Madoc, 11-V* (G.S.C., N.S., II, 11T).

Uralite.*(Amphibole derived from the alteration of pyroxene.)***QUEBEC.—**

OTTAWA COUNTY.—Good examples of uralite have been found in *Templeton, 23-XIII*, and elsewhere in this county. For analyses and descriptions of these occurrences see Harrington (G.S.C., 1877-78, 20G).

Uraninite.*(Gummite.)**(Hydrous urano-silicate of lead, iron, calcium, etc.)***QUEBEC.—**

OTTAWA COUNTY.—Uraninite has been found at the *Villeneuve Mica mines, Villeneuve, 31-I* (G.S.C., N.S., IV, 64T): minor quantities occur with orthoclase, albite and quartz, tourmaline, etc., in a pegmatite vein in *Wakefield, 25-VII* (G.S.C., N.S., XVI, 229A).

SAGUENAY COUNTY.—Uraninite has been found associated with merchantable muscovite, biotite, and zircon in pegmatite dykes at the mica mine 18 miles north of *Murray bay* (Pr. Com. T. L. Walker). Sp. Gr. 9.055, Villeneuve Mineral by Hoffmann (G.S.C., N.S., II, 10T).

Analysis of uraninite by Hillebrand (Am. Journ. Sci., Ser. 3, Vol. XLII, 390-393).

Uo ₃	Uo ₂	ThO ₂	ZrO ₂	CeO ₂	La (Group)	Y(Group)	CaO	PbO	H ₂ O
41.06	34.67	6.41	?	0.40	1.11	2.57	0.39	11.27	1.47

N	SiO ₂	Insol.	Fe ₂ O ₃	Bi ₂ O ₃
0.86	0.19	0.13	0.10	0.09—100.72

Uranochre.*(See Uraconite.)**(Sulphate of uranium.)***Uranophane.***(Hydrated silicate of uranium and calcium.)***QUEBEC.—**

OTTAWA COUNTY.—Uranophane is found associated with gummite, uraninite, tourmaline, apatite, spessartite, etc., in a coarse pegmatite vein, which traverses grey garnetiferous gneiss in *Villeneuve, 31, 32-I* (G.S.C., N.S., XII, 16R).

Uvarovite.*(Garnet.)**(Silicate of aluminum, calcium, and chromium.)*

BRITISH COLUMBIA.—

LARDEAU MINING DIVISION.—*Upper Arrow lake.*

QUEBEC.—

OTTAWA COUNTY.—*Buckingham, 24-XII* (Pr. Com. T. L. Walker):
 uvarovite is found associated with calcite, apatite, tourmaline,
 and vesuvianite in *Wakefield, 29-IV* (G.S.C., 1877-78, 26G).

SHERBROOKE COUNTY.—Uvarovite occurs in granular masses or inter-
 spersed with millerite in white crystalline calcite in *Orford, 6-XII*
 (Geol. Can., 1863, 497).

Analyses of Uvarovite.

	1	2
SiO ₂	37.50	36.65
Al ₂ O ₃	18.65	17.50
Fe ₂ O ₃	1.07	.....
FeO.....	.....	4.97
Cr ₂ O ₃	4.95	6.20
CaO.....	36.13	33.20
MgO.....	0.52	0.81
Ign.....	0.48	0.30
	99.30	99.63
Sp. Gr.....	3.542	

1. From Wakefield, by Harrington (Can. Nat., Ser. 2, IX, 305).

2. From Orford by Hunt (Geol. Can., 1863, 497).

Valentinite.*(Oxide of antimony.)*

NOVA SCOTIA.—

HANTS COUNTY.—Valentinite is found at the *Stibnite mine at West
 Gore* (Pr. Com. H. Piers).

QUEBEC.—

WOLFE COUNTY.—Valentinite is found with native antimony, stibnite,
 senarmontite, and kermesite in veins in argillite in *South Ham, 56-I*
 (G.S.C., N.S., IV, 80K).

Vesuvianite.*(Silicate of calcium, aluminum, etc.)***BRITISH COLUMBIA.—**

NANAIMO MINING DIVISION.—Vesuvianite occurs in fine specimens at *Marble bay, Texada island.*

ONTARIO.—

Vesuvianite is found in the crystalline limestones of the province. The following are some of the more important localities:—

FRONTENAC COUNTY.—*Bedford* and *Clarendon* (Ont. Bur. Min., 1900, 211).

QUEBEC.—

ARGENTEUIL COUNTY.—Vesuvianite occurs in yellow crystals with garnet, pyroxene, and zircon in calcite in *Grenville* (G.S.C., N.S., IV, 64T): and *Harrington* (G.S.C., N.S., VII, 102A): and in scattered crystals with mica and apatite in dykes of white granite in *Wentworth, 23-VII* (G.S.C., N.S., XII, 23J).

MEGANTIC COUNTY.—Vesuvianite occurs in masses and minute crystals of bright pink colour at the *Montreal Chromite pit, Black lake* (Pr. Com. R. P. D. Graham).

OTTAWA COUNTY.—Vesuvianite occurs in quartzose rock in *Templeton, 16, 17-XII*: and in small green prisms in *Wakefield, XIV-I* (G.S.C., N.S., IV, 64T).

PONTIAC COUNTY.—Good specimens of vesuvianite have been found with tourmaline at *Calumet Falls, Litchfield* (G.S.C., N.S., IV, 64T).

NEW BRUNSWICK.—

CHARLOTTE COUNTY.—Massive, green idocrase occurs at *Charley cove, Frye island* (G.S.C., N.S., III, 76S).

Analysis of vesuvianite from *Montreal Chromite pit, Black lake*, by R. P. D. Graham, McGill University (Pr. Com.).

SiO ₂	Al ₂ O ₃	CaO	FeO	MnO	MgO	Na ₂ O	K ₂ O
36.77	20.05	37.47	0.65	0.20	2.69	2.88	0.21—100.92

Vivianite.*(Hydrated phosphate of iron.)***NEW BRUNSWICK.—**

QUEENS COUNTY.—Vivianite is found in small quantities in heavy beds of clay on the banks of the *St. John river* 4 miles above *Grand river* (G.S.C., N.S., X, 18M).

NOVA SCOTIA.—

ANTIGONISH COUNTY.—Vivianite occurs in small amounts at *Antigonish* (G.S.C., N.S., 114P).

QUEBEC.—

STANSTEAD COUNTY.—A bright blue, earthy vivianite occurs in a bed of laminated clay in *Halley, 25-II* (G.S.C., N.S., XI, 17R).

VAUDREUIL COUNTY.—A bright blue vivianite has been found underlying a bed of bog-iron ore at *Cote St. Charles* (G.S.C., N.S., IV, 64T).

YUKON.—

Earthy forms of vivianite have been observed near the *Ramparts of Porcupine river* (G.S.C., N.S., IV, 64T); and also in the *Yukon River valley*, about 40 miles above *Fortymile creek* (G.S.C., N.S., VII, 100A).

Voigtite.

(*Biotite.*)

(*Silicate of aluminum, iron, magnesium, potassium, etc.*)

NOVA SCOTIA.—

SHELBURNE COUNTY.—Voigtite is found associated with staurolite and garnet in mica schist at *North-east harbour* (G.S.C., N.S., V, 65R).

Wad.

(*Hydrated oxide of manganese.*)

BRITISH COLUMBIA.—

TRAIL CREEK MINING DIVISION.—Wad is found in small amounts at the *Curlew vein*, Rossland.

NEW BRUNSWICK.—

ALBERT COUNTY.—Wad occurs in considerable abundance at *Dawson settlement* (G.S.C., N.S., V, 51AA).

NOVA SCOTIA.—

Small deposits of wad occur in many localities in this province:—

CAPE BRETON COUNTY.—*Gabarus* (Pr. Com. H. Piers): *Lewis bay* (G.S.C., N.S., IV, 65T): south side of *Grand Mira* (Pr. Com. H. Piers).

COLCHESTER COUNTY.—*Londonderry, Martin Brook mines* (G.S.C., N.S., IV, 65T).

CUMBERLAND COUNTY.—*Hebert river; Malagash Point* (Pr. Com. H. Piers): *Parrsboro* (G.S.C., N.S., IV, 65T); *Rose* (Pr. Com. H. Piers).

HALIFAX COUNTY.—Near *Chain lake, Halifax; Lower Sackville; Sheet harbour (Watt Section)* (Pr. Com. H. Piers).

ONTARIO.—

HASTINGS COUNTY.—*Madoc, 4-V* (Ont. Bur. Min., 1900, 211).

THUNDER BAY DISTRICT.—Wad occurs mixed with iron ochre on the northeast shore of *Thunder bay* (Ont. Bur. Min., 1900, 211).

QUEBEC.—

BEAUCE COUNTY.—*Aubert-Gallion; Ste. Marie and Tring* (G.S.C., N.S., IV, 64T).

BROME COUNTY.—Bog manganese has been met with in *Bolton* (G.S.C., N.S., IV, 64T).

STANSTEAD COUNTY.—*Stanstead* (G.S.C., N.S., IV, 64T).

Wernerite.

(*Chloro-silicate of calcium, aluminum, and sodium.*)

ONTARIO.—

Scapolite is of frequent occurrence in the Grenville of this province.

Some of the more important localities are:—

FRONTENAC COUNTY.—*Bedford, 30-VI* (*Bobs Lake mine*); *6-VIII* (Mines, Min. Br., 118, 296, 297): *Eel lake* (Johns Hopkins Circular No. 112, May, 1894): *Hinchinbrooke, Bobs lake* (Pr. Com. T. L. Walker).

HALIBURTON COUNTY.—*Cardiff, 7-V: Glamorgan, east of Maxwells Crossing, south side of Burnt river: Lutterworth* (*Paxton Iron mines*), *Monmouth, 28-XIV* (G.S.C., Mem. 6, pp. 211-212).

HASTINGS COUNTY.—*Faraday, 26-B* (G.S.C., Mem. 6, 211): good crystals are found in *Monteagle, 24, 25-VI* (G.S.C., N.S., VII, 98A).

PETERBOROUGH COUNTY.—*Burleigh, 12-V* (G.S.C., Mem. 6, 212).

LANARK COUNTY.—*Bathurst, 20-IX* (G.S.C., 1882-84, 15L): *North Burgess, 13-V* (*Baby mine*); *1-VIII* (Mines, Min. Br., 118, 296).

LEEDS COUNTY.—*Lansdowne, 20-VII.*

RENFREW COUNTY.—*Algona township, Golden lake: Sebastopol township, Turner island in Lake Clear* (G.S.C., N.S., IV, 65T): *Ross, 7-I; 13-VI; 7-IX* (G.S.C., 1882-84, 5, 6 and 8L).

QUEBEC.—

ARGENTEUIL COUNTY.—*Augmentation of Grenville, 3-III: Grenville, 16-II* (G.S.C., N.S., IV, 65T): *Harrington, 18-II.*

MASKINONGE COUNTY.—*Hunterstown* (G.S.C., N.S., IV, 65T).

OTTAWA COUNTY.—*Hull, 10-XI* (*Nellie and Blanche mine*); *6-XVI* (*Horseshoe mine*) (Mines, Min. Br., 118, 296): *Low, 31-IX: Portland* (G.S.C., N.S., IV, 65T): *Ripon, 13-VIII* (G.S.C., 1877-78, 32G): *Templeton, 13-XII* (Mines, Min. Br., 118, 296): *Templeton, 14, 21-XII* (G.S.C., 1877-78, 31G): *Wakefield* (G.S.C., 1882-84, 19L): *Wright, 6-A* (*Chaibee mine*) (Mines, Min. Br., 118, 296).

PONTIAC COUNTY.—A lilac coloured scapolite occurs on *Calumet island* (G.S.C., N.S., IV, 65T): *Litchfield, 21-XI.*

Analyses of Wernerite.

	1	2
SiO ₂	46.30	54.859
Al ₂ O ₃	26.20	22.448
Fe ₂ O ₃.....	.....	0.486
FeO.....	0.60	.....
CaO.....	12.88	9.092
MgO.....	3.63	tr.
K ₂ O.....	2.88	1.127
Na ₂ O.....	4.30	8.365
Cl.....	.....	2.411
SO ₃.....	.....	0.796
H ₂ O(comb.).....	.....	0.141
H ₂ O(hygr.).....	2.80	0.722
	99.59	100.447
Less O = Cl.....	.....	0.59
		99.857
Sp. Gr.....	2.640-2.667	2.605-2.654

1. From Perth, Ont. by Hunt (Geol. Can., 1863, p. 474).
2. From Ripon by Adams (Am. Journ. Sci., Ser. 3, Vol. XVII, 315-320).

Whartonite.*(Sulphide of iron and nickel.)*

ONTARIO.—

SUDBURY DISTRICT.—This name has been applied by Dr. S. H. Emons (Journal of the American Chemical Society, Vol. XIV, No. 7) to one of the various nickeliferous iron sulphides found in this district. It is now regarded merely as a nickeliferous variety of marcasite. The principal localities are *Denison, 12-II* and *Drury, 1, 2-II*.

Wilsonite.*(Altered scapolite.)**(Hydrous silicate of aluminum, potassium, and magnesium.)***ONTARIO.—**FRONTENAC COUNTY.—*Loughborough, 7-VIII (Foxton mine) (Ont. Bur. Min., 1900, 212).*HALIBURTON COUNTY.—*Lutterworth, 13-XIV (G.S.C., Mem. 6, p. 216).*LANARK COUNTY.—*Bathurst (Geol. Can., 1863, p. 483): North Burgess, 2-VIII (Mines, Min. Br., 118, 300); 2-IX (Ont. Bur. Min., 1900, 212).***QUEBEC.—**OTTAWA COUNTY.—*Hull (G.S.C., 1877-78, 33G): Low, 35-IX: Portland (G.S.C., 1882-84, 10J): Portland, East, 2-III: Gore of Templeton 39 (Mines, Min. Br., 118, 300): Templeton, 10-IX, 23-XIII (G.S.C., 1877-78, 33G): Wakefield, 26-VI (Mines, Min. Br., 118, 300).**Analyses of Wilsonite.*

	1	2
SiO ₂	47.50	47.70
Al ₂ O ₃	31.17	31.22
MgO.....	4.25	4.14
CaO.....	1.51	0.39
K ₂ O.....	9.22	9.38
Na ₂ O.....	0.82	0.95
H ₂ O.....	5.50	5.35
	99.97	99.13
Sp. Gr.....	2.76	2.77

1 and 2. From Bathurst, by Hunt (Geol. Can., 1863, 483).

Winkworthite.*(Hydrated silicate, borate, and sulphate of calcium.)*

NOVA SCOTIA.—

HANTS COUNTY.—Winkworthite occurs in the form of embedded nodules in gypsum at *Wentworth* (old name *Winkworth*) (G.S.C., N.S., IV, 65T).

Analysis of winkworthite by How (Phil. Mag., Ser. 4, XLI, 270).

SiO ₂	B ₂ O ₃	SO ₃	CaO	H ₂ O	
4.98	(14.37)	31.51	31.14	18.00	—100.00

Witherite.*(Carbonate of barium.)*

ONTARIO.—

CARLETON COUNTY.—Crystallized specimens of witherite are found in *Nepean* (Pr. Com. T. L. Walker).

THUNDER BAY DISTRICT.—Witherite occurs with calcite, quartz, and fluorite as a prominent constituent of a veinstone carrying native silver and argentite at the *Porcupine mine*, *Gillies township* (G.S.C., N.S., III, 71H).

Wolframite.*(Tungstate of iron and manganese.)*

BRITISH COLUMBIA.—

FORT STEELE MINING DIVISION.—*St. Mary river* (Journ. Can. Min. Inst., XI, 1908, 369).

NELSON MINING DIVISION.—Wolframite occurs with tungstite and scheelite at the *Kootenay Belle mine*, *Sheep creek* (Journ. Can. Min. Inst., XI, 1908, 368).

NEW BRUNSWICK.—

YORK COUNTY.—Wolframite is found with topaz, tinstone, etc., near the mouth of *Burnt Hill brook*, *South West Miramichi river* (Mines, G.S.Br., Sum. Rep., 1911, 362).

NOVA SCOTIA.—

LUNENBURG COUNTY.—Wolframite is found near *Lake Ramsay*, *New Ross* (Mines, G.S.Br., Sum. Rep., 1907, 82).

ONTARIO.—

ONTARIO COUNTY.—Wolframite was found by the late Professor E. J. Chapman in a boulder on the west side of *Chief island*, *Lake Couchiching* (Geol. Can., 1863, 503).

Analyses of Wolframite.

	1	2
WO ₃	73.45	74.90
Nb ₂ O ₅	1.95	.....
FeO.....	9.05	17.75
MnO.....	15.35 ¹	2.75
CaO.....	.....	1.52
MgO.....	.....	2.66
SiO ₂	0.20	1.02
	100.00	100.60
Sp. Gr.....	6.938	7.137

¹ (Diff.)

1. From Lake Couchiching by Hunt (Geol. Can., 1863, 503).
2. From Kootenay Belle mine, Nelson Mining Division, by Walker, (Mines, Min. Br., No. 25, p. 38), and (Journ. Can. Min. Inst., XI, 1908, 368, 369).

Wollastonite.*(Silicate of calcium.)*

BRITISH COLUMBIA.—

CLAYOQUOT MINING DIVISION.—Wollastonite has been noted at *Nootka sound* (Pr. Com. W. J. Sutton).

ONTARIO.—

LANARK COUNTY.—Fibrous wollastonite occurs with mica, pyroxene, quartz, and other minerals in the crystalline limestones of *North Burgess* (G.S.C., N.S., IV, 66T): and *North Elmsley*.

LEEDS COUNTY.—*Bastard* (G.S.C., N.S., IV, 66T).

QUEBEC.—

Wollastonite is found in the Grenville series of this province. Some of the more important localities are:—

ARGENTEUIL COUNTY.—Wollastonite occurs in the gangue material of a graphite deposit in *Grenville, 10-V* (G.S.C., M.R.C., No. 877, 15).

OTTAWA COUNTY.—This mineral also occurs with blue calcite in *Wakefield, 7-I* (G.S.C., 1880-82, 13 GG).

TERREBONNE COUNTY.—*St. Jerome, Morin* (Geol. Can., 1863, 465).

YUKON.—

Wollastonite occurs with the copper ores of *Whitehorse* (Pr. Com. W. J. Sutton).

Analysis of wollastonite from Grenville by Bunce (Hunt, Geol. Can., 1863, 465).

SiO ₂	CaO	FeO	Sp. Gr.
53.05	45.74	1.20—99.99	2.89—2.92

Xenotime.

(*Phosphate of yttrium.*)

ONTARIO.—

NIPISSING DISTRICT.—Xenotime occurs in a coarse granite vein composed of quartz, feldspars, muscovite, and biotite cutting hornblending gneiss in *Calvin* (G.S.C., N.S., IX, 13, 14R).

Yenite.

(*Syn. Ivaite.*)

(*Hydrous silicate of calcium and iron.*)

Yukonite.

(*Hydrated arsenate of calcium and iron.*)

YUKON.—

West side of *Windy arm* of *Tagish lake*, Tyrrell and Graham (Trans. R.S.C., Vol. VII, Sec. 4, p. 1).

Analyses of Yukonite.

	1	2
CaO.....	10.00	10.14
Fe ₂ O ₃	35.72	36.81
As ₂ O ₅	34.06	33.83
H ₂ O.....	20.28	20.28
	100.06	101.06

Analyses by Graham, loc. cit.

Zinc Blende.*(Syn. Sphalerite.)**(Sulphide of zinc.)***Zinc Spinel.***(Syn. Gahnite.)**(Aluminate of zinc.)***Zircon.***(Silicate of zirconium.)***BRITISH COLUMBIA.—**

SLOCAN MINING DIVISION.—Zircon occurs in small, but very well developed crystals with fluorite, feldspar, etc., in pegmatite at *Wilson creek*.

ONTARIO.—

HASTINGS COUNTY.—Zircon occurs in the nepheline syenite of *Dun-gannon, 12, 13-XI* (Am. Journ. Sci., Ser. III, 1894, XLVIII, pp. 10 and 14).

RENFREW COUNTY.—Remarkably fine specimens of this mineral have been found in *Sebastopol, 31-X* (G.S.C., 1882-84, 7L): *Brudenell* (G.S.C., 1882-84, 15L): *Ross*, at *Muskrat lake* (Pr. Com. T. L. Walker): *Westmeath, 13-I* (G.S.C., N.S., XIV, 238A).

THUNDER BAY DISTRICT.—Zircon occurs in the syenite of *Pic island, Lake Superior* (G.S.C., N.S., IV, 66T).

QUEBEC.—

ARGENTEUIL COUNTY.—Zircon occurs in reddish-brown crystals, sometimes half an inch in diameter, in association with wollastonite, pyroxene, graphite, etc., in *Grenville, 10-V* (G.S.C., N.S., IV, 66T).

OTTAWA COUNTY.—This mineral is sometimes found in fine crystals in the apatite veins of *Buckingham: Hull* and *Templeton* (G.S.C., N.S., IV, 66T): *Portland West (High Rock mine)* (Pr. Com. T. L. Walker): *Templeton, 12, 21-XII, 21, 23-XIII* (Mines, Min. Br., 118, 300): *Wakefield* (G.S.C., 1882-84, 19L).

TERREBONNE COUNTY.—Small, brownish crystals of zircon with tourmaline are found in granitic veins which traverse gneiss on the *North river, St. Jerome* (G.S.C., N.S., IV, 66T).

SAGUENAY COUNTY.—Zircon is found with muscovite at the *Mica mine*, 18 miles north of *Murray Bay* (Pr. Com. T. L. Walker).

Zoisite.

(*Hydrous silicate of aluminum and calcium.*)

BRITISH COLUMBIA.—

GREENWOOD MINING DIVISION.—Zoisite constitutes one of the gangue minerals of the copper ores of *Summit camp* (G.S.C., N.S., XV, 123A).

ONTARIO.—

HASTINGS COUNTY.—Zoisite occurs in very small individuals in a comparatively unaltered blue limestone in *Carlow, 8-VIII* (G.S.C., Mem. 6, 216).

SUDBURY DISTRICT.—Zoisite occurs as a secondary mineral in the upper Huronian rocks of this division (G.S.C., N.S., XIV, 57H).

QUEBEC.—

TERREBONNE COUNTY.—Zoisite occurs with epidote, calcite, etc., in the anorthosites of *New Glasgow* (G.S.C., N.S., VIII, 102J).

Zonochlorite.

(*Hydrous silicate of aluminum and calcium.*)

ONTARIO.—

THUNDER BAY DISTRICT.—*Nipigon bay, Lake Superior*.—This material first described by Foote (Rep. Amer. Assoc., Vol. XXI, p. 65) has since been shown by Hawes (Am. Journ. Sci., Ser. 3, Vol. X, 24-26) to be simply prehnite (G.S.C., N.S., III, 77S).

PART II.

**Names of Municipal and Mining Divisions and
Localities in which Minerals Occur, Arranged
Alphabetically under Provinces and
Territories.**

Alberta.

- | | |
|---|---|
| <p>ATHABASKA RIVER.—Asphaltum,
Gypsum, Petroleum, Sulphur
(native).
BANKHEAD.—Coal.
BATTLE RIVER.—Ironstone.
BEAVER CREEK, NORTH SASKATCHE-
WAN RIVER.—Ironstone.
BELLY RIVER.—Nail-head-spar.
BLAIRMORE.—Analcite, Coal.
BOW RIVER.—Gold in placers.
CANMORE.—Coal.
CASCADE CREEK.—Chalcopryrite.
CASTLE MOUNTAIN.—Chalcopryrite,
Galena.
COLEMAN.—Coal.
COPPER MOUNTAIN.—Bornite, Chal-
copyrite, Sphalerite.
COSTIGAN.—Coal.
CROWNEST LAKE.—Almandite, An-
dradite.
EDMONTON.—Halloysite (smectite).
ELBOW RIVER, SOUTH SASKATCHE-
WAN RIVER.—Epsomite, Fibro-
ferrite, Silicified wood.
ELK RIVER.—Coal.
FRANK.—Coal.
JASPER HOUSE, JASPER PARK.—
Topaz in gravels.</p> | <p>JOHNSON CREEK.—Chalcopryrite.
LABUTTE.—Gypsum.
LA SALINE, ATHABASKA RIVER.—
Halite, Sulphur (native).
LETHBRIDGE.—Coal.
LIVINGSTONE.—Coal.
MEDICINE HAT.—Coal.
MCLEOD RIVER.—Gold in placers.
MOOSE MOUNTAIN.—Coal.
NIKANASSIN.—Coal.
OLDMAN RIVER.—Gold in placers.
PANTHER CREEK.—Bornite.
PEACE RIVER.—Gold in placers,
Petroleum, Pyrite in nodules.
PINCHER CREEK.—Petroleum.
RED DEER RIVER.—Ironstone,
Sphalerite.
ROCKY RIVER, JASPER PARK.—
Chert.
ROSS COULÉE.—Silicified wood.
SASKATCHEWAN RIVER.—Gold in
placers.
SMOKY RIVER, PEACE RIVER.—
Sal ammoniac, Sulphur (native).
TABER.—Coal.
VERMILION (FALLS AND FORT).—
Ironstone.
VERMILION PASS.—Galena.</p> |
|---|---|

British Columbia.

AINSWORTH MINING DIVISION.

DUNCAN LAKE.—Quartz.
 FRY CREEK.—Tourmaline.
 GLENGARRY MINE.—Sphalerite.
 HAMILL CREEK.—Garnet.
 KASLO RIVER.—Azurite.
 LIDDLE CREEK.—Altaite.
 SKYLINE MINE.—Argentite, Calamine.
 TRUE BLUE MINING CLAIM.—Melaconite.
 UNITED MINE.—Sphalerite.
 U. S. MINE.—Sphalerite.
 VARIOUS LOCALITIES.—Gold, Silver, Sphalerite, Travertine.

ALBERNI MINING DIVISION.

ALBERNI CANAL.—Andradite, Ilvaite.
 GREAT CENTRAL LAKE.—Stibnite.
 SECHART CHANNEL.—Cinnabar, Mercury.
 UCHUCKLESIT.—Actinolite.

ASHCROFT MINING DIVISION.

LYTTON.—Nephrite.
 MCLEAN LAKE.—Chert.
 NICOAMEN PLATEAU.—Agate, Chalcedony.
 SAVONA MOUNTAIN.—Opal.
 SPATSUM.—Alunogen, Anhydrite, Gypsum, Kaolinite.
 SPENCE BRIDGE.—Gypsum.

ATLIN MINING DIVISION.

ATLIN.—Hydromagnesite, Jasper.
 BENNETT LAKE.—Stibnite.
 BIRCH CREEK.—Actinolite, Chalcopyrite, Magnesite.

BOULDER CREEK.—Actinolite, Magnesite.

CHILKAT RIVER.—Chalcopyrite.
 CONSOLATION CREEK.—Chert.
 GOLDEN GATE.—Gold.
 HACKETT CREEK.—Chalcopyrite.
 LOCALITY ?.—Hubnerite.
 RUBY CREEK.—Actinolite, Magnesite.
 SURPRISE LAKE.—Gold.
 TABLE MOUNTAIN.—Linarite.
 VARIOUS LOCALITIES.—Copper (native), Galena, Gold, Sphalerite.
 WILLIAM CREEK.—Magnetite.

BELLAKULA MINING DIVISION.

DEAN CANAL.—Bornite, Chalcopyrite, Graphite.
 ELLERSLIE CHANNEL.—Chalcopyrite.

CARIBOO MINING DIVISION.

BARKERVILLE.—Galena.
 BLACKWATER RIVER.—Infusorial earth.
 GRANT BROOK.—Alunogen.
 HARDCRABBLE CREEK.—Scheelite.
 TETE JAUNE CACHE.—Beryl, Cyanite, Muscovite, Topaz.
 TWO SISTERS MOUNTAIN.—Chert.
 VARIOUS STREAMS.—Placer gold.

CLAYOQUOT MINING DIVISION.

SIDNEY INLET.—Chalcocite.
 NOOTKA SOUND.—Wollastonite.
 SIDNEY INLET.—Bornite, Chalcocite.
 TAFINO INLET.—Bornite.

BRITISH COLUMBIA.

CLINTON MINING DIVISION.

BONAPARTE RIVER.—Chabazite, Chalcantinite, Chrompicotite (diamondiferous), Hexahydrate, Hyalite, Olivine, Tennantite.

BIG BAR.—Nitrate.

CARIBOO ROAD, 108-MILE HOUSE.—Hydromagnesite.

CLINTON.—Hematite, Travertine.

CHILCOTIN RIVER.—Chalcantinite, Melanterite.

HAT CREEK.—Chert.

JUNCTION VALLEY.—Chrysotile.

LOON LAKE.—Infusorial earth.

NATRON LAKE.—Natron.

WATSON BAR CREEK.—Native Arsenic, Arsenolite.

FORT STEELE MINING DIVISION.

BULL RIVER.—Erythrite, Hematite.

CRANBROOK.—Chalcopyrite.

FERNIE.—Hematite.

FLATHEAD RIVER.—Petroleum.

LITTLE NIGGER CREEK.—Altaite.

LUKE CREEK.—Tetrahedrite.

MOYIE.—Cerussite, Pyromorphite.

NORTH STAR MINE.—Silver.

ST. MARY RIVER.—Wolframite.

STEELE.—Azurite.

GOLDEN MINING DIVISION.

DECEPTION CREEK.—Jamesonite.

GOLDEN.—Cinnabar.

ICE RIVER.—Cancrinite, Chalcocite, Hydronephelite, Ilmenite, Muscovite, Nephelite, Schorlomite, Sodalite.

JUBILEE MOUNTAIN.—Chalcocite.

KICKING HORSE VALLEY.—Damourite, Dolomite.

BRITISH COLUMBIA.

MOUNT STEPHEN.—Calcite, Galena.

OTTERTAIL CREEK.—Cookeite.

VERMONT CREEK.—Jamesonite.

GRAND FORKS MINING DIVISION.

FRANKLIN CAMP.—Pyrargyrite.

GRANBY.—Calcite, Chalcopyrite, Pyrite.

WATERLOO.—Stephanite.

GREENWOOD MINING DIVISION.

COPPER CREEK.—Copper (native), Cuprite, Malachite, Marcasite.

GREENWOOD.—Proustite, Pyrargyrite.

JEWEL MINE.—Argentite.

KETTLE RIVER.—Bismuthinite, Jamesonite, Magnesite, Marcasite, Platinum.

KING SOLOMON MINE.—Azurite, Chrysocolla, Lampadite.

LONG LAKE.—Altaite, Hessite, Petzite.

MIDWAY.—Analcite.

PHOENIX.—Chalcopyrite.

SUMMIT.—Zoisite.

VARIOUS LOCALITIES.—Bornite, Chalcocite, Epidote, Tennantite, Tremolite.

KAMLOOPS MINING DIVISION.

ADAMS LAKE.—Barite.

BARRETT CREEK.—Arsenopyrite.

BLAIR CREEK.—Alunogen.

COPPER CREEK.—Bornite, Chalcopyrite, Chert, Pyroxene, Stibnite, Tiemannite.

CRAIGELLACHIE.—Freibergite.

DUFFY CREEK.—Dolomite (auriferous).

BRITISH COLUMBIA.

FADEAR CREEK.—Clinocllore.
 GRANDE PRAIRIE.—Andradite,
 Molybdenite.
 KAMLOOPS.—Agate, Chalcedony,
 Chalcocite, Chalcopyrite, Col-
 umbite, Magnetite.
 LITTLE SHUSWAP LAKE.—Bismuth-
 inite.
 NORTH THOMPSON RIVER.—Cyanite,
 Gypsum.
 SALMON RIVER.—Anhydrite, Gyp-
 sum, Stilbite.
 SAVONA MOUNTAIN.—Agate, Chal-
 cedony.
 STUMP LAKE.—Hyalite.
 TRANQUILLE.—Platinum.
 VARIOUS LOCALITIES.—Actinolite in
 copper deposits.

LARDEAU MINING DIVISION.

FERGUSON.—Platinum, Sphalerite.
 LOCALITY?—Cassiterite.
 UPPER ARROW LAKE.—Calcite,
 Uvarovite.
 VARIOUS LOCALITIES.—Chalcopy-
 rite, Galena, Gold, Tetrahedrite.

LIARD MINING DIVISION.

LOWER CANYON.—Galena.
 THIBERT CREEK.—Platinum.

LILLOOET MINING DIVISION.

CADWALLADER CREEK.—Stibnite.
 FOUNTAIN CREEK.—Alunogen.
 FOSTER BAR.—Andradite, Horn-
 blende, Stibnite.
 LILLOOET.—Awaruite, Molybdenite.
 WATKINSON.—Magnetite, Tetrahe-
 drite.

BRITISH COLUMBIA.

NANAIMO MINING DIVISION.

CAMPBELL RIVER.—Bog Iron ore.
 COMOX.—Clay Ironstone.
 CUMBERLAND.—Native copper.
 HOMATHCO RIVER.—Bornite, Cin-
 narbar.
 MOUNT LEHMAN.—Bog Iron ore.
 NANAIMO.—Amber, Coal, Copper
 (native), Halite.
 QUADRA ISLAND.—Chalcocite.
 READ ISLAND.—Metacinnabarite.
 TATLAYOKO LAKE.—Hematite, Stib-
 nite.
 TEXADA ISLAND.—Andradite, Chal-
 cocite, Chalcopyrite, Erythrite,
 Gold, Grossularite, Limonite,
 Magnetite, Molybdenite, Silver,
 Tellurium, Tetrahedrite, Tremo-
 lite, Vesuvianite.
 UPPER CAMPBELL LAKE.—Lode-
 stone.
 VALDEZ ISLAND.—Chalcocite, Cop-
 per (native), Quartz, Sylvanite.
 WEST REDONDA ISLAND.—Magnet-
 ite.

NELSON MINING DIVISION.

CRAWFORD BAY.—Hematite.
 CRESTON.—Erythrite.
 EUREKA MINE.—Azurite, Malachite.
 FIVEMILE POINT.—Fluorite.
 HIDDEN CREEK.—Garnet.
 KITCHENER.—Hematite.
 LOST CREEK.—Molybdenite.
 PEND D'OREILLE RIVER.—Corun-
 dum.
 SALMO.—Tourmaline, Tungstite.
 SHEEP CREEK.—Calamine, Schee-
 lite, Wolframite, Garnet, Molyb-
 denite.
 SLOCAN CROSSING.—Magnetite.
 STAGHORN MOUNTAIN.—Aragonite.

BRITISH COLUMBIA.

SUMMIT CREEK.—Cyanite.
 TOAD MOUNTAIN.—Argentite, Bornite, Chalcopyrite, Stromeayerite.
 VARIOUS LOCALITIES. — Epidote, Tetrahedrite.

NEW WESTMINSTER MINING DIVISION.

NICOAMEN.—Magnetite.
 PORT KELLS.—Limonite.
 RIVERSIDE.—Infusorial earth.
 SALMON ARM.—Molybdenite.
 SILVER CREEK.—Iron ochre.

NICOLA MINING DIVISION.

ASPEN GROVE.—Bornite, Chalcodony, Chalcopyrite, Copper (native), Pyroxene.
 GUICHON CREEK.—Chalcopyrite.
 IRON MOUNTAIN. — Chalcopyrite, Malachite.
 MERRITT.—Coal, Gypsum, Ironstone.
 QUILCHENA CREEK.—Chert, Coal.

OMINECA MINING DIVISION.

BIRCH CREEK.—Galena.
 BOULDER CREEK.—Galena.
 DRIFTWOOD MINES (THIRKELSON'S CLAIMS).—Bornite.
 FORT ST. JOHN.—Epsomite, Mirabilite.
 GERMANSEN LANDING.—Dolomite, Magnesite.
 GROUNDHOG MOUNTAIN.—Coal.
 HAZELTON.—Siderite, Tetrahedrite.
 HUDSON BAY MOUNTAINS.—Bornite, Silver (native), Tetrahedrite.
 KITSALAS RIVER.—Chalcocite.
 NECHAKO RIVER.—Amber.
 OOTSA LAKE.—Chalcedony.

BRITISH COLUMBIA.

ROCHER-DE-BOULE MINE.—Barnhardite.
 SILVER CREEK.—Arquerite.
 SILVER BELL MINE.—Jamesonite, Stibnite.
 TELKWA RIVER.—Chalcopyrite.
 VITAL CREEK.—Arquerite.

OSOYOOS MINING DIVISION.

CATHEDRAL MOUNTAIN.—Hubnerite.
 HEDLEY.—Arsenopyrite, Chalcopyrite, Gold.
 KRUGER MOUNTAIN.—Petzite.
 NICKEL PLATE MOUNTAIN.—Axinite, Erythrite.
 OSOYOOS LAKE.—Epsomite, Hessite.

PEACE RIVER MINING DIVISION.

HUDSON HOPE.—Travertine.
 PEACE RIVER.—Amber.

PORTLAND CANAL MINING DIVISION.

BEAR RIVER.—Anthraxolite.

QUATSINO MINING DIVISION.

CAPE COMMERELL.—Pyrite.
 KYUQUOT SOUND.—Alunite.
 QUATSINO SOUND.—Bog Iron ore.

QUEEN CHARLOTTE MINING DIVISION.

ALDEN ISLAND.—Native arsenic.
 CUMSHEWA.—Galena.
 GRAHAM ISLAND.—Amber, Chalcodony, Coal, Grossularite, Ozocerite, Petroleum.

BRITISH COLUMBIA.

JEDWAY.—LODESTONE.
 MORESBY ISLAND.—Gold.
 SKIDEGATE INLET.—Clay Ironstone.
 SKINCUTTLE INLET.—Chalcopyrite,
 Magnetite.
 TAR ISLANDS.—Maltha.

QUESNEL MINING DIVISION.

BIG SIOUX CLAIMS.—Copper (na-
 tive).
 DEASE LAKE.—Iridosmine.
 HARVEY CREEK.—Siderite.
 HORSEFLY RIVER.—Aragonite, Bar-
 ite, Copper (native), Leucite,
 Opal, Sphaerosiderite, Strontian-
 ite.

NAZCO.—Nitre.

QUESNEL.—Amber, Clay ironstone,
 Infusorial earth, Monazite, Plat-
 inum.

TWENTYMILE CREEK. — Copper
 (native).

REVELSTOKE MINING
DIVISION.

ILLECILLEWAET.—Actinolite, Born-
 ite, Chalcopyrite, Galena, Lepid-
 olite, Magnetite, Quartz (rock
 crystal).

SIMILKAMEEN MINING
DIVISION.

AGATE MOUNTAIN.—Semi-opal, Sil-
 icified wood.

ASHNOLA RIVER.—Calcite.

GRANITE CREEK.—Gypsum.

OLIVINE MOUNTAIN.—Chromite (di-
 amondiferous), Chrysolite, Cor-
 undum, Gold, Olivine, Platinum.

PRINCETON (COPPER MOUNTAIN).—
 Chalcantite, Magnetite.

TULAMEEN RIVER. — Iridosmine,
 Platinum.

BRITISH COLUMBIA.

SKEENA MINING DIVISION.

ECSTAL RIVER.—Pyrite.
 ILIANCES RIVER.—Allophane.
 NAAS RIVER.—Coal.
 OBSERVATORY INLET.—Pyrrargyrite.
 PRINCE RUPERT.—Albite, Tourma-
 line.
 SKEENA RIVER.—Almandite, Coal,
 Chalcopyrite, Halite.

SLOCAN CITY MINING
DIVISION.

CALUMET MINE.—Barite.
 HEKLA CLAIM.—Barite.
 LEMON CREEK.—Argentite.
 MYRTLE CLAIM.—Barite.
 OTTAWA MINE.—Barite.
 SPRINGER CREEK.—Argentite, Scheel-
 ite, Silver (native), Stephanite.
 TENMILE CREEK.—Covellite, Prous-
 tite.
 VARIOUS LOCALITIES.—Travertine.

SLOCAN MINING DIVISION.

BEAVER MOUNTAIN.—Anglesite, Li-
 narite, Quartz, Siderite.
 CARPENTER CREEK.—Tetrahedrite,
 Stibnite.
 EIGHTMILE CREEK.—Arsenic (na-
 tive), Arsenopyrite.
 FOURMILE CREEK.—Opal, Heuland-
 ite.
 GREAT BEAR LAKE.—Anglesite,
 Silver.
 HAUSER CREEK.—Smithsonite.
 LITTLE CREEK.—Tetradymite.
 RECO MINE.—Jamesonite.
 ROBIN MINING CLAIM.—Barite.
 SILVERTON.—Gersdorffite, Pyrrargy-
 rite.

BRITISH COLUMBIA.

SLOCAN LAKE.—Tourmaline, Garnet, Staurolite.

STANDARD MINE.—Aragonite.

VARIOUS LOCALITIES. — Antimony (native), Cerussite, Freibergite, Galena, Sphalerite, Sylvanite, Travertine.

WHITEWATER MINE.—Siderite, Tetrahedrite.

WILSON CREEK.—Calcite, Zircon.

STIKINE MINING DIVISION.

STIKINE RIVER.—Almandite, Bornite.

TRAIL CREEK MINING DIVISION.

MONTE CRISTO MOUNTAIN.—Danaitite, Erythrite.

ROSSLAND.—Apophyllite, Arsenopyrite, Chalcopyrite, Gersdorffite, Gmelinite, Heulandite, Laumontite, Molybdenite, Natrolite, Prehnite, Wad.

VARIOUS LOCALITIES.— Epidote, Gold.

TROUT LAKE MINING DIVISION.

GAINER CREEK.—Aragonite.

POPLAR CREEK.—Arsenopyrite.

TROUT LAKE.—Chalcopyrite.

VARIOUS LOCALITIES.—Galena.

VANCOUVER MINING DIVISION.

BURRARD INLET.—Sphalerite.

HOWE SOUND.—Bornite, Chalcopyrite.

JERVIS INLET.—Chalcopyrite.

BRITISH COLUMBIA.

VERNON MINING DIVISION.

ARMSTRONG.—Chistolite, Cyanite.

CHERRY CREEK.—Freibergite.

OKANAGAN LAKE.—Gypsum.

VERNON.—Chalcanthite.

VICTORIA MINING DIVISION.

COWICHAN.—Barite.

KOKSILAH.—Arsenic (native).

MOUNT BUTTLE.—Molybdenite.

MOUNT SICKER.—Barite.

PENDER ISLAND.—Nitrogen.

SALTSPRING ISLAND.—Halite.

SANSUM NARROWS.—Chalcopyrite.

SOOKE.—Hematite, Magnetite.

WINDERMERE MINING DIVISION.

VARIOUS LOCALITIES.—Travertine.

YALE MINING DIVISION.

BOSTON BAR.—Cinnabar.

FORGE MOUNTAIN.—Chrysocolla.

HOPE.—Arsenopyrite, Freibergite, Mercury.

SALMON RIVER.—Steatite.

SKUZZY CREEK.—Muscovite.

SPUZZUM CREEK.—Molybdenite.

Manitoba.

ASSINIBOINE RIVER.—Marcasite.
 BLACK ISLAND.—Hematite.
 BIG GEORGE ISLAND.—Magnetite
 (Magnetic sand).
 BRANDON HILLS.—Bog Iron ore.
 CAT HEAD.—Dolomite.
 CEDAR LAKE.—Amber (Chemawin-
 ite), Dolomite.
 CROSS LAKE.—Muscovite.
 DAWSON BAY.—Dolomite.
 GRASS RIVER DISTRICT.—Jasper.
 LAKE MANITOBA.—Copper (native),
 Halite, Jasper.
 LAKE ST. MARTIN.—Gypsum.
 LAKE WINNIPEGOSIS.—Chert, Ha-
 lite, Marcasite.
 LITTLE PLAYGREEN LAKE.—Moly-
 bdenite.
 LOON LAKE.—Epidote.
 MANIGOTAGAN RIVER.—Magnetite.
 NELSON HOUSE.—Galena, Tour-
 maline.

OCHRE RIVER.—Petroleum.
 PARTRIDGE CROP LAKE.—Anhy-
 drite.
 PEMBINA RIVER.—Clay Ironstone.
 PEMMICAN ISLAND.—Marcasite.
 PIPESTONE LAKE.—Arsenopyrite,
 Barite, Chalcopyrite.
 RED RIVER VALLEY.—Gypsum.
 RICE LAKE.—Gold, Jasper, Pyrite.
 STAR LAKE.—Arsenopyrite, Gold.
 SUGAR ISLAND.—Copper (native).
 TOWNSHIP 32, RANGE 8, WEST OF
 PRINCIPAL MERIDIAN.—Anhy-
 drite.
 TOWNSHIP 24, RANGE 28, WEST OF
 1st MERIDIAN.—Melanterite.
 TURTLE MOUNTAIN.—Lignite.
 VARIOUS LOCALITIES.—Lignite, Py-
 rite.
 VERMILION RIVER.—Petroleum.
 WANIPIGOW LAKE.—Galena.
 WINDIGO.—Tourmaline.

New Brunswick.

ALBERT COUNTY.

ALMA.—Alunite, Bornite, Chalco-
 cite, Chalcopyrite.
 CAPE ENRAGE.—Chalcocite.
 DAWSON SETTLEMENT.—Bog Man-
 ganese, Wad.
 ELGIN.—Bornite, Chalcopyrite, Psi-
 lomelane, Pyrolusite.
 HILLSBOROUGH.—Alabaster, Al-
 bertite, Anhydrite, Gypsum.
 MELDONA.—Bog Manganese.
 SAWMILL CREEK.—Bog Manganese.
 VARIOUS LOCALITIES.—Petroleum.

CARLETON COUNTY.

BULL CREEK.—Chalcopyrite.
 ST. JOHN RIVER.—Gold.
 WOODSTOCK.—Bog Manganese, Ga-
 lena, Graphite, Hematite, Siderite.

CHARLOTTE COUNTY.

ADAMS ISLAND.—Dolomite.
 BEAVER HARBOUR.—Epidote.
 CAMPOBELLO ISLAND.—Galena.
 CHAMCOOK LAKE.—Epidote.
 CLARKE HEAD.—Chalcopyrite.
 CROW HARBOUR ISLAND.—Chalco-
 cite.
 DEER ISLAND.—Fluorite.
 DUMBARTON.—Graphite.
 FRYE ISLAND.—Dolomite, Fluorite,
 Vesuvianite (Idocrase).
 GASPERAU STATION.—Actinolite.
 GRAND MANAN ISLAND.—Amethyst,
 Barite, Copper (native), Jasper.
 LEPREAU.—Dolomite, Magnetite.
 L'ETANG ISLAND.—Dolomite.
 LETITE.—Pyrrhotite.

NEW BRUNSWICK.

LYNNFIELD.—Bog Manganese.
 MAGAGUADAVIC RIVER.—Galena.
 MASCAREEN.—Chalcocite, Chalcopyrite, Copper (native), Pyrrhotite.
 MOORE MILLS.—Bog Manganese, Chiasolite, Garnet, Staurolite.
 NEW RIVER.—Epidote, Orthoclase.
 PENNFIELD.—Molybdenite.
 ST. ANDREWS PENINSULA.—Calcite.
 ST. JAMES.—Andalusite.
 ST. STEPHEN.—Actinolite, Molybdenite, Pyrrhotite, Serpentine.
 VARIOUS LOCALITIES.—Malachite.

GLOUCESTER COUNTY.

BELLE DUNE.—Calcite (Iceland spar).
 BERESFORD.—Galena.
 CARAQUET.—Coal.
 CLIFTON.—Coal, Hematite.
 MILLSTREAM.—Galena, Magnetite.
 NIPISIGUIT RIVER.—Chalcocite, Molybdenite.
 TETAGOUCHE RIVER.—Chalcopyrite, Pyrolusite.

KENT COUNTY.

BEERSVILLE.—Coal.
 KOUCHIBOUGUAC RIVER.—Bog Iron ore.
 LIVERPOOL.—Bog Iron ore.
 RICHIBUCTO.—Bog Iron ore, Bog Manganese.

KINGS COUNTY.

BULL MOOSE HILL.—Bog Iron ore, Bog Manganese.
 CAPE MERINGOUIN.—Anhydrite.
 CLIFTON.—Orthoclase.
 DARLING LAKE.—Agate, Carnelian, Chalcedony.

NEW BRUNSWICK.

DICKIE MOUNTAIN.—Galena.
 DUNSINANE.—Coal.
 HAMMOND RIVER.—Galena.
 HAMPTON.—Agate, Carnelian, Chalcedony, Jasper.
 JORDAN MOUNTAIN.—Pyrolusite.
 KARS.—Chalcopyrite.
 KINGSTON.—Epidote.
 LAND'S END.—Orthoclase.
 MARKHAMVILLE.—Dolomite.
 MECHANIC SETTLEMENT.—Infusorial earth.
 NORTON.—Albertite, Chalcocite, Galena.
 PICCADILLY MOUNTAIN.—Anhydrite.
 PLEASANT LAKE.—Infusorial earth.
 QUISPAMIS.—Galena.
 SPRINGFIELD.—Chalcocite, Chalcopyrite.
 SUSSEX.—Gypsum, Hematite.
 SUSSEX VALE.—Bog Iron ore.
 UPHAM.—Galena, Gypsum, Pyrolusite.
 WESTFIELD.—Chalcopyrite, Epidote.

NORTHUMBERLAND COUNTY

CHAMPLAIN ISLAND.—Iron ochre.
 DIATOM LAKE.—Infusorial earth.
 DUNGARVON RIVER.—Coal.
 MIRAMICHI RIVER.—Chalcopyrite, Galena.
 ROGERVILLE.—Bog Iron ore.

QUEENS COUNTY.

CHIPMAN.—Bog Iron ore.
 GOLDING LANDING.—Ankerite.
 GRAND LAKE.—Coal.
 ST. JOHN RIVER.—Vivianite.
 WASHAEMOAK RIVER.—Agate, Carnelian, Chalcedony.

NEW BRUNSWICK.

RESTIGOUCHE COUNTY.

- DALHOUSIE.—Agate, Amethyst,
Carnelian, Chalcedony, Heulandite,
Prehnite.
UPSALQUITCH RIVER.—Amethyst.

ST. JOHN COUNTY.

- BLACK RIVER.—Chalcocite, Chalcopyrite, Hematite.
GOOSE CREEK.—Bornite, Chalcopyrite.
GRAND BAY.—Epidote.
LAKE FITZGERALD.—Infusorial earth.
LANCASTER.—Sphalerite, Tetrahedrite.
LORNEVILLE.—Serpentine.
MARBLE COVE MINE.—Graphite.
NEREPIS VALLEY.—Siderite.
PORTLAND.—Serpentine.
QUACO.—Gypsum, Pyrolusite.
ST. JOHN CITY.—Dolomite.
VARIOUS LOCALITIES.—Malachite.
WEST BEACH.—Magnesite.

SUNBURY COUNTY.

- BURTON.—Bog Iron ore.
MAUGERVILLE.—Bog Iron ore.
OROMOCTO RIVER.—Coal.

NEW BRUNSWICK.

VICTORIA COUNTY.

- PLASTER ROCK.—Gypsum.
TOBIQUE RIVER.—Agate, Carnelian,
Chalcedony.

WESTMORLAND COUNTY.

- BEECH HILL.—Fluorite.
BELIVEAU.—Albertite.
DORCHESTER.—Azurite, Chalcocite,
Chalcopyrite.
DOVER.—Maltha, Petroleum.
GOULDVILLE.—Barite, Galena.
MEMRAMCOOK.—Petroleum.
PETITCODIAC.—Selenite.
SALISBURY.—Gypsum.
VARIOUS LOCALITIES.—Malachite.

YORK COUNTY.

- BEAVER DAM SETTLEMENT.—Bog Iron ore.
BURNT HILL BROOK.—Cassiterite,
Malybdenite, Topaz, Wolframite.
CANTERBURY.—Garnet.
HARVEY STATION.—Fluorite.
LYBSTER'S MILLS.—Fluorite.
NASHWAAKSIS RIVER.—Coal.
PRINCE WILLIAM.—Antimony (native),
Jamesonite, Kermesite, Stibnite.
QUEENSBURY.—Bog Iron ore, Bog Manganese.

North West Territories.

- ADMIRALTY INLET.—Prehnite.
ALBERT HARBOUR.—Almandite,
Copper (native).
ARCTIC ISLANDS.—Coal.
BAFFIN ISLAND.—Graphite.
BARING ISLAND.—Hematite.
BATHURST ISLAND.—Hematite.
BIG ISLAND.—Hornblende.
BUFFALO RIVER.—Chalcopyrite.

- BYAM-MARTIN ISLAND.—Hematite.
CHURCHILL RIVER.—Lazulite.
COPPER MOUNTAIN.—Copper (native),
Prehnite.
CORBETT INLET.—Chalcopyrite.
CUMBERLAND SOUND.—Graphite.
CYRUS FIELD BAY.—Coccolite.
DAVIS STRAIT.—Graphite.

NORTH WEST TERRITORIES.

DUBAWNT LAKE.—Amethyst, Fluorite.
 ECHO BAY.—Hematite.
 FROBISHER BAY.—Apatite, Cocco-
 lite.
 GREAT BEAR LAKE.—Chalcopyrite,
 Erythrite, Galena, Hematite, Hy-
 dromagnesite.
 GREAT SLAVE LAKE.—Erythrite,
 Jasper, Sulphur (native).
 HUDSON STRAIT.—Phlogopite.
 LES ISLES DU LARGE.—Hematite.
 LIARD RIVER.—Chert, Ironstone.
 MACKENZIE RIVER.—Ironstone,
 Lignite, Thenardite.

NORTH WEST TERRITORIES.

MACTAVISH BAY.—Hematite.
 NASTAPOKA ISLANDS.—Ankerite,
 Siderite.
 NORTH BAY.—Graphite.
 PEEL RIVER.—Ironstone.
 PRINCE REGENT INLET.—Hematite.
 PRINCESS ROYAL ISLAND.—Jasper.
 RAE RIVER.—Apatite.
 ROCHER ROUGE BAY.—Hematite.
 "ROCK BY THE RIVERSIDE."—
 Gypsum.
 SALT RIVER.—Halite.
 SLAVE RIVER.—Gypsum.
 TRAIL POINT.—Ironstone.
 VARIOUS LOCALITIES.—Asphaltum.

Nova Scotia.

ANNAPOLIS COUNTY.

CHUTE COVE.—Apophyllite, Helio-
 trope, Heulandite.
 CLEMENTSPORT.—Magnetite.
 GATES MOUNTAIN.—Natrolite.
 HAMPTON.—Apophyllite.
 KENNINGTON COVE.—Talc.
 MARGARETVILLE.—Apophyllite,
 Copper (native), Epistilbite, Mor-
 denite, Natrolite, Stilbite, Thomp-
 sonite.
 MARTIALS COVE.—Analcite.
 NICTAUX.—Magnetite.
 NORTH MOUNTAINS.—Heulandite,
 Mesolite.
 PARADISE.—Quartz, Tourmaline.
 PETER POINT.—Laumonite.
 PORT GEORGE.—Mesolite, Natro-
 lite, Stilbite.
 ST. CROIX COVE.—Heulandite, Lau-
 monite.
 TORBROOK.—Hematite, Magnetite.
 VARIOUS LOCALITIES.—Amethyst.
 WILMOT.—Bog Iron ore.

ANTIGONISH COUNTY.

ADDINGTON FORKS.—Chalcocite.
 AFTON.—Bog Manganese.
 ANTIGONISH.—Vivianite.
 ANTIGONISH HARBOUR.—Alabaster,
 Halite, Gypsum.
 ARISAIG.—Galena, Gieseckite, Pin-
 ite.
 BRIERLY BROOK.—Chalcocite, Chal-
 copyrite.
 DOCTORS BROOK.—Hematite.
 FRENCHMAN BARN.—Gieseckite.
 JAMES RIVER.—Gypsum.
 LOCHABER.—Bornite, Chalcopyrite,
 Hematite, Infusorial earth, Lim-
 onite.
 MCNEIL BROOK.—Hematite.
 OGDEN CLIFFS.—Gypsum.
 OHIO RIVER.—Chalcopyrite, Gyp-
 sum.
 POLSON LAKE.—Chalcopyrite, Py-
 rite, Siderite.
 POMQUET RIVER.—Bog Manganese,
 Chalcocite.

NOVA SCOTIA.

ST. JOSEPH.—Chalcocite.
 SOUTH LAKE.—Chrysolite (Olivine).
 SPRINGHILL.—Hematite.
 UPPER SOUTH RIVER.—Bornite.

CAPE BRETON COUNTY.

BARACHOIS.—Hematite.
 BARACHOIS HARBOUR.—Pyrrhotite.
 BARACHOIS MOUNTAIN.—Magnetite.
 BEECHMONT.—Chalcopyrite.
 BOISDALE.—Hematite.
 BOULARDERIE ISLAND.—Gypsum.
 CAPE DAUPHIN.—Coal.
 CAPE PERCY.—Coal.
 CATALONE LAKE.—Chrysolite, Infusorial earth.
 CHRISTMAS ISLAND.—Graphite.
 EAGLE HEAD.—Chalcopyrite, Molybdenite, Steatite.
 EAST BAY.—Gypsum.
 FRENCH ROAD.—Chalcopyrite.
 FRENCHVALE.—Graphite.
 GABARUS.—Hematite, Wad.
 GEORGE RIVER.—Chalcopyrite, Dolomite.
 GEORGE RIVER MOUNTAIN.—Hematite.
 GILLIES LAKE.—Hematite.
 GLACE BAY.—Coal, Halotrichite, Melanterite.
 GRAND MIRA.—Bog Manganese.
 INDIAN BAY.—Coal.
 LEITCHES CREEK.—Pyrrhotite.
 LEWIS.—Wad.
 MCADAM LAKE.—Galena.
 MIRA.—Hematite, Magnetite.
 MORIEN BAY.—Coal.
 SALMON RIVER.—Galena.
 STEELS CROSSING.—Galena.
 SYDNEY RIVER.—Celestite.

NOVA SCOTIA.

COLCHESTER COUNTY.

BASS RIVER.—Barite.
 BEAVER BROOK.—Anhydrite.
 BLACK ROCK.—Manganite.
 COBEQUID MOUNTAIN.—Albertite.
 DEBERT RIVER.—Coal.
 EARLTOWN LAKE.—Infusorial earth.
 EAST RIVER.—Barite.
 GAYS RIVER.—Galena.
 GERRISH MOUNTAIN.—Magnetite.
 GULLEY LAKE.—Infusorial earth.
 JOHNSTONS ROAD CROSSING.—Sulphur (native).
 LITTLE TATAMAGOUCHE RIVER.—Hematite.
 LONDONDERRY.—Aragonite, Barite, Bog Manganese, Calcite, Hematite, Limonite, Siderite, Sideroplesite, Wad.
 LOWER FIVE ISLANDS.—Mountain Cork.
 MACINTOSH LAKE.—Infusorial earth.
 MIDDLE STEWIAKKE.—Barite.
 MOOSE ISLAND.—Gypsum.
 NEW ANNAN.—Covellite.
 OLD BARNES.—Gypsum, Limonite.
 ONSLOW.—Psilomelane, Pyrolusite.
 OLIVER.—Chalcocite.
 PINNACLE ISLAND.—Chabazite.
 SALMON RIVER.—Coal, Pyrolusite.
 SHUBENACADIE RIVER.—Anhydrite.
 STEWIAKKE RIVER.—Coal, Travertine.
 VARIOUS LOCALITIES.—Magnetite.
 WASSON BLUFF.—Pyrolusite.
 WAUGH RIVER.—Chalcocite.

CUMBERLAND COUNTY.

AMHERST HEAD.—Gypsum.
 ATKINSON.—Barite.
 BARKUS BROOK.—Anhydrite.
 BASS RIVER LAKE.—Infusorial earth.

NOVA SCOTIA.

BENNETTS BROOK.—Apophyllite, Cuprite.
 BLACK BROOK.—Barite.
 BLUE SEA CORNER.—Chalcocite, Galena.
 BROOKVILLE.—Hematite.
 CANFIELD CREEK.—Gypsum, Limonite, Selenite.
 CAPE D'OR.—Analcite, Apophyllite, Chabazite, Copper (native), Cuprite, Heulandite, Natrolite, Scheelite, Stilbite.
 CAPE SPENCER.—Hematite.
 CHISHOLM CREEK.—Chalcocite.
 CLARKE HEAD.—Ankerite, Prehnite.
 EAST RIVER.—Hematite.
 FARMINGTON.—Arsenopyrite.
 FIVE ISLANDS.—Andalusite, Barite, Chabazite, Chalcopyrite, Copper (native), Heubachite, Natrolite.
 FOLLY LAKE.—Infusorial earth.
 FOUNTAIN LAKE.—Infusorial earth.
 FULLERTON LAKE.—Limonite.
 HORSE SHOE COVE.—Stilbite.
 ISLE HAUTE.—Apophyllite, Heulandite.
 JOGGINS.—Coal.
 MCKAY HEAD.—Analcite.
 MALAGASH POINT.—Chalcopyrite, Wad.
 NAPPAN.—Chalcocite.
 PARRSBORO.—Bog Manganese.
 PARTRIDGE ISLAND.—Acadialite, Amethyst, Analcite, Calcite, Chabazite, Chert, Heulandite, Jasper, Stilbite, Stilpnomelane.
 PHILIP RIVER.—Gypsum, Selenite.
 PUDSEY POINT.—Iron ochre.
 RIVER HEBERT.—Bog Manganese, Wad.
 ROSE.—Wad.
 ROSLIN.—Chalcocite.
 SALEM.—Pyrolusite.

NOVA SCOTIA.

SPENCER ISLAND.—Copper (native), Cuprite, Heulandite.
 SPRINGHILL.—Alunogen, Coal, Petroleum, Selenite.
 SWAN CREEK.—Acadialite, Analcite, Apophyllite, Calcite, Chabazite, Heulandite, Natrolite.
 TWO ISLANDS.—Acadialite, Agate, Analcite, Apophyllite, Bornite, Calcite, Carnelian, Chabazite, Chalcedony, Gismondite, Heliotrope, Heulandite, Malachite, Martite, Natrolite, Scheelite, Stilbite.
 WALLACE HARBOUR.—Gypsum.
 WASSON BLUFF.—Chabazite.
 WENTWORTH.—Bog Iron ore, Chalcocite.
 WESTCHESTER.—Bog Manganese.

DIGBY COUNTY.

BRIAR ISLAND.—Jasper.
 CAPE COVE.—Chalcopyrite.
 DIGBY GUT.—Analcite.
 DIGBY NECK.—Agate, Amethyst, Analcite, Carnelian, Chabazite, Chalcedony, Hematite, Heulandite, Magnetite, Martite.
 LONG ISLAND.—Chlorite.
 METEGHAN RIVER.—Infusorial earth.
 MINK COVE.—Chabazite, Heulandite.
 NORTH MOUNTAIN.—Martite.
 PACE LAKE.—Quartz.
 ST. MARY BAY.—Iserine, Jasper, Laumonite.
 SANDY COVE.—Agate, Carnelian, Chabazite, Chalcedony, Laumonite, Quartz.
 WATERFORD.—Heulandite.
 WILLIAM BROOK.—Analcite, Chabazite, Heulandite.

NOVA SCOTIA.

GUYSBOROUGH COUNTY.

- CANSO ROAD.—Bornite, Chalcopyrite.
 CANSO STRAIT.—Coal.
 COUNTRY HARBOUR.—Cassiterite.
 DOVER HARBOUR.—Almandite.
 EAST ROMAN VALLEY.—Chalcopyrite.
 ERINVILLE.—Hematite.
 MELROSE.—Hematite.
 SALMON RIVER.—Galena, Staurolite.
 SHERBROOKE.—Octahedrite.
 SMITHFIELD.—Galena.
 VARIOUS LOCALITIES.—Gold.

HALIFAX COUNTY.

- BEAVER DAM.—Andalusite.
 BEDFORD.—Molybdenite.
 BLACK BROOK.—Bog Iron ore.
 CHAIN LAKE.—Infusorial earth, Wad.
 DARTMOUTH.—Graphite.
 DARTMOUTH LAKE.—Infusorial earth.
 GAYS RIVER.—Gypsum.
 GEIZER'S HILL.—Andalusite, Chiasolite.
 GRAND LAKE.—Infusorial earth.
 GUYSBOROUGH ROAD.—Pyrite.
 HALIFAX.—Iolite (Cordierite), Wad.
 HAMMOND PLAINS.—Molybdenite.
 LOWER SACKVILLE.—Wad.
 MONTAGUE.—Arsenopyrite.
 MOOSELAND.—Rutile.
 MOOSE RIVER.—Scheelite.
 MUSQUODOBOIT HARBOUR.—Fluorite, Galena.
 MUSQUODOBOIT RIVER.—Gypsum, Infusorial earth, Kaolinite, Pyrolusite.
 NEWCOMB CORNER.—Bog Iron ore.
 PRESTON ROAD.—Bog Iron ore, Limonite.

NOVA SCOTIA.

- ST. MARGARET BAY ROAD.—Amethyst.
 SHIP HARBOUR ROAD.—Bog Iron ore.
 SCHEELITE.—Scheelite.
 STILLWATER BROOK.—Scheelite.
 TANGIER.—Cassiterite.
 VARIOUS LOCALITIES.—Bog Manganese, Wad.
 WATT SECTION OF SHEET HARBOUR.—Bog Manganese.
 WAVERLEY.—Arsenopyrite.

HANTS COUNTY.

- AVONDALE.—Halite, Mirabilite.
 BLACK BROOK.—Goethite.
 BROOKVILLE.—Howlite.
 CAMBRIDGE.—Hematite.
 CHESTER.—Iolite (Fahlunite).
 CHEVERIE.—Anhydrite, Halite, Gypsum, Petroleum, Pyrolusite.
 CLIFTON.—Prehnite.
 CLIFTON QUARRY.—Mirabilite, Ulexite.
 DOUGLAS.—Psilomelane.
 DUTCH SETTLEMENT.—Gypsum, Selenite.
 GRAND LAKE.—Hematite.
 HANTSPOUR.—Gypsum.
 HERBERT RIVER.—Anhydrite, Gypsum.
 HORN SETTLEMENT.—Selenite.
 KENNETCOOK CORNERS.—Pyrolusite.
 MINESVILLE.—Pyrolusite.
 MOUNT DENISON.—Anhydrite.
 MOUNT UNIACKE.—Arsenopyrite.
 NEWPORT.—Anhydrite, Halite, Howlite, Pickeringite, Ulexite.
 NOEL LAKE.—Anhydrite, Howlite.
 PEMBROKE.—Barite.
 RAWDON.—Stibnite.
 SELMA.—Limonite.

NOVA SCOTIA.

SEVENMILE PLAIN.—Pyrite.
 SHUBENACADIE.—Goethite.
 TENNYCAPE.—Calcite, Limonite,
 Manganite, Pyrolusite, Turgite.
 THREEMILE PLAIN.—Ulexite.
 VARIOUS LOCALITIES.—Psilomelane.
 WALTON.—Barite, Goethite, Gyp-
 sum, Manganite, Pyrolusite.
 WENTWORTH (OLD NAME WINK-
 WORTH).—Howlite, Ulexite, Wink-
 worthite.
 WEST GORE.—Antimony, Kermes-
 ite, Stibnite, Valentinite.
 WINDSOR.—Anhydrite, Cryptomor-
 phite, Epsomite, Gypsum, Halite,
 Howlite, Iolite (Fahlunite), Sel-
 enite.

INVERNESS COUNTY.

AINSLIE.—Barite.
 BIG BROOK.—Graphite.
 BRIGAND BROOK.—Talc.
 BROAD COVE.—Coal, Galena.
 CAPE ROUGE.—Barite, Fluorite.
 CHETICAMP.—Chalcopryrite, Galena,
 Gypsum, Selenite.
 CHIMNEY CORNER. — Coal, Iron
 ochre.
 DENYS RIVER.—Infusorial earth.
 EMERALD.—Hubnerite.
 FARIBAULT BROOK. — Pyrrhotite,
 Sphalerite.
 GLENDALE.—Graphite.
 GRAND COVE.—Asphaltum.
 INHABITANTS RIVER.—Coal.
 JUDIQUE.—Barite.
 LAKE AINSLIE.—Infusorial earth,
 Iron ochre, Petroleum.
 MABOU.—Anhydrite, Barite.
 MACKENZIE RIVER.—Silver.
 MARGAREE.—Gypsum.
 PLASTER ISLAND.—Anhydrite.
 PLEASANT BAY.—Galena, Pyrite.

NOVA SCOTIA.

PORT HOOD.—Coal.
 SCOTTVILLE.—Chalcopryrite.
 WAGAMATCOOK.—Bismuth (native).
 WHYCOCOMAGH.—Dolomite, Mag-
 netite, Malacolite.

KINGS COUNTY.

BLACK ROCK.—Centrallassite, Cer-
 inite, Heulandite, Prehnite.
 CANADA CREEK.—Amethyst.
 CAPE BLOMIDON.—Agate, Amethyst,
 Analcite, Apophyllite, Carnelian,
 Chalcedony, Dolomite, Gypsum,
 Heulandite, Louisite, Mesolite,
 Natrolite, Stilbite.
 CAPE SPLIT.—Agate, Carnelian,
 Chalcedony, Natrolite, Steeleite,
 Thompsonite.
 COLDBROOK STATION.—Bog Iron
 ore.
 HALLS HARBOUR. — Heulandite,
 Sphaerostilbite, Stilbite.
 HORTON MOUNTAIN.—Pyrolusite.
 KEMPT LAKE.—Infusorial earth.
 LONG ISLAND.—Jasper.
 LONG POINT.—Heulandite.
 MORDEN.—Heulandite, Mordenite.
 NEW CANAAN.—Iron ochre.
 NORTH ALTON RIVER.—Pyrolusite.
 NORTH MOUNTAIN.—Magnetite,
 Thompsonite.
 PROSPECT.—Pyrolusite.
 ROSS CREEK.—Quartz.
 SCOTT BAY.—Apophyllite, Rutile,
 Sagenite.
 SHEFFIELD VAULT.—Analcite.
 SOUTH MOUNTAIN.—Pyrolusite.
 STRONACH BROOK.—Natrolite.
 THE RACE.—Apophyllite.
 VARIOUS LOCALITIES.—Gypsum.
 VICTORIA HARBOUR.—Laumonite,
 Stilbite.
 WOODWORTH COVE.—Jasper.

NOVA SCOTIA.

LUNENBURG COUNTY.

- CHESTER.—Quartz.
 CHESTER BASIN.—Iron ochre.
 DALHOUSIE ROAD SETTLEMENT.—
 Almandite.
 EAST CHESTER.—Iron ochre.
 HOUEY LAKE.—Scheelite.
 LARDER RIVER.—Fluorite.
 LAHAVE.—Pyrite.
 NEW ROSS.—Beryl, Cassiterite,
 Chalcopyrite, Columbite, Dur-
 angite, Eosphorite, Fluorite, Hub-
 nerite, Kaolinite, Lepidolite, Li-
 monite, Manganite, Molybdenite,
 Monazite, Opal, Pyrolusite,
 Quartz, Scheelite, Sphalerite, Tri-
 phylite, Wolframite.
 SHERBROOKE LAKE.—Almandite.
 VARIOUS LOCALITIES.—Kaolinite,
 Gold.

PICTOU COUNTY.

- ALBION MINES.—Chalcopyrite.
 BEN LAKE.—Infusorial earth.
 BLACK BROOK.—Infusorial earth.
 BRIDGEVILLE.—Barite, Bog Iron
 ore, Bog Manganese, Goethite,
 Manganite, Pyrolusite.
 CARIBOO.—Chalcocite.
 EAST RIVER.—Goethite, Hematite,
 Limonite, Pyrolusite.
 FERRONA JUNCTION.—Anhydrite,
 Gypsum.
 EDEN LAKE.—Infusorial earth.
 FORBES LAKE.—Infusorial earth.
 FRENCH RIVER.—Bog Iron ore.
 HODSON.—Barite.
 JOHN RIVER.—Albertite, Chalcocite.
 McDONALD BROOK.—Ironstone.
 MCKAY LAKE.—Infusorial earth.

NOVA SCOTIA.

- MCLELLAN MOUNTAINS.—Hema-
 tite.
 NEW LAIRY.—Chalcopyrite.
 PIEDMONT.—Bog Manganese.
 ST. MARYS.—Ironstone.
 SIXMILE BROOK.—Chalcopyrite.
 SPRINGVILLE.—Bog Iron ore, Li-
 monite, Pyrolusite.
 STELLARTON.—Coal, Stellarite.
 SUNDRIDGE.—Chalcocite.
 SUTHERLAND BROOK.—Hematite,
 Siderite.
 THOBURN.—Petroleum.
 UPPER BARNEY RIVER.—Infusorial
 earth.
 VALE.—Coal.
 VARIOUS LOCALITIES.—Clay Iron-
 stone.
 WEST RIVER.—Hematite, Ironstone.
 WESTVILLE.—Coal.

QUEENS COUNTY.

- BROAD RIVER.—Andalusite.
 CALEDONIA.—Arsenopyrite.
 FIFTEENMILE BROOK.—Scheelite.
 MALAGA.—Cassiterite, Gold, Schee-
 lite.
 VARIOUS LOCALITIES.—Gold, Gyp-
 sum, Malachite.

RICHMOND COUNTY.

- ARICHAT.—Galena.
 CAMPBELL POINT.—Bornite.
 CLEVELAND.—Magnetite.
 GRAND ANSE.—Hematite.
 L'ARCHEVEQUE.—Barite.
 LOCH LOMOND.—Barite, Chalcopy-
 rite, Hematite, Pyrolusite.
 PLASTER COVE.—Fluorite.
 RIVER BOURGEOISE.—Selenite.
 ST. PETERS.—Hematite.

NOVA SCOTIA.

SHELburnE COUNTY.

- CARLETON.—Staurolite.
 GOOSE NECK POINT.—Andalusite.
 JORDAN RIVER.—Molybdenite,
 Staurolite.
 NORTH-EAST HARBOUR.—Chlorite,
 Voigtite.
 PORT LATOUR.—Andalusite.
 PUBNICO HARBOUR.—Staurolite.
 RED HEAD.—Andalusite, Staurolite.
 SHELburnE.—Quartz.
 SHELburnE HARBOUR.—Alman-
 dite, Andalusite.
 SOUTH HARBOUR.—Galena.

VICTORIA COUNTY.

- BADDECK.—Baddeckite (Musco-
 vite).
 BOULDARDERIE CENTRE.—Pyrrho-
 tite.

NOVA SCOTIA.

- GOOSE COVE.—Anhydrite.
 GREAT BRAS D'OR LAKE.—Anhy-
 drite.
 IONA.—Anhydrite.
 LIEUTENANT POND.—Anhydrite.
 NEW CAMPBELLTON.—Dolomite.
 PORT BEVIS.—Anhydrite.
 ST. ANNS.—Infusorial earth.

YARMOUTH COUNTY.

- BRAZIL.—Almandite, Ilmenite.
 CHEGOGGIN POINT.—Almandite, Il-
 menite.
 LAKE GEORGE.—Almandite.
 PUBNICO.—Andalusite.
 YARMOUTH.—Andalusite.

Ontario.

ADDINGTON COUNTY.

- ANGLESEA.—Arsenopyrite, pyrrho-
 tite.
 DENBIGH.—Graphite, Sulphur.
 EFFINGHAM.—Arsenopyrite (Dana-
 ite).
 OSO.—Hematite.
 SHEFFIELD.—Molybdenite, Stib-
 nite.
 VERONA.—Tourmaline.

ALGOMA DISTRICT.

- ABERDEEN.—Hematite.
 AIRD ISLAND.—Muscovite.
 BATCHEWANA BAY.—Manganite.
 BAY OF ISLANDS.—Chalcopyrite,
 Erythrite.

- BRUCE MINES.—Ankerite, Bornite
 Calcite, Chalcocite, Chalcopyrite,
 Dolomite, Hematite.
 COBDEN.—Apatite.
 COFFIN.—Bornite.
 DEROCHE.—Hematite.
 DESBARATS.—Erythrite.
 ECHO BAY.—Limonite.
 ECHO LAKE.—Bismuth (native),
 Stibnite.
 GOULD.—Chalcocite.
 GRAHAM.—Arsenopyrite.
 LOWER MATTAGAMI RIVER.—Lim-
 onite.
 MASSEY MINE.—Chalcopyrite.
 OTTER.—Erythrite.
 PLUMMER.—Bornite.
 ST. JOSEPH ISLAND.—Iron (native).

ONTARIO.

VARIOUS LOCALITIES. — Enstatite, Galena, Garnet, Gold, Huronite, Jasper, Malachite, Melanterite.

WALLACE MINE. — Chalcopyrite, morenosite, rutile.

BRANT COUNTY.

BRANTFORD. — Gypsum.

SOUTH DUMFRIES. — Gypsum.

TUSCARORA. — Sulphatite.

BRUCE COUNTY.

ALBEMARLE. — Sphalerite.

VARIOUS LOCALITIES. — Halite.

CARLETON COUNTY.

FITZROY. — Bog Iron ore, Galena, Magnetite, Tourmaline.

HUNTLEY. — Apatite, Barite.

MARCH. — Barite, Bog Iron ore, Calcite, Microcline, Molybdenite.

MARLBOROUGH. — Bog Iron ore, Limonite.

NEPEAN. — Strontianite, Witherite.

OTTAWA. — Bytownite, Ilvaite.

ESSEX COUNTY.

AMHERSTBURG. — Celestite, Chert.

DETROIT RIVER. — Calcite, Celestite.

MALDEN. — Fluorite.

FRONTENAC COUNTY.

BARRIE. — Chalcopyrite, Jamesonite, Magnetite, Meneghinite, Sphalerite, Stibnite, Tennantite.

BEDFORD. — Apatite, Calcite, Galena, Graphite, Hematite, Hornblende, Magnetite, Microcline, Phlogopite, Pyrite, Pyroxene, Scapolite, Serpentine, Titanite, Tourmaline, Tremolite, Vesuvianite.

ONTARIO.

CLARENDON. — Arsenopyrite, Bismuthinite, Gold, Hematite, Jamesonite, Steatite, Talc, Tremolite, Vesuvianite.

EEL LAKE. — Wernerite.

HINCHINBROOKE. — Anhydrite, Apatite, Marcasite, Wernerite.

KENNEBEC. — Tremolite.

KINGSTON. — Anthraxolite, Celestite, Leucoxene.

LOUGHBOROUGH. — Anhydrite, Anthraxolite, Apatite, Barytocelestite, Calcite, Datolite, Galena, Graphite, Gypsum, Hematite, Phlogopite, Pyrite, Tremolite, Wilsonite.

MILLER. — Bismuthinite, Molybdenite, Muscovite.

MISSISSIPPI. — Augite.

OLDEN. — Galena, Pyrrhotite.

OSO. — Magnetite.

PALMERSTON. — Chalcopyrite, Magnetite.

PORTLAND. — Hematite, Magnetite.

SOUTH CANONTO. — Hematite.

STORRINGTON. — Apatite, Barite, Calcite, Galena, Hematite, Magnetite.

THIRTY-ISLAND LAKE. — Serpentine.

GLENGARRY COUNTY.

LOCHIEL. — Labradorite.

GRENVILLE COUNTY.

CHARLESTON LAKE. — Pyralloite.

GREY COUNTY.

KEPPEL. — Sphalerite.

OWEN SOUND. — Celestite.

SYDENHAM. — Iron ochre.

VARIOUS LOCALITIES. — Travertine.

ONTARIO.

HALDIMAND COUNTY.

- NORTH AND SOUTH CAYUGA.—
Gypsum.
ONEIDA.—Gypsum.
SENECA.—Gypsum.
WALPOLE.—Chert.

HALIBURTON COUNTY.

- CARDIFF.—Apatite, Biotite, Diopside, Fluorite, Galena, Phlogopite, Sphalerite, Wernerite.
DUDLEY.—Apatite, Magnetite.
DYSART.—Apatite.
GLAMORGAN.—Epidote, Hastingsite, Magnetite, Wernerite.
HARCOURT.—Apatite, Biotite, Chondrodite, Epidote, Gedrite, Iolite (Cordierite), Molybdenite.
LUTTERWORTH.—Allanite, Andradite, Galena, Graphite, Molybdenite, Orthoclase, Wernerite, Wilsonite.
MINDEN. — Ilmenite, Magnetite, Pyrrhotite.
MONMOUTH. — Apatite, Epidote, Phlogopite, Wernerite.
SNOWDON.—Actinolite, Limonite, Uraconite.
VARIOUS LOCALITIES.—Nephelite, Sodalite.
WILBERFORCE.—Graphite.

HALTON COUNTY.

- ESQUESING.—Iron ochre.

HASTINGS COUNTY.

- BRIDGEWATER.—Galena.
CARLOW.—Corundum, Ilmenite, Magnetite, Pyroxene, Zoisite.

ONTARIO.

- DUNGANNON.—Andradite, Biotite, Cancrinite, Corundum, Hastingsite, Magnetite, Malachite, Molybdenite, Muscovite, Nephelite, Orthoclase, Perthite, Sodalite, Zircon.
ELDORADO COPPER MINE.—Chalcocite.
ELZEVIR. — Actinolite, Antholite, Arsenopyrite, Galena, Hematite, Steatite, Talc.
FARADAY. — Apatite, Magnetite, Muscovite, Realgar, Scorodite, Wernerite.
GRIMSTHORPE.—Steatite, Talc.
HASTINGS ROAD.—Galena.
HERSCHELL. — Apatite, Biotite, Diopside, Orthoclase, Pyroxene.
HUNGERFORD.—Galena, Pyrite.
HUNTINGDON.—Fluorite, Hematite, Limonite.
LAKE.—Galena, Tremolite.
LIMERICK.—Annabergite, Erythrite, Fluorite, Galena.
MADOC.—Actinolite, Antimony, Arsenopyrite, Barite, Beryl, Bournonite, Chalcopyrite, Dufrenite, Erythrite, Fluorite, Franklinite, Galena, Gold, Hematite, Lodestone, Magnetite, Malachite, Pyrite, Rutile, Smaltite, Stilpnomelane, Talc, Tetrahedrite, Tourmaline, Turgite, Uraconite, Wad.
MARMORA.—Arsenolite, Arsenopyrite, Bournonite, Chalcopyrite, Epsomite, Fluorite, Gold, Graphite, Lepidomelane, Malachite, Meneghinite, Pyrite, Pyrrhotite, Serpentine, Stibnite.
MAYNOOTH.—Graphite.
MAYO.—Chalcopyrite.
MONTEAGLE.—Apatite, Chabazite, Pyroxene, Titanite, Wernerite.

ONTARIO.

RAWDON.—Arsenopyrite, Pyrralolite.

THURLOW.—Bog Iron ore.

TUDOR.—Andradite, Arsenopyrite, Bismuth (native), Bismuthinite, Bismutite, Epidote, Galena, Magnetite, Tourmaline.

VARIOUS LOCALITIES.—Melanterite.

WICKLOW.—Albite, Orthoclase.

WOLLASTON.—Arsenopyrite, Magnetite, Tourmaline.

HURON COUNTY.

GODERICH.—Anhydrite.

VARIOUS LOCALITIES.—Halite.

KENORA DISTRICT.

EAGLE LAKE.—Gold.

LAKE OF THE WOODS.—Gold.

MANITOU LAKE.—Gold.

VARIOUS LOCALITIES.—Chlorite, Molybdenite.

WABIGOON LAKE.—Gold.

KENT COUNTY.

CAMDEN.—Bog Iron ore.

LAMBTON COUNTY.

BOSANQUET.—Humboldtine.

ENNISKILLEN.—Asphaltum, Petroleum.

QUARRY ISLAND.—Molybdenite.

VARIOUS LOCALITIES.—Halite.

LANARK COUNTY.

BATHURST.—Apatite, Diopside, Hematite, Hornblende, Magnetite, Orthoclase, Peristerite, Titanite, Tourmaline, Tremolite, Wernerite, Wilsonite.

ONTARIO.

BECKWITH.—Hematite.

DALHOUSIE.—Actinolite, Bog Iron ore, Galena, Hematite, Martite, Pyrite, Quartz.

DARLING.—Bournonite, Hematite, Limonite, Magnetite, Pyrite.

LAVANT.—Arsenopyrite, Barite, Chalcopyrite, Magnetite.

NORTH BURGESS.—Actinolite, Anhydrite, Apatite, Barite, Calcite, Goethite, Loganite, Orthoclase, Perthite, Phlogopite, Pyrite, Pyroxene, Scapolite, Serpentine, Titanite, Tourmaline, Tremolite, Turgite, Wilsonite, Wollastonite.

NORTH ELMSLEY.—Apatite, Diopside, Limonite, Titanite, Wollastonite.

PAKENHAM.—Barite, Tourmaline.

PERTH.—Spodumene.

RAMSAY.—Barite, Epidote, Galena, Pyrralolite.

SOUTH SHERBROOKE.—Apatite, Hornblende, Magnetite, Oligoclase, Titanite.

LEEDS COUNTY.

BASTARD.—Bog Iron ore, Chalcopyrite, Hematite, Wollastonite.

ELIZABETHTOWN.—Cacoxenite, Pyrite, Pyrrhotite, Steatite, Talc.

ESCOTT.—Chalcopyrite.

NEWBORO.—Chondrodite.

NORTH CROSBY.—Apatite, Chlorite, Chondrodite, Magnetite, Molybdenite.

SOUTH BURGESS.—Calcite, Corundum, Phlogopite, Spinel.

SOUTH CROSBY.—Apatite, Calcite, Chlorite, Chondrodite, Hematite, Phlogopite.

YEO ISLAND.—Muscovite, Tourmaline.

ONTARIO.

LENNOX COUNTY.

CHARLESTON LAKE.—Rensselaerite,
Tourmaline.
KALADAR.—Actinolite, Arsenopyrite,
Cyanite, Talc.
LANSDOWNE.—Wernerite.

LINCOLN COUNTY.

GAINSBOROUGH.—Limonite.
St. DAVIDS.—Sulphatite.

MANITOULIN DISTRICT.

MANITOULIN ISLAND.—Petroleum.
MICHIPCOTEN ISLAND.—Agate,
Analcite, Calcite, Chert, Chlorastrolite,
Copper, Domeykite, Genthite,
Hematite, Limonite, Niccolite,
Pyrite.
RUTHERFORD.—Chert.
SAYER LAKE.—Chert.
VARIOUS LOCALITIES.—Celestite.

MIDDLESEX COUNTY.

MOSE.—Petroleum.

MUSKOKA DISTRICT.

GIBSON.—Allanite.

NIPISSING DISTRICT.

AIRY.—Magnetite.
AUSTEN BAY.—Chert.
CALVIN.—Beryl, Muscovite, Polycrase,
Xenotime.
CAMERON.—Amazonite, Fluorite,
Iron, Microcline, Perthite.

ONTARIO.

GARROW.—Chalcopyrite.
GRANT.—Magnetite.
IRON ISLAND.—Barite.
IRON LAKE.—Chert.
KOKOKO BAY.—Chert.
LAKE NIPISSING.—Molybdenite.
LES ERABLES RAPIDS.—Almandite.
MADAWASKA STATION.—Iron ochre.
MATTAWA.—Muscovite.
MATTHIAS ISLAND.—Ankerite.
TIMAGAMI LAKE.—Arsenopyrite,
Epidote, Malachite, Rutile.
VARIOUS LOCALITIES.—Allanite,
Chlorite, Enstatite, Galena, Leucocoxene.

NORFOLK COUNTY.

CHARLOTTEVILLE.—Bog Iron ore,
Limonite.
MIDDLETON.—Bog Iron ore.
WALSINGHAM.—Iron ochre.
WINDHAM.—Bog Iron ore, Limonite.

ONTARIO COUNTY.

CHIEF ISLAND.—Wolframite.

OXFORD COUNTY.

DEREHAM.—Petroleum.
OXFORD.—Petroleum.
VARIOUS LOCALITIES.—Travertine.

PARRY SOUND DISTRICT.

FERGUSON.—Muscovite.
FOLEY.—Chalcocite, Chalcopyrite,
Galena, Gold, Malachite.
PROUDFOOT.—Spessartite.

ONTARIO.

PATRICIA DISTRICT.

CROSS LAKE.—Molybdenite.
SUTTON MILL LAKES.—Ilmenite.

PEEL COUNTY.

CALEDON.—Celestite.

PETERBOROUGH COUNTY.

ANSTRUTHER.—Apatite, Biotite.
BELMONT.—Chlorite, Epidote, Gold,
Labradorite, Magnetite, Serpentine.
BURLEIGH.—Peristerite, Wernerite.
CHANDOS.—Chalcopyrite, Gold.
DUMMER.—Barite, Chalcopyrite,
Pyrite, Tourmaline.
GALWAY.—Barite, Calcite, Lollingite,
Ontariolite, Pyrrhotite, Tourmaline.
METHUEN.—Corundum, Damourite,
Muscovite.
VARIOUS LOCALITIES.—Melanterite,
Nephelite, Sodalite.

PRESCOTT COUNTY.

HAWKESBURY.—Axinite, Celestite.

RAINY RIVER DISTRICT.

ANDREW BAY, LAKE OF THE WOODS.
—Copper.
ATIKOKAN RIVER.—Magnetite.
CLEARWATER LAKE.—Serpentine.
DESPAIR LAKE.—Serpentine.
JASPER LAKE.—Jasper.
LAKE OF THE WOODS.—Hematite,
Hessite, Muscovite, Pyrrhotite.
MIKADO MINE.—Bismuthinite.
NICKEL LAKE.—Pyrite.
PINE PORTAGE BAY.—Covellite.
POOHBAH LAKE.—Nephelite.

ONTARIO.

RAINY LAKE.—Augite, Beryl.
SAWBILL LAKE.—Gold.
VARIOUS LOCALITIES.—Chert,
Chlorite, Enstatite, Garnet.
WATTEN.—Steatite.

RENFREW COUNTY.

ALGONA.—Tremolite, Wernerite.
BAGOT.—Bournonite, Celestite,
Clinocllore, Magnetite, Molybdenite,
Tremolite.
BLITHFIELD.—Diopside, Pargasite,
Talc, Tourmaline, Tremolite.
BROMLEY.—Peristerite.
BROUGHAM.—Graphite, Molybdenite.
BRUDENELL.—Corundum, Zircon.
GRATTAN.—Magnetite.
HAGARTY.—Allanite.
ISLAND D, LAKE CLEAR.—Pyroxene,
Titanite.
LYNDOCH.—Beryl, Bismite, Bismuthinite,
Columbite, Molybdenite.
MADAWASKA RIVER.—Hornblende.
MATAWATCHAN.—Fuchsite, Muscovite.
MCNAB.—Barite.
MOUNT ST. PATRICK.—Microcline.
PEMBROKE.—Muscovite.
PETAWAWA RIVER.—Infusorial earth.
RADCLIFFE.—Corundum.
RAGLAN.—Chrysoberyl, Corundum,
Gahnite, Molybdenite, Muscovite.
ROLPH.—Magnetite.
ROSS.—Apatite, Biotite, Chryso-
tile, Fluorite, Hornblende, Magnetite,
Orthoclase, Picrolite, Pyrite,
Pyroxene, Spinel, Titanite,
Tourmaline, Tremolite, Wernerite,
Zircon.

ONTARIO.

SEBASTOPOL.—Amazonite, Apatite, Augite, Biotite, Calcite, Chrysotile, Hornblende, Microcline, Orthoclase, Pyroxene, Titanite, Wernerite, Zircon.
 STAFFORD.—Magnetite.
 TURNER ISLAND.—Calcite, Wernerite.
 VARIOUS LOCALITIES.—Nephelite, Sodalite.
 WESTMEATH.—Actinolite, Zircon.

SIMCOE COUNTY.

BASS LAKE.—Martite.
 NOTTAWASAGA.—Iron ochre.
 VARIOUS LOCALITIES.—Travertine.

STORMONT COUNTY.

ROXBOROUGH.—Bog Iron ore.

SUDBURY DISTRICT.

BALFOUR.—Anthraxolite, Sphalerite.
 BLEZARD.—Chalcopyrite, Pentlandite, Pyrrhotite.
 DENISON.—Actinolite, Annabergite, Blueite, Cassiterite, Chalcocite, Chalcopyrite, Folgerite, Gersdorffite, Leucoxene, Millerite, Morenosite, Niccolite, Pentlandite, Polydimite, Pyrrhotite, Scheelite, Sperrylite, Whartonite.
 DRURY.—Actinolite, Blueite, Chalcopyrite, Folgerite, Lepidomelane, Morenosite, Pentlandite, Pyrrhotite, Staurolite, Whartonite.
 DRYDEN.—Cyanite, Oligoclase, Sillimanite.
 FAIRBANK.—Anthraxolite.
 GRAHAM.—Chalcopyrite, Pyrite.
 HYMAN.—Pyrrhotite, Staurolite.
 LEVACK.—Pyrrhotite.
 LORNE.—Chalcopyrite, Pyrrhotite.

ONTARIO.

McKIM.—Magnetite, Millerite, Pyrite, Pyrrhotite, Smaltite.
 MONCRIEFF.—Magnetite.
 MOOSE RIVER.—Gypsum, Lignite.
 SNIDER.—Chalcopyrite, Magnetite, Pentlandite, Pyrrhotite.
 STREET.—Arsenolite.
 VARIOUS LOCALITIES.—Diallage, Enstatite, Zoisite.
 WANAPITEL.—Sillimanite.
 WANAPITEI LAKE.—Arsenopyrite.
 WATERS.—Quartz.

THUNDER BAY DISTRICT.

AMETHYST HARBOUR.—Amethyst.
 BATTLE ISLAND.—Copper.
 BLACK BAY.—Chalcopyrite, Fluorite.
 BLACK STURGEON LAKE.—Martite.
 BLUEBERRY LAKE.—Fluorite.
 CAPE GARGANTUA.—Copper, Fluorite.
 EDWARD ISLAND.—Arsenic (native).
 ENGLISH RIVER.—Limonite.
 FLUOR ISLAND.—Fluorite.
 FRENCH PORTAGE.—Steatite.
 GILLIES.—Argentite, Calcite, Witherite.
 GRAVELLY POINT.—Fluorite.
 JACKFISH BAY.—Pyrrhotite.
 JARVIS ISLAND.—Argentite, Barite.
 KAMINISTIKWIA RIVER.—Jasper, Kalinite, Lead (native), Magnetite, Prehnite.
 LAC DES MILLE LACS.—Magnesite.
 LAKE NIPIGON.—Amethyst.
 LOON STATION.—Datolite.
 LYBSTER.—Argentite, Silver.
 MACGREGOR.—Silver.
 McINTYRE.—Silver.
 McKELLAR ISLAND.—Argentite, Barite, Rhodocrosite.
 McKELLAR POINT.—Pectolite.

ONTARIO.

MCKENZIE RIVER.—Amethyst, Fluorite.
 MAMAINSE.—Chalcocite, Copper, Coracite, Epidote.
 MANITOU LAKE.—Leucoxene.
 MOSS.—Magnetite, Sylanite.
 NEEBING.—Barite, Marcasite.
 NIPIGON BAY.—Zonochlorite.
 O'CONNOR.—Argentite, Copper, Harmotome, Marcasite, Mountain Leather.
 PAIPOONGE.—Argentite, Silver.
 PANCAKE BAY MINE.—Bornite.
 PIC ISLAND.—Barite, Naphelite, Fluorite, Zircon.
 PIERRE PLAT.—Bismuth (native).
 PORT ARTHUR DISTRICT.—Saponite, Stephanite.
 PORT COLDWELL.—Nephelite.
 ST. IGNACE ISLAND.—Prehnite.
 SAND BAY MINE.—Bornite.
 SCHREIBER.—Pyrite, Pyrrhotite.
 SILVER ISLET.—Animikite, Annabergite, Argentite, Calcite, Domeskite, Erythrite, Galena, Huntite, Marcasite, Niccolite, Rhodocrosite, Silver, Tetrahedrite.
 SILVER MOUNTAIN.—Chert.
 SPAR ISLAND.—Apophyllite, Argentite, Azurite, Chalcocite, Copper, Erythrite, Fluorite, Silver.
 STRANGE.—Fluorite, Magnetite.
 STURGEON BAY.—Chalcopyrite.
 STURGEON LAKE.—Copper, Gold, Topaz.
 TERRACE BAY.—Fluorite.
 VARIOUS LOCALITIES.—Anthraxolite, Aragonite, Chrysocolla, Cuprite, Enstatite, Garnet, Hornstone, Malachite, Melanterite, Natrolite, Prehnite, Sphalerite, Wad.
 WAWA LAKE.—Chalcopyrite.
 WHITEFISH RIVER.—Jasper.

ONTARIO.

TIMISKAMING DISTRICT.

ABITIBI LAKE.—Serpentine.
 BRISTOL.—Arsenopyrite.
 BUCKE.—Cobaltite, Emplectite.
 COBALT AREA, COLEMAN.—Annabergite, Aragonite, Argenite, Arsenolite, Arsenopyrite, Asbolite, Bismuth (native), Bornite, Breithauptite, Chabazite, Chloanthite, Cobaltite, Dyscrasite, Erythrite, Heterogenite, Heubachite, Mercury, Millerite, Niccolite, Proustite, Pyrargyrite, Scorodite, Silver, Smaltite, Stephanite, Stromeyerite, Tetrahedrite, Ullmannite.
 DELORO.—Bismuthinite, Gold, Hesseite.
 EAST SHININGTREE.—Bismuthinite.
 ELK LAKE.—Bismuth (native), Bornite, Chloanthite, Timiskamite.
 GAUTHIER.—Gold.
 GOWGANDA.—Bismuth (native), Bornite, Chloanthite, Chrysotile, Iron.
 HAULTAIN.—Argentite.
 HEARST.—Gold.
 JAMES.—Argentite, Chalcopyrite, Covellite, Silver.
 LANGMUIR.—Argentite, Barite, Fluorite.
 LARDER LAKE, SWASTIKA.—Ankerite.
 LEBEL.—Chalcopyrite.
 McVITTIE.—Gold.
 MILNER.—Argentite.
 MONTREAL RIVER.—Quartz.
 MUNRO.—Gold.
 OGDEN.—Ankerite.
 OTTO.—Gold.
 PORCUPINE.—Gold, Scheelite.
 POWELL.—Ankerite.
 RABBIT LAKE.—Erythrite.

ONTARIO

TECK.—Gold.
 TISDALE.—Gold.
 TUDHOPE.—Chalcopryrite, Covellite.
 WEST DOME.—Ankerite.
 WHITNEY.—Gold.
 WILLETT.—Silver.

VICTORIA COUNTY.

DALTON.—Allanite, Magnetite.
 DIGBY.—Magnetite, Molybdenite.
 SOMERVILLE.—Barite, Galena.

WATERLOO COUNTY.

CONESTOGO.—Iron ochre.

ONTARIO.

WELLAND COUNTY.

CHIPPAWA.—Sulphatite.
 NIAGARA FALLS.—Calcite, Sphalerite.

WELLINGTON COUNTY.

VARIOUS LOCALITIES.—Travertine

WENTWORTH COUNTY.

VARIOUS LOCALITIES.—Travertine.

YORK COUNTY.

TORONTO.—Petalite.
 VARIOUS LOCALITIES.—Travertine.

Prince Edward Island.

HOG ISLAND.—Saponite.

ST. GEORGE HEAD.—Saponite.

Quebec.

ABITIBI TERRITORY.

GULL LAKE.—Anthophyllite.
 LAKE CHIBOUGAMOU.—Chalcopryrite, Chrysotile.
 PAINT MOUNTAIN.—Magnetite.

ARGENTEUIL COUNTY.

ARGENTEUIL.—Titanite, Tourmaline.
 AUGMENTATION OF GRENVILLE.—Phlogopite, Wernerite.
 CHATHAM.—Calcite.
 CHATHAM GORE.—Graphite, Orthoclase, Tourmaline.
 GRENVILLE.—Aphrodite, Chert, Diopside, Graphite, Grossularite, Hornblende (Edenite), Hornstone, Hyacinth, Magnesite, Orthoclase, Phlogopite, Pyralloilite, Pyrolusite, Retinalite, Serpentine, Titanite, Tourmaline, Vesuvianite, Wernerite, Wollastonite, Zircon.

HARRINGTON.—Vesuvianite, Wernerite.

LACHUTE.—Andesite, Tourmaline.
 WENTWORTH.—Chrysotile, Vesuvianite.

ARTHABASKA COUNTY.

CHESTER.—Bornite, Chalcocite, Chalcopryrite, Galena.
 STANFOLD.—Bog Iron ore.
 TINGWICK.—Chalcopryrite, Chrysotile.

ASHUANIPI TERRITORY.

ASHUANIPI.—Huronite.
 ASHUANIPI RIVER.—Magnetite.
 LAKE OSSOKUMANUAN.—Labradorite.

QUEBEC.

BAGOT COUNTY.

ACTON.—Anthroxolite, Bornite, Chalcocite, Chalcopyrite, Cuprite, Galena, Kaolinite.
 UPTON.—Azurite.

BEAUCE COUNTY.

AUBERT-GALLION.—Bog Manganese, Wad.
 BROUGHTON.—Chlorite, Chrysotile, Picrolite, Serpentine, Steatite, Talc.
 LAKE ST. FRANCIS.—Andalusite.
 RIVIERE DES PLANTES.—Platinum.
 RIVIÈRE-DU-LOUP.—Iridosmine, (Osmiridium), Platinum, Rutile.
 ST. FRANCIS.—Actinolite, Arsenopyrite, Ilmenite, Pyrrhotite.
 ST. JOSEPH.—Epidote.
 ST. MARIE.—Bog Manganese, Chalcocite, Chalcopyrite.
 TRING.—Aragonite, Bog Manganese.

BEAUHARNOIS COUNTY.

VALLEYFIELD.—Magnesite.

BELLECHASSE COUNTY.

MAILLOUX.—Galena.
 ST. VALIER.—Bog Iron ore.

BERTHIER COUNTY.

BRASSARD.—Beryl.
 MAISONNEUVE.—Beryl, Fergusonite, Samarskite.
 MILIEU RIVER.—Apatite, Chondrodite.
 ST. GABRIELLE DE BRANDON.—Magnetite.

QUEBEC.

BONAVENTURE COUNTY.

CARLETON.—Iron ochre.
 PORT DANIEL.—Barite.
 VARIOUS LOCALITIES.—Barite.

BROME COUNTY.

BOLTON.—Actinolite, Bog Manganese, Chalcopyrite, Chlorite, Chromite, Chrysotile, Fuchsite, Magnesite, Magnetite, Muscovite, Picrolite, Pyrrhotite, Serpentine, Steatite, Talc, Wad.
 BROME.—Bornite, Chalcocite, Chalcopyrite, Chloritoid, Hematite (Specularite), Ilmenite, Magnetite, Sodalite.
 BROME MOUNTAIN.—Hornblende, Nephelite, Perthite (Microperthite), Titanite.
 POTTON.—Actinolite, Bog Iron ore, Chlorite, Chrysotile, Galena, Limonite, Pyrrhotite, Steatite, Talc.
 SUTTON.—Bornite, Chalcocite, Chalcopyrite, Chlorite, Chloritoid, Cuprite, Fuchsite, Hematite (Specularite), Ilmenite, Magnesite, Malachite, Muscovite, Pyrrhotite, Rutile, Steatite, Talc.
 SUTTON MOUNTAIN.—Epidote.
 VARIOUS LOCALITIES.—Orthoclase.

CHAMBLY COUNTY.

MONTARVILLE.—Augite, Chrysotile.
 VARIOUS LOCALITIES.—Orthoclase.

CHAMPLAIN COUNTY.

BATISCAN RIVER.—Bog Iron ore.
 CAP DE LA MADELEINE.—Iron ochre.
 LAKE BOUCHARD (LAC A BAUDE).—Allanite, Biotite.

QUEBEC.

LAC TORTUE.—Bog Iron ore, Limonite.

MATTAWIN RIVER.—Magnetite.

CHARLEVOIX COUNTY.

BAY ST. PAUL.—Allanite, Fluorite, Hypersthene, Ilmenite, Rutile.
LAC DU PIED DES MONTS.—Almandite, Fergusonite, Muscovite, Samarskite.

MURRAY BAY.—Fluorite.

ST. IRÉNÉE.—Ilmenite.

ST. URBAIN.—Sapphirine.

SEIGNIORY DE LA COTE BEAUPRE.—Galena.

CHICOUTIMI COUNTY.

ALMA ISLAND.—Ilmenite.

BOURGET.—Ilmenite.

COMMISSIONER LAKE.—Hematite.

JONQUIERE.—Beryl, Bismuthinite, Muscovite.

KENOGAMI.—Ilmenite.

KENOGAMI LAKE.—Magnetite.

LAKE ST. JOHN.—Allanite, Hornblende, Ilmenite.

LATERRIERE.—Molybdenite.

PERIBONKA RIVER.—Labradorite.

COMPTON COUNTY.

CLINTON.—Chlorite.

COMPTON.—Chiasolite.

EAST ANGUS.—Gold.

EATON.—Chiasolite.

EMBERTON.—Chiasolite.

HAMPDEN.—Chiasolite.

MARSTON.—Chiasolite.

DRUMMOND COUNTY.

DRUMMONDVILLE.—Anthraxolite, Bog Iron ore, Limonite.

QUEBEC.

DURHAM.—Bornite, Chalcopyrite.

KINGSEY.—Quartz.

STUKELY.—Bornite.

UPTON.—Chalcopyrite, Galena.

WICKHAM.—Bornite, Chalcocite, Chalcopyrite.

FRONTENAC COUNTY.

MARLOW.—Scheelite, Sphalerite.

RISBOROUGH.—Sphalerite.

ST. SAMUEL DE GAYHURST.—Chiasolite.

SPALDING.—Hematite.

GASPE COUNTY.

CHALEUR BAY.—Agate.

CHATTE RIVER.—Anthraxolite.

MAGDALEN ISLANDS.—GYPSUM, Manganite, Pyrolusite.

MAGDALEN RIVER.—Pyrrhotite.

MALBAIE.—Ilmenite.

STE. ANNE DES MONTS.—Augite.

SERPENTINE MOUNTAIN.—Serpentine.

SHICKSHOCK MOUNTAINS.—Chromite, Chrysolite, Chrysotile, Hornblende, Serpentine.

YORK.—Asphaltum.

HOCHELAGA COUNTY.

MONTREAL.—Acmite, Augite, Calcite, Cancrinite, Chrysolite, Dawsonite, Epsomite, Nephelite, Sodalite.

MONTREAL RESERVOIR EXTENSION.—Analcite, Dawsonite, Natrolite.

OUTREMONT.—Natrolite.

ST. HELEN ISLAND.—Strontianite.

QUEBEC.

IBERVILLE COUNTY.

MOUNT JOHNSON.—Hornblende,
Oligoclase, Titanite.

JACQUES CARTIER COUNTY.

LACHINE.—Aragonite.
OUTREMONT.—Arsenic (native).
ST. ANNE-DE-BELLEVUE.—Chrysolite,
Melilite.

JOLIETTE COUNTY.

CARTIER.—Apatite.
DAILLEBOUT.—Seybertite, Spinel.
KILDARE.—Diopside, Magnetite.
STE. ELIZABETH.—Iron ochre.
SEIGNIORY DE LANORAIE.—Iron
ochre.
STE. ROSE (ROSALIE).—Iron ochre.
VARIOUS LOCALITIES.—Limonite.

KAMOURASKA COUNTY.

OUELLE RIVER.—Chalcedony, Jasper.
RIVIERE AUX VACHES.—Bog Iron
ore.
ST. PASCHEL.—Bog Iron ore.

L'ASSOMPTION COUNTY.

ST. LIN.—Ilmenite.

LEVIS COUNTY.

CHAUDIERE FALLS.—Kaolinite.
ETCHEMIN.—Copper (native).
POINT LEVIS.—Anthraxolite, Cop-
per (native), Glauconite.
ST. NICHOLAS.—Anthraxolite.

QUEBEC.

LOTBINIERE COUNTY.

LOTBINIERE.—Anthraxolite.
ST. APOLLINAIRE.—Chalcopyrite.
STE. CATHERINE.—Pyrite.
ST. FLAVIEN.—Anthraxolite, Azurite,
Malachite.
ST. GILES.—Bornite, Chalcopyrite.
ST. SYLVESTER.—Bornite.

MASKINONGE COUNTY.

HUNTERSTOWN.—Tourmaline, Wernerite.
RIVIERE DU MILIEU.—Iron ochre.
RIVIERE DU POSTE.—Chrysoberyl.
ST. JUSTIN.—Infusorial earth.

MEGANTIC COUNTY.

BLACK LAKE.—Diamond, Sclerite,
Vesuvianite.
COLERAIN.—Axinite, Chromite,
Chrysotile, Grossularite, Magnetite,
Serpentine.
HALIFAX.—Chalcocite, Chalcopyrite.
INVERNESS.—Bog Iron ore, Chalcocite,
Chalcopyrite, Orthoclase.
IRELAND.—Chalcopyrite, Chrysotile,
Limonite, Talc.
KINNEAR'S MILLS.—Magnetite.
LEEDS.—Bornite, Chalcocite, Chalcopyrite,
Chloritoid, Chromite, Chrysotile,
Magnetite, Molybdenite, Orthoclase.
NELSON.—Chalcopyrite.
THETFORD.—Chalcopyrite, Chromite,
Chrysotile, Serpentine.

MISSISQUOI COUNTY.

PINNACLE HARBOUR.—Chalcopyrite.
ST. ARMAND.—Chalcopyrite, Epidote,
Galena, Hematite, Sphalerite.

QUEBEC.

MISTASSINI TERRITORY.

LAKE KAWACHAGMAI.—Huronite.
LAKE MISTASSINI.—Anthraxolite,
Lazulite.

MONTCALM COUNTY.

CHELTSEY.—Ilmenite.
KILKENNY.—Limonite.
RAWDON.—Ilmenite, Labradorite,
Magnetite.
ST. JULIEN.—Ilmenite.

MONTMORENCY COUNTY.

CHATEAU RICHER.—Andesite, Hypersthene, Ilmenite, Labradorite.
ISLAND OF ORLEANS.—Anthraxolite, Glauconite.
LAVAL SETTLEMENT.—Infusorial earth.
STE. ANNE DE MONTMORENCY.—Iron ochre.
ST. JOACHIM.—Andesite.
SAULT A LA PUCE.—Chondrodite, Spinel.

NEW QUEBEC TERRITORY.

EASTMAIN RIVER.—Huronite.
HAMILTON RIVER.—Jasper.
KOGALUK BAY.—Chalcopyrite.
KOKSOAK RIVER.—Ankerite, Hematite, Magnetite.
LAKE MICHIKAMAU.—Labradorite.
LARCH RIVER.—Chert.
LITTLE WHALE RIVER.—Axinite, Galena, Siderite.
MANITOUNUK SOUND.—Axinite.
MENIHEK LAKE.—Anthraxolite, Hematite.
PAINT HILLS GROUP.—Danalite, Microcline, Spodumene.
PETITSIKAPAU LAKE.—Anthraxolite.
UNGAVA BAY.—Graphite.
UNGAVA RIVER.—Ankerite, Jasper.

QUEBEC.

VARIOUS LOCALITIES.—Chert.
WHITLEY BAY.—Almandite.

NICOLET COUNTY.

GENTILLY.—Bog Iron ore, Limonite.

OTTAWA COUNTY.

AMHERST.—Kaolinite.
AYLWIN.—Phlogopite, Pyrrhotite.
BIGELOW.—Chrysolite, Hornblende, Spinel.
BLAKE.—Phlogopite, Pyrite.
BOUCHETTE.—Quartz, Sphalerite, Spinel.
BOWMAN.—Apatite.
BUCKINGHAM.—Apatite, Babingtonite, Barite, Calcite, Cassiterite, Clinocllore, Cocolite, Enstatite, Galena, Graphite, Mountain Cork, Orthoclase, Peristerite, Pyroxene, Ripidolite, Sahlite, Titanite, Uvarovite, Zircon.

CAMERON.—Magnetite.
DENHOLM.—Chrysolite, Galena.
DERRY.—Datolite, Faujasite, Fluorite, Phlogopite.
EARDLEY.—Bog Iron ore, Molybdenite, Pyrrhotite.
EGAN.—Infusorial earth, Molybdenite, Quartz, Saponite.
HINCKS.—Hornblende.
HULL.—Actinolite, Amazonite, Apatite, Augite, Barite, Bog Iron ore, Chabazite, Chlorite, Chrysolite, Epidote, Hematite, Hornblende, Iron ochre, Jasper, Magnetite, Microcline, Molybdenite, Mountain Leather, Oligoclase, Orthoclase, Phlogopite, Pyroxene, Sahlite, Scapolite, Serpentine, Titanite, Tourmaline, Tremolite, Wilsonite, Zircon.
LAKE OF THREE MOUNTAINS.—Albite.

QUEBEC.

LEAD ISLAND.—Galena.
 LIEVRE RIVER.—Lepidolite.
 LOCHABER.—Graphite.
 LOW.—Wernerite, Wilsonite.
 MASHAM.—Molybdenite, Muscovite, Phlogopite.
 MULGRAVE.—Chrysotile, Magnetite.
 PORTLAND.—Apatite, Augite, Chabazite, Chrysotile, Coccolite, Grossularite, Phlogopite, Prehnite, Pyrite, Pyroxene, Pyrrhotite, Spinel, Wernerite, Wilsonite, Zircon.
 RIPON.—Wernerite.
 TEMPLETON.—Albite, Apatite, Augite, Barite, Bog Iron ore, Calcite, Chabazite, Chrysotile, Epidote, Fassaite, Fluorite, Hematite, Lepidolite, Magnetite, Michel-Levyite, Microcline, Orthoclase, Phlogopite, Prehnite, Pyrite, Pyroxene, Quartz, Ripidolite, Rutile, Sahlite, Sphalerite, Titanite, Uralite, Vesuvianite, Wernerite, Wilsonite, Zircon.
 VARIOUS LOCALITIES.—Hematite.
 VILLENEUVE.—Albite, Amazonite, Apatite, Fluorite, Microcline, Monazite, Muscovite, Pyrite, Quartz, Spessartite, Tourmaline, Uraninite, Uranophane.
 WAKEFIELD.—Almandite, Apatite, Calcite, Chabazite, Chrysotile, Epidote, Fluorite, Galena, Graphite, Grossularite, Lepidolite, Limonite, Microcline, Molybdenite, Mountain Leather, Muscovite, Phlogopite, Pyrite, Pyroxene, Pyrrhotite, Sahlite, Spinel, Stilbite, Titanite, Tourmaline, Uraninite, Uvarovite, Vesuvianite, Wernerite, Wilsonite, Wollastonite, Zircon.

QUEBEC.

WRIGHT.—Hornblende, Magnetite, Phlogopite, Scapolite, Serpentine.

PONTIAC COUNTY.

ALDFIELD.—Chondrodite, Molybdenite.
 ALLEYN.—Molybdenite, Pyrite, Tremolite.
 BRISTOL.—Hematite, Magnetite.
 CALUMET.—Apatite, Arsenopyrite, Biotite, Chalcopyrite, Diopside, Galena, Hornblende, Phlogopite, Pyroxene, Pyrrhotite, Retinalite, Serpentine, Silver (native), Sphalerite, Wernerite.
 CAWOOD.—Andradite, Chrysotile, Phlogopite.
 CLARENDON.—Pyrralolite, Pyrrhotite.
 DUHAMEL.—Picrolite.
 HUDDERSFIELD.—Fluorite.
 LESLIE.—Iron ochre.
 LITCHFIELD.—Apatite, Calcite, Diopside, Graphite, Grossularite, Loganite, Magnetite, Molybdenite, Muscovite, Titanite, Tourmaline, Tremolite, Vesuvianite, Wernerite.
 PORTAGE DU FORT.—Dolomite, Pyrralolite.

PORTNEUF COUNTY.

FOSSAMBAULT SEIGNIORY.—Magnetite,
 GOSFORD.—Infusorial earth.
 JACQUES CARTIER RIVER.—Hematite.
 MONTAUBAN.—Sphalerite.
 PORTNEUF.—Bog Iron ore, Limonite.
 ST. BASIL.—Bog Iron ore, Limonite.

QUEBEC.

QUEBEC COUNTY.

QUEBEC.—Anthraxolite, Epsomite.
 ST. LOUIS ROAD.—Bog Manganese.
 SILLERY.—Anthraxolite.
 STONEHAM.—Infusorial earth.

RICHMOND COUNTY.

BROMPTON.—Bornite, Chalcocite, Chromite, Chrysotile.
 CLEVELAND.—Bog Manganese, Bornite, Chalcocite, Chalcopyrite, Chlorite, Chromite, Chrysolite, Orthoclase.
 HALIFAX.—Bornite.
 MELBOURNE.—Bornite, Chalcocite, Chalcopyrite, Chlorite, Chromite, Diallage, Magnesite, Pyrite, Serpentine.
 RICHMOND.—Magnetite.
 SHIPTON.—Chrysotile, Picrolite, Serpentine.

ROUVILLE COUNTY.

BELOEIL.—Acmite, Cancrinite, Natrolite, Sodalite.
 ROUGEMONT.—Augite, Chrysolite.

ST. MAURICE COUNTY.

POINT DU LAC.—Iron ochre.
 RADNOR FORGES.—Limonite.
 ST. MARGUERITE.—Iron ochre.
 THREE RIVERS.—Bog Iron ore, Limonite.

SAGUENAY COUNTY.

BAY OF SEVEN ISLANDS.—Ilmenite.
 BERGONNES.—Microcline, Muscovite.

QUEBEC.

BERSIMIS RIVER.—Magnetite.
 LES ESCOUMANS.—Iron ochre.
 MANIKUAGAN BAY.—Molybdenite.
 MANIKUAGAN RIVER.—Almandite, Magnetite.
 MINGAN.—Orthoclase.
 MURRAY BAY.—Uraninite, Zircon.
 MUSHALAGAN RIVER.—Tremolite.
 OLOMANOSHIBO RIVER.—Sillimanite.
 OUTARDES RIVER.—Magnetite.
 ROMAINE RIVER.—Labradorite.
 ST. MARGUERITE RIVER.—Ilmenite.
 SAGUENAY RIVER.—Limonite.
 SHELDRAKE.—Labradorite.
 THUNDER RIVER.—Ilmenite.
 VARIOUS LOCALITIES.—Magnetite.

SHEFFORD COUNTY.

ELY.—Bornite, Chalcopyrite.
 ROXTON.—Bornite, Chalcocite, Chalcopyrite.
 SHEFFORD.—Chalcopyrite, Chlorite.
 SHEFFORD MOUNTAIN.—Hornblende, Perthite, Titanite.
 STUKELY.—Chalcocite, Chalcopyrite, Galena, Serpentine.
 VARIOUS LOCALITIES.—Orthoclase.

SHERBROOKE COUNTY.

ASCOT.—Arsenopyrite, Chalcopyrite, Chlorite, Galena, Gold, Magnetite, Pyrite, Tennantite.
 MOULTON HILL.—Arsenopyrite.
 ORFORD.—Augite, Bornite, Calcite, Chalcopyrite, Diallage, Diopside, Grossularite, Magnetite, Millerite, Picrolite, Serpentine, Uvarovite.
 SHERBROOKE.—Jasper, Silver.

QUEBEC.

STANSTEAD COUNTY.

- BARFORD.—Pyrrhotite.
 BARNSTONE.—Chialstolite.
 HATLEY.—Chalcopyrite, Chialstolite, Vivianite.
 STANSTEAD.—Bog Manganese, Chialstolite, Iron ochre, Wad.

TEMISCOUATA COUNTY.

- CACOUNA.—Bog Manganese, Limonite.
 GREEN ISLAND.—Limonite.
 VILLERAY.—Limonite.

TERREBONNE COUNTY.

- ABERCROMBIE.—Labradorite.
 MILLE ISLES.—Labradorite.
 MORIN.—Labradorite, Wollastonite.
 NEW GLASGOW.—Zoisite.
 NORTH RIVER.—Magnetite.
 STE. ADELE.—Enstatite.
 STE. ANNE DES PALINES.—Bog Iron ore.
 ST. JEROME.—Chondrodite, Ilmenite, Labradorite, Molybdenite, Pyrrhotite, Wollastonite, Zircon.
 WEXFORD.—Ilmenite, Magnetite.

TIMISKAMING COUNTY.

- BELANGER ISLAND.—Chalcedony.
 DUHAMEL.—Galena.
 FABRE.—Axinite, Chalcopyrite, Smaltite.
 GRAND LAKE ROUTE.—Cyanite.
 GUIGUES.—Galena.
 KEWAGAMA.—Molybdenite, Phenacite.
 KINOJEVIS.—Molybdenite.
 LES ERABLES RAPIDS.—Cyanite.

QUEBEC.

- LAKE KINAWISIK.—Gold.
 LAKE OPASATIKA.—Gold.
 LONG LAKE.—Beryl.
 PREISSAC.—Beryl, Bismuth (native), Bismuthinite.
 QUINZE RIVER.—Magnetite.
 SNAKE CREEK.—Cyanite.

TWO MOUNTAINS COUNTY.

- GRAND FRENIERE.—Kaolinite.

VAUDREUIL COUNTY.

- COTE ST. CHARLES.—Bog Iron ore, Iron ochre, Limonite, Vivianite.
 PETIT COTE.—Bog Iron ore, Limonite.
 ST. ANGELIQUE.—Limonite.

WOLFE COUNTY.

- DUDSWELL.—Dolomite.
 GARTHEY.—Chalcopyrite, Chromite, Chrysotile, Pyrite, Serpentine, Steatite.
 HAM.—Antimony (native), Chalcopyrite, Diallage, Ilmenite.
 SOUTH HAM.—Chalcopyrite, Chromite, Kermesite, Magnetite, Picrolite, Senarmontite, Serpentine, Stibnite, Valentinite.
 STRATFORD.—Pyrite.
 WEEDON.—Chalcopyrite, Gold, Pyrite.
 WOLFESTOWN.—Chrysotile, Magnetite, Steatite.

YAMASKA COUNTY.

- RIVER AUX VACHES.—Limonite.
 ST. FRANCIS RIVER.—Limonite.
 YAMASKA MOUNTAIN.—Anorthite, Hornblende, Nephelite, Titanite.

Saskatchewan.

ATHABASKA RIVER.—Petroleum.
 BLACK BAY.—Hematite.
 ESTEVAN.—Coal.
 GREEN LAKE.—Ironstone.
 LAKE ATHABASKA.—Limonite.
 PEACE RIVER.—Petroleum.

PORCUPINE CREEK.—Amber.
 SOURIS RIVER.—Amber.
 STONE RIVER.—Garnet.
 VARIOUS LOCALITIES.—Coal, Selenite.
 WOOD MOUNTAIN.—Ironstone.

Yukon.

ANACONDA CLAIM.—Stibnite.
 ARCTIC CHIEF MINE.—Tetrahedrite.
 BIG SALMON RIVER.—Magnetite.
 BLACK RIVER.—Magnetite.
 BONNET PLUME RIVER.—Jasper.
 COPPER KING CLAIM.—Stibnite.
 DISCOVERY CLAIM.—Bismuth (native).
 DUBLIN GULCH.—Scheelite.
 ELDORADO CREEK.—Galena.
 FRANCIS RIVER.—Amber, Gold.
 HAGGART CREEK.—Scheelite, Scordite.
 HIGHT CREEK.—Bismuth (native), Scheelite.
 INDIAN RIVER.—Magnesite, Newberyite, Struvite.
 KLONDIKE RIVER.—Actinolite, Cassiterite, Fuchsite, Sericite, Osmiridium, Serpentine.
 LEWES RIVER.—Fuchsite, Gold, Magnesite, Nephrite.
 MCQUESTEN RIVER.—Scheelite, Struvite.
 MAYO RIVER.—Scheelite.

MINTO CREEK.—Scheelite.
 OPHIR CREEK.—Galena.
 PATTERSON MOUNTAIN.—Jasper.
 PEEL RIVER.—Epsomite, Gold, Hematite, Magnetite, Petroleum.
 PELLY RIVER.—Almandite, Awaruite, Garnet, Gold, Magnetite, Serpentine.
 PORCUPINE RIVER.—Calcite.
 PUEBLO CLAIM.—Chrysocolla, Hematite.
 RABBIT FOOT CLAIM.—Allophane, Erythrite.
 SNAKE RIVER.—Jasper.
 SPOTTED FAWN CREEK.—Leucite.
 STEWART RIVER.—Arsenopyrite, Gold, Scheelite.
 TAGISH LAKE.—Symplectite, Yukonite.
 UPPER WHITE RIVER.—Realgar.
 VARIOUS LOCALITIES.—Bornite, Coal, Chalcopyrite, Epidote, Garnet, Gold, Hessite, Hessonite, Magnetite, Wollastonite.
 YUKON RIVER.—Gold, Serpentine.

LIST OF RECENT REPORTS OF GEOLOGICAL SURVEY

Since 1910, reports issued by the Geological Survey have been called memoirs and have been numbered Memoir 1, Memoir 2, etc. Owing to delays incidental to the publishing of reports and their accompanying maps, not all of the reports have been called memoirs, and the memoirs have not been issued in the order of their assigned numbers and, therefore, the following list has been prepared to prevent any misconceptions arising on this account. The titles of all other important publications of the Geological Survey are incorporated in this list.

Memoirs and Reports Published During 1910.

REPORTS.

Report on a geological reconnaissance of the region traversed by the National Transcontinental railway between Lake Nipigon and Clay lake, Ont.—by W. H. Collins. No. 1059.

Report on the geological position and characteristics of the oil-shale deposits of Canada—by R. W. Ells. No. 1107.

A reconnaissance across the Mackenzie mountains on the Pelly, Ross, and Gravel rivers, Yukon and North West Territories—by Joseph Keele. No. 1097.

Summary Report for the calendar year 1909. No. 1120.

MEMOIRS—GEOLOGICAL SERIES.

MEMOIR 1. *No. 1, Geological Series.* Geology of the Nipigon basin, Ontario—by Alfred W. G. Wilson.

MEMOIR 2. *No. 2, Geological Series.* Geology and ore deposits of Hedley mining district, British Columbia—by Charles Camshell.

MEMOIR 3. *No. 3, Geological Series.* Palæoniscid fishes from the Albert shales of New Brunswick—by Lawrence M. Lambe.

MEMOIR 5. *No. 4, Geological Series.* Preliminary memoir on the Lewes and Nordenskiöld Rivers coal district, Yukon Territory—by D. D. Cairnes.

MEMOIR 6. *No. 5, Geological Series.* Geology of the Haliburton and Bancroft areas, Province of Ontario—by Frank D. Adams and Alfred E. Barlow.

MEMOIR 7. *No. 6, Geological Series.* Geology of St. Bruno mountain, province of Quebec—by John A. Dresser.

MEMOIRS—TOPOGRAPHICAL SERIES.

MEMOIR 11. *No. 1, Topographical Series.* Triangulation and spirit levelling of Vancouver island, B.C., 1909—by R. H. Chapman.

Memoirs and Reports Published During 1911.

REPORTS.

Report on a traverse through the southern part of the North West Territories, from Lac Seul to Cat lake, in 1902—by Alfred W. G. Wilson. No. 1006.

Report on a part of the North West Territories drained by the Winisk and Upper Attawapiskat rivers—by W. McInnes. No. 1080.

Report on the geology of an area adjoining the east side of Lake Timiskaming—by Morley E. Wilson. No. 1064.

Summary Report for the calendar year 1910. No. 1170.

MEMOIRS—GEOLOGICAL SERIES.

MEMOIR 4. *No. 7, Geological Series.* Geological reconnaissance along the line of the National Transcontinental railway in western Quebec—by W. J. Wilson.

- MEMOIR 8. *No. 8, Geological Series.* The Edmonton coal field, Alberta—by D. B. Dowling.
- MEMOIR 9. *No. 9, Geological Series.* Bighorn coal basin, Alberta—by G. S. Malloch.
- MEMOIR 10. *No. 10, Geological Series.* An instrumental survey of the shore-lines of the extinct lakes Algonquin and Nipissing in southwestern Ontario—by J. W. Goldthwait.
- MEMOIR 12. *No. 11, Geological Series.* Insects from the Tertiary lake deposits of the southern interior of British Columbia, collected by Mr. Lawrence M. Lambe, in 1906—by Anton Handlirsch.
- MEMOIR 15. *No. 12, Geological Series.* On a Trenton Echinoderm fauna at Kirkfield, Ontario—by Frank Springer.
- MEMOIR 16. *No. 13, Geological Series.* The clay and shale deposits of Nova Scotia and portions of New Brunswick—by Heinrich Ries assisted by Joseph Keele.

MEMOIRS—BIOLOGICAL SERIES.

- MEMOIR 14. *No. 1, Biological Series.* New species of shells collected by Mr. John Macoun at Barkley sound, Vancouver island, British Columbia—by William H. Dall and Paul Bartsch.

Memoirs and Reports Published During 1912.

REPORTS.

Summary Report for the calendar year 1911. No. 1218.

MEMOIRS—GEOLOGICAL SERIES.

- MEMOIR 13. *No. 14, Geological Series.* Southern Vancouver island—by Charles H. Clapp.
- MEMOIR 21. *No. 15, Geological Series.* The geology and ore deposits of Phoenix, Boundary district, British Columbia—by O. E. LeRoy.
- MEMOIR 24. *No. 16, Geological Series.* Preliminary report on the clay and shale deposits of the western provinces—by Heinrich Ries and Joseph Keele.
- MEMOIR 27. *No. 17, Geological Series.* Report of the Commission appointed to investigate Turtle mountain, Frank, Alberta, 1911.
- MEMOIR 28. *No. 18, Geological Series.* The Geology of Steeprock lake, Ontario—by Andrew C. Lawson. Notes on fossils from limestone of Steeprock lake, Ontario—by Charles D. Walcott.

Memoirs and Reports Published During 1913.

REPORTS, ETC.

Museum Bulletin No. 1: contains articles Nos. 1 to 12 of the Geological Series of Museum Bulletins, articles Nos. 1 to 3 of the Biological Series of Museum Bulletins, and article No. 1 of the Anthropological Series of Museum Bulletins.

Guide Book No. 1. Excursions in eastern Quebec and the Maritime Provinces, parts 1 and 2.

Guide Book No. 2. Excursions in the Eastern Townships of Quebec and the eastern part of Ontario.

Guide Book No. 3. Excursions in the neighbourhood of Montreal and Ottawa.

Guide Book No. 4. Excursions in southwestern Ontario.

Guide Book No. 5. Excursions in the western peninsula of Ontario and Manitoulin island.

Guide Book No. 8. Toronto to Victoria and return *via* Canadian Pacific and Canadian Northern railways: parts 1, 2, and 3.

Guide Book No. 9. Toronto to Victoria and return *via* Canadian Pacific, Grand Trunk Pacific, and National Transcontinental railways.

Guide Book No. 10. Excursions in Northern British Columbia and Yukon Territory and along the north Pacific coast.

MEMOIRS—GEOLOGICAL SERIES.

MEMOIR 17. *No. 28, Geological Series.* Geology and economic resources of the Larder Lake district, Ont., and adjoining portions of Pontiac county, Que.—by Morley E. Wilson.

MEMOIR 18. *No. 19, Geological Series.* Bathurst district, New Brunswick—by G. A. Young.

MEMOIR 26. *No. 34, Geological Series.* Geology and mineral deposits of the Tulameen district, B.C.—by C. Camsell.

MEMOIR 29. *No. 32, Geological Series.* Oil and gas prospects of the north-west provinces of Canada—by W. Malcolm.

MEMOIR 31. *No. 20, Geological Series.* Wheaton district, Yukon Territory—by D. D. Cairnes.

MEMOIR 33. *No. 30, Geological Series.* The geology of Gowganda Mining Division—by W. H. Collins.

MEMOIR 35. *No. 29, Geological Series.* Reconnaissance along the National Transcontinental railway in southern Quebec—by John A. Dresser.

MEMOIR 37. *No. 22, Geological Series.* Portions of Atlin district, B.C.—by D. D. Cairnes.

MEMOIR 38. *No. 31, Geological Series.* Geology of the North American Cordillera at the forty-ninth parallel, Parts I and II—by Reginald Aldworth Daly.

Memoirs and Reports Published During 1914.

REPORTS, ETC.

Summary Report for the calendar year 1912. No. 1305.

Museum Bulletins Nos. 2, 3, 4, 5, 7, and 8 contain articles Nos. 13 to 22 of the Geological Series of Museum Bulletins, article No. 2 of the Anthropological Series, and article No. 4 of the Biological Series of Museum Bulletins.

Prospector's Handbook No. 1: Notes on radium-bearing minerals—by Wyatt Malcolm.

MUSEUM GUIDE BOOKS.

The archæological collection from the southern interior of British Columbia—by Harlan I. Smith. No. 1290.

MEMOIRS—GEOLOGICAL SERIES.

MEMOIR 23. *No. 23, Geological Series.* Geology of the Coast and islands between the Strait of Georgia and Queen Charlotte sound, B.C.—by J. Austen Bancroft.

- MEMOIR 25. *No. 21, Geological Series.* Report on the clay and shale deposits of the western provinces (Part II)—by Heinrich Ries and Joseph Keele.
- MEMOIR 30. *No. 40, Geological Series.* The basins of Nelson and Churchill rivers—by William McInnes.
- MEMOIR 20. *No. 41, Geological Series.* Gold fields of Nova Scotia—by W. Malcolm.
- MEMOIR 36. *No. 33, Geological Series.* Geology of the Victoria and Saanich map-areas, Vancouver island, B.C.—by C. H. Clapp.
- MEMOIR 52. *No. 42, Geological Series.* Geological notes to accompany map of Sheep River gas and oil field, Alberta—by D. B. Dowling.
- MEMOIR 43. *No. 36, Geological Series.* St. Hilaire (Beloeil) and Rougemont mountains, Quebec—by J. J. O'Neill.
- MEMOIR 44. *No. 37, Geological Series.* Clay and shale deposits of New Brunswick—by J. Keele.
- MEMOIR 22. *No. 27, Geological Series.* Preliminary report on the serpentines and associated rocks, in southern Quebec—by J. A. Dresser.
- MEMOIR 32. *No. 25, Geological Series.* Portions of Portland Canal and Skeena Mining divisions, Skeena district, B.C.—by R. G. McConnell.
- MEMOIR 47. *No. 39, Geological Series.* Clay and shale deposits of the western provinces, Part III—by Heinrich Ries.
- MEMOIR 40. *No. 24, Geological Series.* The Archæan geology of Rainy lake—by Andrew C. Lawson.
- MEMOIR 19. *No. 26, Geological Series.* Geology of Mother Lode and Sunset mines, Boundary district, B.C.—by O. E. LeRoy.
- MEMOIR 39. *No. 35, Geological Series.* Kewagama Lake map-area, Quebec—by M. E. Wilson.
- MEMOIR 51. *No. 43, Geological Series.* Geology of the Nanaimo map-area—by C. H. Clapp.
- MEMOIR 61. *No. 45, Geological Series.* Moose Mountain district, southern Alberta (second edition)—by D. D. Cairnes.
- MEMOIR 41. *No. 38, Geological Series.* The "Fern Ledges" Carboniferous flora of St. John, New Brunswick—by Marie C. Stopes.
- MEMOIR 53. *No. 44, Geological Series.* Coal fields of Manitoba, Saskatchewan, Alberta, and eastern British Columbia (revised edition)—by D. B. Dowling.
- MEMOIR 55. *No. 46, Geological Series.* Geology of Field map-area, Alberta and British Columbia—by John A. Allan.

MEMOIRS—ANTHROPOLOGICAL SERIES.

- MEMOIR 48. *No. 2, Anthropological Series.* Some myths and tales of the Ojibwa of southeastern Ontario—collected by Paul Radin.
- MEMOIR 45. *No. 3, Anthropological Series.* The inviting-in feast of the Alaska Eskimo—by E. W. Hawkes.
- MEMOIR 49. *No. 4, Anthropological Series.* Malecite tales—by W. H. Mechling.
- MEMOIR 42. *No. 1, Anthropological Series.* The double curve motive in northeastern Algonkian art—by Frank G. Speck.

MEMOIRS—BIOLOGICAL SERIES.

- MEMOIR 54. *No. 2, Biological Series.* Annotated list of flowering plants and ferns of Point Pelee, Ont., and neighbouring districts—by C. K. Dodge.

Memoirs and Reports Published During 1915.

REPORTS, ETC.

- Summary Report for the calendar year 1913, No. 1359.
 Report from Anthropological Division. Separate from Summary Report 1913.
 Report from Topographical Division. Separate from Summary Report 1913.
 Museum Bulletin No. 6. *No. 3, Anthropological Series.* Pre-historic and present commerce among the Arctic Coast Eskimo—N. Stefansson.
 Museum Bulletin No. 9. *No. 4, Anthropological Series.* The glenoid fossa in the skull of the Eskimo—F. H. S. Knowles.
 Museum Bulletin No. 13. *No. 5, Biological Series.* The double crested cormorant (*Phalacrocorax auritus*). Its relation to the salmon industries on the Gulf of St. Lawrence—P. A. Taverner.

MEMOIRS—GEOLOGICAL SERIES.

- MEMOIR 58. *No. 48, Geological Series.* Texada island—by R. G. McConnell.
 MEMOIR 60. *No. 47, Geological Series.* Arisaig-Antigonish district—by M. Y. Williams.
 MEMOIR 67. *No. 49, Geological Series.* The Yukon-Alaska Boundary between Porcupine and Yukon rivers—by D. D. Cairnes.
 MEMOIR 59. *No. 55, Geological Series.* Coal fields and coal resources of Canada—by D. B. Dowling.
 MEMOIR 50. *No. 51, Geological Series.* Upper White River District, Yukon—by D. D. Cairnes.
 MEMOIR 66. *No. 54, Geological Series.* Clay and shale deposits of the western provinces, Part V—by J. Keele.
 MEMOIR 65. *No. 53, Geological Series.* Clay and shale deposits of the western provinces, Part IV—by H. Ries.
 MEMOIR 56. *No. 56, Geological Series.* Geology of Franklin mining camp, B. C.—by Chas. W. Drysdale.
 MEMOIR 64. *No. 52, Geological Series.* Preliminary report on the clay and shale deposits of the Province of Quebec—by J. Keele.
 MEMOIR 57. *No. 50, Geological Series.* Corundum, its occurrence, distribution, exploitation, and uses—by A. E. Barlow.

Memoirs and Reports in Press, May 8, 1915.

- MEMOIR 62. *No. 5, Anthropological Series.* Abnormal types of speech in Nootka—by E. Sapir.
 MEMOIR 63. *No. 6, Anthropological Series.* Noun reduplication in Comox, a Salish language of Vancouver island—by E. Sapir.
 MEMOIR 46. *No. 7, Anthropological Series.* Classification of Iroquoian radicals with subjective pronominal prefixes—by C. M. Barbeau.
 MEMOIR 70. *No. 8, Anthropological Series.* Family hunting territories and social life of the various Algonkian bands of the Ottawa valley—by F. G. Speck.
 MEMOIR 71. *No. 9, Anthropological Series.* Myths and folk-lore of the Timiskaming Algonquin and Timagami Ojibwa—by F. G. Speck.
 MEMOIR 69. *No. 57, Geological Series.* Coal fields of British Columbia—by D. B. Dowling.

- MEMOIR 34. *No. 63, Geological Series.* The Devonian of southwestern Ontario—by C. R. Stauffer.
- MEMOIR 73. *No. 58, Geological Series.* The Pleistocene and Recent deposits of the island of Montreal—by J. Stansfield.
- MEMOIR 68. *No. 59, Geological Series.* A geological reconnaissance between Golden and Kamloops, B.C., along the line of the Canadian Pacific railway—by R. A. Daly.
- MEMOIR 72. *No. 60, Geological Series.* The artesian wells of Montreal—by C. L. Cumming.
- MEMOIR 74. *No. 61, Geological Series.* A list of Canadian mineral occurrences—by R. A. A. Johnston.
- MEMOIR 75. *No. 10, Anthropological Series.* Decorative art of Indian tribes of Connecticut—Frank G. Speck.
- MEMOIR 76. *No. 62, Geological Series.* Geology of the Cranbrook map-area—by S. J. Schofield.

Summary Report for the calendar year 1914.

Museum Bulletin No. 10. *No. 5, Anthropological Series.* The social organization of the Winnebago Indians—by P. Radin.

Museum Bulletin No. 11. *No. 23, Geological Series.* Physiography of the Beavertell map-area and the southern part of the Interior plateaus, B.C.—by Leopold Reinecke.

Museum Bulletin No. 12. *No. 24, Geological Series.* On *Eoceratops canadensis*, gen. nov., with remarks on other genera of Cretaceous horned dinosaurs—by L. M. Lambe.

Museum Bulletin No. 14. *No. 25, Geological Series.* The occurrence of Glacial drift on the Magdalen islands—by J. W. Goldthwait.