F MINES
, LL.D., DEPUTY MINISTER

MINES BRANCH
EUGENE HAANEL, PH.D., DIRECTOR.

MAGNETITE OCCURRENCES NEAR CALABOGIE RENFREW COUNTY, ONTARIO.

BY

E. Lindeman

OTTAWA
GOVERNMENT PRINTING BUREAU
1914

No. 254

CANADA
DEPARTMENT OF MINES
HON. LOUIS CODERRE, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER

MINES BRANCH
EUGENE HAANEL, PH.D., DIRECTOR.

MAGNETITE OCCURRENCES NEAR CALABOGIE RENFREW COUNTY, ONTARIO.

BY

E. Lindeman

OTTAWA
GOVERNMENT PRINTING BUREAU
1914

46492—1

No. 254

LETTER OF TRANSMITTAL.

To Dr. Eugene Haanel,
Director of Mines Branch,
Department of Mines,
Ottawa.

Sir,—I beg to submit, herewith, the following report on the occurrences of magnetite near Calabogie, in Renfrew county, Ontario.

I have the honour to be,

Sir,

Your obedient servant,

E. Lindeman.

CONTENTS.

ILLUSTRATIONS.

Maps.

MAGNETITE OCCURRENCES NEAR CALABOGIE

BAGOT TOWNSHIP, RENFREW COUNTY, ONTARIO.

BY

E. Lindeman.

INTRODUCTORY.

In the summer of 1904, a magnetometric survey was made by Mr. E. Nystrom—Mines Branch—of the east half of lot 16, concession IX, in the township of Bagot, Renfrew county, Ont. This property is locally known as the Caldwell, or Coe mine.

During the summer of 1911, this survey was extended by the writer—assisted by Mr. N. D. Bothwell—to the west half of lot 16, concession IX, and to lot 16, concession VIII, locally known as the Campbell mine. In addition to this, a topographical map of the above-mentioned properties was made, on which the results of the magnetometric surveys have been incorporated.

During the same summer, topographical and magnetometric surveys were also made of the Bluff Point mine, lot 16, concessions X and XI, Culhane mine, lot 21, concession VII, Black Bay mine, lot 22, concession XI.

As all the ore deposits are to a great extent covered by drift, the magnetometric survey has been of great help in ascertaining their probable extent. The general procedure of the survey was as follows: a base line was first laid out, approximately following the strike of the ore deposit, and carefully chained; and at right angles to this line, at intervals of every 50 feet, cross lines were run to the limit of the disturbed magnetic field. These lines were staked every 50 feet. In this manner, the whole area to be investigated was laid out in 50 ft. squares. Magnetic observations of the vertical intensity were taken with the Thalen-Tiberg magnetometer. The distance between the points of observation varied from 25 to 50 feet, depending upon the local complication of the magnetic field. As two instruments with different constants were used in taking the magnetic observations it was necessary, in order

to plot the readings, on the same map, to reduce them to values corresponding to an instrument with a constant of $1._0H$. The reduction was done according to the following formula:—

$tgV = K_n . tgV_n$.

V = the angle which corresponds to the angle V_n for an instrument with a constant $1._0H$.

V_n = the observed angle of the magnetometer with a constant K_nH.

The constants of the two instruments used were $0._9H$ and $1._2H$.

The isodynamic lines on the accompanying magnetometric maps have been obtained by joining points of equal value of V, and have been drawn for V = 0°, 20°, 40°, 50°, 60°, –20°, –40°, –50°, and –60°. The blue colours indicate the north pole attraction, while the yellow colours represent south pole attraction.

The topographical survey was made by means of plane-table and stadia, and by transit and stadia where the country was thickly wooded.

LOCATION OF THE CALABOGIE DISTRICT.

The iron ore occurrences covered by the following report are situated in the township of Bagot, Renfrew county, and lie within a radius of 3 miles from Calabogie station, on the Kingston and Pembroke railway. The distance by rail from Calabogie to Kingston is 89 miles, and to Renfrew 14 miles.

HISTORY.

For information on the history of the various workings the writer is indebted to Mr. J. G. Campbell of Perth.

Mining operations in the district were commenced in 1881, by an American syndicate, which did some development work on the property now known as the Bluff Point iron mine. During the following winter the work was continued by the Calabogie Iron Company, and the ore was hauled by teams over Calabogie lake to Barryvale, which was, at that time, the terminus of the Kingston and Pembroke railway. In 1883, No. 4—or the Campbell mine—on lot 16, concession VIII, was opened up; but mining operations closed in the autumn of the same year. Work was resumed on the Bluff Point property

in 1886, and the property leased to the American Mining Company, which continued operations until the following year when the mine was again closed down. In 1894 a few shipments of ore were made from the Bluff Point property to Radnor, Quebec, by the Canada Iron Furnace Company. Since then, mining operations on a small scale were carried on, from time to time, until 1901. The total amount of ore shipped from the Bluff Point and Campbell mines is reported to be about 9,000 tons.

The Culhane and Black Bay mines were also opened up in the eighties. No shipment of ore was ever made, however, from the Culhane mine; but about 10,000 tons are reported to have been shipped from the Black Bay mine.

The Coe or Caldwell mine was opened up in 1883; but work was soon discontinued. Subsequently, the property was leased by the Hamilton Steel and Iron Company, and a number of openings made. The amount of ore shipped from the property is reported by Mr. T. B. Caldwell, of Lanark, the present owner, to be about 10,000 tons.

From the Wilson or Martel mine, about 4,000 tons of ore are said to have been shipped.

GEOLOGY.

As seen from the geological map (see Fig. 1), the area is chiefly occupied by amphibolites and schists, associated with bands of crystalline limestone. These rocks have been collectively named by the Geological Survey, Canada, as the 'Hasting Series.' They are the oldest rocks known in the district, and are invaded by intrusions of granites and pegmatites.

Under the name amphibolite are included dark coloured basic metamorphic rocks, which have as their chief constituents, hornblende, pyroxene or biotite, and plagioclase feldspar; while quartz and magnetite are frequently present as accessory constituents. Some of these amphibolites are rather coarse, and nearly massive, resembling diorites; while others are fine and uniform in grain, with a distinct foliation, grading into typical mica or hornblende schists. Though it has not been possible to determine with certainty the origin of these metamorphic rocks, it is considered highly probable that they, in part at least, represent highly altered basic intrusions which invaded the older crystalline limestone, and were subsequently folded with it. They are now found conformable to the lime-

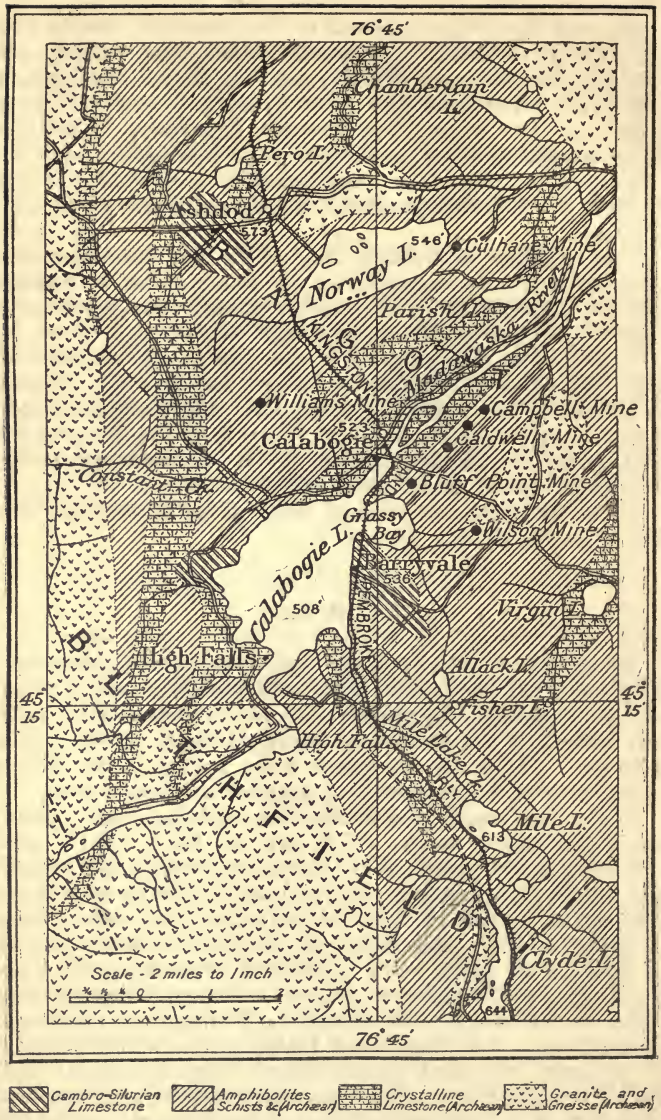


Fig. 1—Geological Map of Calabogie District, Renfrew County, Ontario, reproduced from sheet No. 119, Geological Survey of Canada, 1904.

stone bands, the general strike throughout the district being northeast-southwest, with the dip generally to the southeast, sometimes quite steep and other times comparatively flat. The limestones are crystalline in structure, and are frequently highly dolomitic. They very often carry inclusions of the amphibolites, which help to mark their banding, especially where brought into relief by weathering. Quartzose streaks, bands, and nodules also form common inclusions in the limestone. As may be seen from the map (Fig. 1), the distribution of the limestone is somewhat irregular. It can sometimes be traced in broad bands for several miles; though even then it is associated with amphibolite and dykes of granite. Often, however, this limestone occurs as narrow and irregular bands which are intimately associated with the amphibolites but are too small in extent to be mapped separately on a map of this scale.

The granites of the area are generally reddish, or grey in colour, and are composed of feldspar and quartz, the former preponderating. Some biotite is also invariably present, but this is very subordinate in amount. Throughout the granites, inclusions of amphibolites, in varying amount, are often distributed.

In addition to the Archæan rocks there are within the district a few small areas of Cambro-Silurian limestone, probably representing the remains of a widespread series of these rocks, the greater portion of which has been removed by denudation. They occur near Calabogie lake, and west of Norway lake, where they overlie the older rocks in a nearly horizontal attitude.

ORE DEPOSITS.

The magnetite deposits of the district occur in bands and irregular lenses, associated with the amphibolites, and generally along or near the contacts of these rocks and crystalline limestone. In places where the limestone is not in actual contact with the ore, it is always found outcropping in the immediate vicinity of the same; and there is good reason to believe that the ore deposits owe their origin to the contact action of the plutonic amphibolites on the limestone.

The quality of the ore varies considerably, not only in the various mines, but also within the same ore body, owing to the amount of gangue-rock present. In some cases, ore consisting of almost pure magnetite is observed; in others the

magnetite is found closely associated with hornblendic, micaceous, and chloritic material; while often, a gradual or sudden change of rich ore into such a gangue-rock takes place.

The following table gives a number of analyses representing average samples taken, by the writer, from various pits. The analyses have been made by Mr. H. Leverin of the Mines Branch.

Analyses of Iron Ores.

Locality.	Iron.	Silica.	Insol.	Alumina.	Lime.	Magnesia.	Phosphorus.	Sulphur	Titanium.
	Fe.	SiO_2		Al_2O_3	CaO	MgO	P.	S.	TiO_2
'Tommy R. pit,' lot 16, con. IX, Bagot	38·30	.....	16·10	.....	.....	.....	0·233	0·020	.....
'T. B. pit,' lot 16, con. IX, Bagot	50·59	10·26	.....	4·82	3·33	5·86	0·289	0·012	0·25
'Holden Pit,' lot 16, con. IX, Bagot	60·91	4·60	.....	3·60	1·77	2·83	0·578	0·100	0·10
Campbell mine, lot 16, con. VIII, Bagot	47·86	10·60	.....	4·27	4·45	6·90	0·330	0·080	0·25
South half of lot 16, con. IX, Bagot	47·81	15·00	.....	3·85	4·86	7·05	0·390	0·015	0·25
Martel mine, lot 13, con. X, Bagot	58·71	7·10	.....	1·55	2·05	5·70	0·056	0·230	Trace.
Bluff Point mine*	59·50	9·10	.....	4·80	0·01	.....	0·170	0·160	.....
Culhane mine	47·70	.....	9·3	.....	4·20	0·66	0·179	1·65	.....
Black Bay mine	51·60	.....	15·85	.....	.....	.....	.....	.....	.....

* Average sample by Canada Iron Furance Co.

It will be seen from the above table that the best quality of the ore averages about 61 per cent of iron, while in other places it does not average more than 47 per cent. The sulphur content varies from 0·012 to 1·65 per cent, with the phosphorus ranging from 0·170 to 0·578 per cent, indicating that the ore is of non-Bessemer grade.

Judging from the magnetometric surveys, the ore deposits of the district are of an extremely irregular character. This has already, in many cases, been proved by actual mining work. In width, the larger deposits vary from 1 to 7 feet, with a maximum length of about 150 feet, while others are much smaller. It seems, therefore, that the district is not likely to become an iron ore producer of any importance, though a limited amount of ore might yet be taken from some of the mines.

DESCRIPTION OF MAGNETITE OCCURRENCES.

Bluff Point Mine.—The Bluff Point mine is situated on ot 16, concessions X and XI, in the township of Bagot, on the

northeast side of Calabogie lake, and about one mile south of Calabogie station. The old workings are connected with the main line by a spur line, about three-fourths of a mile in length.

The magnetite occurs in irregular lenses, along the contact of crystalline limestone and a dark grey amphibolite. The general strike is northeast-southwest, with a dip ranging from 30 to 45 degrees towards the southeast.

There are five workings on the property, which are well described by Mr. E. D. Ingall of the Geological Survey, Canada, in his report on the Iron Ore Deposits along the Kingston and Pembroke Railway. No. 1 (see map No. 251) is an irregular open-cut, at the south end of which a shaft has been sunk to a depth of 300 feet. The face of the open-cut is 10 to 15 feet high, exposing in one place an ore body about 4 feet wide. The hanging wall is made up of amphibolite, while the foot-wall consists of chloritic material and limestone.

No. 2 is a small open-cut, with an inclined shaft at the bottom. The shaft dips at an angle of 40 degrees to the southeast, and is reported to have a depth of 95 feet. It is stated that a drift from the bottom of the shaft was driven northeast about 70 feet, and some ore stoped out.

No. 3 is an inclined shaft filled with water, and partly caved in. No. 3a is an open-cut, now caved in. No. 4 is a test pit, 22 feet deep, in the bottom of which, it is said, about 5 feet of magnetite was obtained.

No. 5 is an open-cut, exposing the contact of limestone and amphibolite. No magnetite is visible.

The ore, judging from what is exposed in pit No. 1, is a compact, medium-grained magnetite, associated in places with a considerable percentage of chloritic material. The following analysis represents a shipment of ore made by the Canada Iron Furnace Co.:—

Fe	59·50	per cent.
SiO_2	9·10	"
Al_2O_3	4·80	"
CaO	0·01	"
P	0·170	"
S	0·160	"

It may be seen from the accompanying magnetometric map (No. 251), that the strong magnetic attraction is confined to a few small areas round pits Nos. 1, 2, 4, and 5, indicating a

very pockety distribution of the ore, and giving little encouragement for finding any ore body of importance.

Caldwell or Coe Mine.—The Caldwell or Coe mine is situated on the east half of lot 16, concession IX, of the township of Bagot, about one mile east of Calabogie station.

Work was begun on this property in 1883, and the opening now known as the Jeanette pit was commenced by Mr. Coe of Madoc, who operated the property under lease. Subsequently, a number of openings were made by the Hamilton Steel and Iron Company, who acquired the lease and carried on mining operations for a short time. The total amount of ore shipped from the property is reported by Mr. T. B. Caldwell, the present owner, to be 10,000 tons.

The ore consists of a medium-grained magnetite, which occurs in small irregular masses or lenses, associated with a dark-coloured, basic, highly schistose amphibolite, chiefly composed of feldspar, hornblende, and biotite. The general strike of the iron bearing rocks is northeast and southwest, and the dip about 40 degrees towards the southeast.

There are a great number of open-cuts and test pits on this property, the location of which are shown on the accompanying magnetometric map (No. 249). The Tommy R pit is an open pit and trench, extending about 110 feet, with a width ranging from 15 to 45 feet. The iron bearing formation revealed by this working consists of bands of magnetite interbanded with amphibolite schists, through which individual grains of magnetite often are disseminated. The average iron content of the ore in this pit is, therefore, rather low. The following analysis represents a sample taken by the writer across the exposure:—

Fe	38·30	per cent.
Insol	16·10	"
P	0·233	"
S	0·020	"

At a distance of 500 to 900 feet northeast of the Tommy R pit, several small deposits of magnetite have been revealed in numerous pits and trenches. They all lie in a dark coloured amphibolite schist, with which they are often found interbanded. In some instances the contacts with the adjacent amphibolites are sharp, and the ore of an exceedingly good quality; but in many cases the ore and the country rock grade imperceptibly into each other. The width of the richer ore

layers ranges from 2 to 7 feet, while their length is rarely more than 150 feet, and usually less.

A sample taken by the writer across one of these deposits gave the following analysis:—

Fe	60·91	per cent.
SiO_2	4·60	"
Al_2O_3	3·60	"
CaO	1·77	"
MgO	2·83	"
P	0·575	"
S	0·100	"

The Jeanette working is an open pit, reported to have a depth of 40 feet. The pit was full of water when visited by the writer.

The T. B. pit is an irregular open working, about 90 × 80 feet, and reported to be 60 feet deep. Dark coloured amphibolites associated with mica and small particles of magnetite are exposed in the upper portion of the pit.

Campbell Mine, or No. 4 Mine.—The workings known locally by the above names are situated on lot 16, concession VIII, in the township of Bagot, immediately across the line from the T.B. pit of the property last described (see map No. 249). They consist of an open-cut 100 × 40 feet, and three test pits, exposing dark coloured amphibolites, with considerable mica and chlorite. The magnetic attraction of this area is very irregular, indicating a pockety distribution of the magnetite in the country rock.

West Half of Lot 16, Concession IX, Bagot Township.—A shallow pit has been sunk on this lot at the edge of a beaver meadow, exposing some magnetite associated with amphibolites (see map No. 249). A sample taken from an ore pile near the pit gave the following analysis:—

Fe	47·81	per cent.
SiO_2	15·00	"
Al_2O_3	3·85	"
CaO	4·86	"
MgO	7·05	"
P	0·390	"
S	0·015	"

Martel or Wilson Mine.—The Martel or Wilson mine is situated on lot 13, concession X, in Bagot township, about $1\frac{3}{4}$ miles southeast of the station of Calabogie. In a flat of low ground two openings have been made about 350 feet apart.

The principal mining operations have been confined to pit No. 1 (see map No. 253). From this pit, 2,000 tons of good magnetite are reported to have been extracted and shipped. Pit No. 2 is a mere prospect hole. The ore, judging from what little shows above water around the edge of pit No. 1, occurs in a dark green, almost black, diorite. The accompanying magnetometric map shows the magnetic attraction to be very irregular, and gives little encouragement for finding any ore body of importance.

Culhane Mine.—The Culhane mine is situated on lot 21, concession VII, in Bagot township. It lies on the south shore of Norway lake, about 3 miles northeast of Calabogie station. Magnetite occurs here in small irregular bands or lenses in a series of crystalline limestone, interbedded with amphibolite schist. The general strike of the iron bearing formation is northeast, with a dip of 30 degrees towards the northwest. There are 4 workings on the property, the location of which is shown on the accompanying magnetometric map, No. 252. This map shows that the most promising area lies in the northeast part of the field, immediately south of reference post No. 40. At this point a small open-cut, about 35 feet long and 10 feet wide, has been made into the hillside, exposing some limestone interbanded with amphibolites. From the bottom of this cut a vertical shaft has been sunk, in search for ore; but evidently with negative result. A small amount of magnetite, disseminated throughout the schists, is probably the cause of the strong magnetic attraction found here.

About 250 feet southwest of the last mentioned open-cut lies the main shaft, from which a few hundred tons of ore have been extracted and piled up nearby. The shaft follows the dip of the formation, and is reported to have a depth of 70 feet, but was, at the time of the writer's visit, full of water. At its mouth, some magnetite intermixed with hornblende and mica schist is exposed; but judging from the irregular magnetic attraction, there is no prospect of finding any ore body of importance here.

Working No. 3 lies 350 feet southwest of No. 2. It consists of an open-cut, exposing a schistose amphibolite, through which a small amount of magnetite is disseminated.

Working No. 4 lies 250 feet southwest of No. 3. It consists of a small test pit, the sides of which have fallen in.

Williams or Black Bay Mine.—The Williams or Black Bay mine is situated about 2 miles northwest of Calabogie station, on lot 22, concession XI, in the township of Bagot.

The magnetite occurs along the contact of crystalline limestone and a basic amphibolite. The general strike is about northeast–southwest, with a dip, judging from the inclination of the workings, of about 40 degrees towards the northwest. The limestone forms the footwall, and it is found to the south of the working, while the amphibolite lies to the north.

The proved length of the deposit in the main working is about 240 feet, but towards both ends of the pit, the ore body becomes indefinite, the orey ground being represented by amphibolite containing some disseminated magnetite. The open-cut has a face of about 15 feet, beyond which the ore has been followed downward in several inclines along the dip. The depths of these inclines are reported, by Mr. E. D. Ingall, to vary from 10 to 80 feet.

A sample taken from an ore pile gave the following analysis:—

Fe	51·50 per cent.
Insol	15·85 "

Judging from the magnetometric survey (see map No. 250) the prospects of finding any ore body of any importance on this property are not encouraging.

CANADA

DEPARTMENT OF MINES

HON. LOUIS CODERRE, MINISTER; R. W. BROCK, DEPUTY MINISTER;

MINES BRANCH

EUGENE HAANEL, PH.D., DIRECTOR.

REPORTS AND MAPS OF ECONOMIC INTEREST

PUBLISHED BY THE

MINES BRANCH.

REPORTS.

1. Mining Conditions in the Klondike, Yukon. Report on—by Eugene Haanel, Ph.D., 1902.

†2. Great Landslide at Frank, Alta. Report on—by R. G. McConnell and R. W. Brock, M.A., 1903.

†3. Investigation of the different electro-thermic processes for the smelting of iron ores, and the making of steel, in operation in Europe. Report of Special Commission—by Dr. Haanel, 1904.

†4. Rapport de la Commission nommée pour étudier les divers procédés électro-thermiques pour la réduction des minerais de fer et la fabrication de l'acier employés en Europe—by Dr. Haanel. (French Edition), 1905.

5. On the location and examination of magnetic ore deposits by magnetometric measurements—by Dr. Haanel, 1904.

†7. Limestones, and the Lime Industry of Manitoba. Preliminary Report on—by J. W. Wells, 1905.

†8. Clays and Shales of Manitoba: Their Industrial Value. Preliminary Report on—by J. W. Wells, 1905.

†9. Hydraulic Cements (Raw Materials) in Manitoba: Manufacture and Uses of. Preliminary Report on—by J. W. Wells, 1905.

†10. Mica: Its Occurrence, Exploitation, and Uses—by Fritz Cirkel, M.E., 1905. (See No. 118.

†11. Asbestos: Its Occurrence, Exploitation, and Uses—by Fritz Cirkel, 1905. (See No. 69.)

†12. Zinc Resources of British Columbia and the Conditions affecting their Exploitation. Report of the Commission appointed to investigate—by W. R. Ingalls, 1905.

†16. *Experiments made at Sault Ste. Marie, under Government auspices, in the smelting of Canadian iron ores by the electro-thermic process. Final Report on—by Dr. Haanel, 1907.

†17. Mines of the Silver-Cobalt Ores of the Cobalt district: Their Present and Prospective Output. Report on—by Dr. Haanel, 1907.

†18. Graphite: Its Properties, Occurrence, Refining, and Uses—by Fritz Cirkel, 1907.

†19. Peat and Lignite: Their Manufacture and Uses in Europe—by Erik Nystrom, M.E., 1908.

†20. Iron Ore Deposits of Nova Scotia. Report on (Part I)—by Dr. J. E. Woodman.

*A few copies of the Preliminary Report, 1906, are still available.
†Publications marked thus † are out of print.

†21. Summary Report of Mines Branch, 1907-8.

22. Iron Ore Deposits of Thunder Bay and Rainy River districts. Report on—by F. Hille, M.E.

†23. Iron Ore Deposits, along the Ottawa (Quebec side) and Gatineau rivers. Report on—by Fritz Cirkel.

24. General Report on the Mining and Metallurgical Industries of Canada, 1907-8.

25. The Tungsten Ores of Canada. Report on—by Dr. T. L. Walker.

26. The Mineral Production of Canada, 1906. Annual Report on—by John McLeish, B.A.

26a. French translation: The Mineral Production of Canada, 1906. Annual Report on—by John McLeish.

27. The Mineral Production of Canada, 1907. Preliminary Report on—by John McLeish.

†27a. The Mineral Production of Canada, 1908. Preliminary Report on—by John McLeish.

†28. Summary Report of Mines Branch, 1908.

†28a. French translation: Summary Report of Mines Branch, 1908.

29. Chrome Iron Ore Deposits of the Eastern Townships. Monograph on—by Fritz Cirkel. (Supplementary Section: Experiments with Chromite at McGill University—by Dr. J. B. Porter.)

30. Investigation of the Peat Bogs and Peat Fuel Industry of Canada, 1908. Bulletin No. 1—by Erik Nystrom and A. Anrep, Peat Expert.

32. Investigation of Electric Shaft Furnace, Sweden. Report on—by Dr. Haanel.

47. Iron Ore Deposits of Vancouver and Texada islands. Report on—by Einar Lindeman, M.E.

†55. Report on the Bituminous, or Oil-shales of New Brunswick and Nova Scotia; also on the Oil-shale industry of Scotland—by Dr. R. W. Ells.

58. The Mineral Production of Canada, 1907 and 1908. Annual Report on—by John McLeish.

NOTE.—*The following preliminary bulletins were published prior to the issuance of the Annual Report for 1907-8.*

†31. Production of Cement in Canada, 1908.

42. Production of Iron and Steel in Canada during the Calendar Years 1907 and 1908.

43. Production of Chromite in Canada during the Calendar Years 1907 and 1908.

44. Production of Asbestos in Canada during the Calendar Years 1907 and 1908.

†45. Production of Coal, Coke, and Peat in Canada during the Calendar Years 1907 and 1908.

46. Production of Natural Gas and Petroleum in Canada during the Calendar Years 1907 and 1908.

59. Chemical Analyses of Special Economic Importance made in the Laboratories of the Department of Mines, 1906-7-8. Report on—by F. G. Wait, M.A., F.C.S. (With Appendix on the Commercial Methods and Apparatus for the Analysis of Oil-shales—by H. A. Leverin, Ch. E.).

Schedule of Charges for Chemical Analyses and Assays.

†62. Mineral Production of Canada, 1909. Preliminary Report on—by John McLeish.

63. Summary Report of Mines Branch, 1909.

67. Iron Ore Deposits of the Bristol Mine, Pontiac county, Quebec. Bulletin No. 2—by Einar Lindeman and Geo. C. Mackenzie, B.Sc.

†68. Recent Advances in the Construction of Electric Furnaces for the Production of Pig Iron, Steel, and Zinc. Bulletin No. 3—by Dr. Haanel.

69. Chrysotile-Asbestos: Its Occurrence, Exploitation, Milling, and Uses. Report on—by Fritz Cirkel. (Second Edition, enlarged.)

---

†Publications marked thus † are out of print.

†71. Investigation of the Peat Bogs and Peat Industry of Canada, 1909-10; to which is appended Mr. Alf. Larson's Paper on Dr. M. Ekenberg's Wet-Carbonizing Process; from Teknisk Tidskrift, No. 12, December 26, 1903—translation by Mr. A. v. Anrep, Jr.; also a translation of Lieut. Ekelund's Pamphlet entitled 'A Solution of the Peat Problem,' 1909, describing the Ekelund Process for the Manufacture of Peat Powder, by Harold A. Leverin, Ch.E. Bulletin No. 4—by A. v. Anrep (Second Edition, enlarged).

81. French Translation: Chrysotile-Asbestos: Its Occurrence, Exploitation, Milling, and Uses. Report on—by Fritz Cirkel.

82. Magnetic Concentration Experiments. Bulletin No. 5—by Geo. C. Mackenzie.

83. An investigation of the Coals of Canada with reference to their Economic Qualities: as conducted at McGill University under the authority of the Dominion Government. Report on—by J. B. Porter, E.M., D.Sc., R. J. Durley, Ma.E., and others—
Vol. I—Coal Washing and Coking Tests.
Vol. II—Boiler and Gas Producer Tests.
Vol. III—
Appendix I
Coal Washing Tests and Diagrams.
Vol. IV—
Appendix II
Boiler Tests and Diagrams.
Vol. V—
Appendix III
Producer Tests and Diagrams
Vol. VI—
Appendix IV
Coking Tests.
Appendix V
Chemical Tests.

†84. Gypsum Deposits of the Maritime Provinces of Canada—including the Magdalen Islands. Report on—by W. F. Jennison, M.E. (See No. 245.)

88. The Mineral Production of Canada, 1909. Annual Report on—by John McLeish.

NOTE.—*The following preliminary bulletins were published prior to the issuance of the Annual Report for 1909.*

†79. Production of Iron and Steel in Canada during the Calendar Year 1909.

†80. Production of Coal and Coke in Canada during the Calendar Year 1909.

85. Production of Cement, Lime, Clay Products, Stone, and other Structural Materials during the Calendar Year 1909.

89. Reprint of Presidential address delivered before the American Peat Society of Ottawa, July 25, 1910. By Dr. Haanel.

90. Proceedings of Conference on Explosives.

92. Investigation of the Explosives Industry in the Dominion of Canada, 1910. Report on—by Capt. Arthur Desborough. (Second Edition.)

93. Molybdenum Ores of Canada. Report on—by Professor T. L. Walker, Ph.D.

100. The Building and Ornamental Stones of Canada, Vol.I. Report on—by Professor W. A. Parks, Ph. D.

100a. French translation: The Building and Ornamental Stones of Canada, Vol. I. Report on—by W. A. Parks.

102. Mineral Production of Canada, 1910. Preliminary Report on—by John McLeish.

†103. Summary Report of Mines Branch, 1910.

104. Catalogue of Publications of Mines Branch, from 1902 to 1911; containing Tables of Contents and List of Maps, etc.

105. Austin Brook Iron-bearing district. Report on—by E. Lindeman.

110. Western Portion of Torbrook Iron Ore Deposits, Annapolis county, N.S. Bulletin No. 7—by Howells Fréchette, M.Sc.

111. Diamond Drilling at Point Mamainse, Ont. Bulletin No. 6—by A. C. Lane, Ph.D., with Introductory by A. W. G. Wilson, Ph.D.

†Publications marked thus † are out of print.

118. Mica: Its Occurrence, Exploitation, and Uses. Report on—by Hugh S. de Schmid, M.E.

142. Summary Report of Mines Branch, 1911.

143. The Mineral Production of Canada, 1910. Annual Report on—by John McLeish.

NOTE.—*The following preliminary Bulletins were published prior to the issuance of the Annual Report for 1910.*

†114. Production of Cement, Lime, Clay Products, Stone, and other Structural Materials in Canada, 1910.

†115. Production of Iron and Steel in Canada during the Calendar Year 1910.

†116. Production of Coal and Coke in Canada during the Calendar Year 1910.

†117. General Summary of the Mineral Production of Canada during the Calendar Year 1910.

145. Magnetic Iron Sands of Natashkwan, Saguenay county, Que. Report on—by Geo. C. Mackenzie.

†150. The Mineral Production of Canada, 1911. Preliminary Report on—by John McLeish.

151. Investigation of the Peat Bogs and Peat Industry of Canada, 1910–11. Bulletin No. 8—by A. v. Anrep.

154. The Utilization of Peat Fuel for the Production of Power, being a record of experiments conducted at the Fuel Testing Station, Ottawa, 1910–11. Report on—by B. F. Haanel, B.Sc.

155. French translation: The Utilization of Peat Fuel for the Production of Power, being a Record of Experiments conducted at the Fuel Testing Station, Ottawa, 1910–11. Report on—by B. F. Haanel.

156. French translation: The Tungsten Ores of Canada. Report on—by Dr. T. L. Walker.

167. Pyrites in Canada: Its Occurrence, Exploitation, Dressing, and Uses. Report on—by A. W. G. Wilson.

170. The Nickel Industry: with Special Reference to the Sudbury region, Ont. Report on—by Professor A. P. Coleman, Ph.D.

184. Magnetite Occurrences along the Central Ontario Railway. Report on—by E. Lindeman.

196. French translation: Investigation of the Peat Bogs and Peat Industry of Canada, 1909–10; to which is appended Mr. Alf. Larson's paper on Dr. M. Ekenburg's Wet-Carbonizing Process: from Teknisk Tidskrift, No. 12, December 26, 1908—translation by Mr. A. v. Anrep; also a translation of Lieut. Ekelund's Pamphlet entitled "A Solution of the Peat Problem," 1909, describing the Ekelund Process for the Manufacture of Peat Powder, by Harold A. Leverin Ch. E. Bulletin No. 4—by A. v. Anrep. (Second Edition, enlarged.)

197. French translation: Molybdenum Ores of Canada. Report on—by Dr. T. L. Walker.

198. French translation: Peat and Lignite: Their Manufacture and Uses in Europe—by Erik Nystrom, M.E., 1908.

201. The Mineral Production of Canada during the Calendar Year 1911. Annual Report on—by John McLeish.

NOTE.—*The following preliminary Bulletins were published prior to the issuance of the Annual Report for 1911.*

181. Production of Cement, Lime, Clay Products, Stone, and other Structural Materials in Canada during the Calendar Year 1911. Bulletin on—by John McLeish.

†182. Production of Iron and Steel in Canada during the Calendar Year 1911. Bulletin on —by John McLeish.

183. General Summary of the Mineral Production in Canada during the Calendar Year 1911. Bulletin on—by John McLeish.

199. Production of Copper, Gold, Lead, Nickel, Silver, Zinc, and other Metals of Canada, during the Calendar Year 1911. Bulletin on—by John McLeish.

200. The Production of Coal and Coke in Canada during the Calendar Year 1911. Bulletin on—by John McLeish.

†Publications marked thus † are out of print.

202. French translation: Graphite: Its Properties, Occurrence, Refining, and Uses—by Fritz Cirkel, 1907.

216. Mineral Production of Canada, 1912. Preliminary Report on—by John McLeish.

224. Summary Report of the Mines Branch, 1912.

226. French translation: Chrome Iron Ore Deposits of the Eastern Townships. Monograph on—by Fritz Cirkel. (Supplementary Section: Experiments with Chromite at McGill University—by Dr. J. B. Porter.)

227. Sections of the Sydney Coal Fields—by J. G. S. Hudson.

†229. Summary Report of the Petroleum and Natural Gas Resources of Canada, 1912—by F. G. Clapp. (See No. 224.)

230. Economic Minerals and the Mining Industry of Canada.

231. French translation: Economic Minerals and the Mining Industry of Canada.

233. French translation: Gypsum Deposits of the Maritime Provinces of Canada—including the Magdalen Islands. Report on—by W. F. Jennison.

262. The Mineral Production of Canada during the Calendar Year 1912. Annual Report on—by John McLeish.

NOTE.—*The following preliminary Bulletins were published prior to the issuance of the Annual Report for 1912.*

238. General Summary of the Mineral Production of Canada, during the Calendar Year 1912. Bulletin on—by John McLeish.

247. Production of Iron and Steel in Canada during the Calendar Year 1912. Bulletin on—by John McLeish.

256. Production of Copper, Gold, Lead, Nickel, Silver, Zinc, and other Metals of Canada, during the Calendar Year 1912—by C. T. Cartwright, B.Sc.

257. Production of Cement, Lime, Clay Products, Stone, and other Structural Materials during the Calendar Year 1912. Report on—by John McLeish.

258. Production of Coal and Coke in Canada, during the Calandar Year 1912. Bulletin on—by John McLeish.

254. Calabogie Iron-Bearing District. Report on—by E. Lindeman.

NOTE.—*Lists of manufacturers of clay products, stone quarry operators, and operators of lime-kilns, are prepared annually by the Division of Mineral Resources and Statistics, and copies may be had on application.*

IN THE PRESS.

56. French translation: Bituminous or Oil-shales of New Brunswick and Nova Scotia; also on the Oil-shale Industry of Scotland—by R. W. Ells.

149. French translation: Magnetic Iron Sands of Natashkwan, Saguenay county, Que. Report on—by Geo. C. Mackenzie.

180. French translation: Investigation of the Peat Bogs, and Peat Industry of Canada, 1910-11. Bulletin No. 8—by A. v. Anrep.

203. Building Stones of Canada—Vol. II: Building and Ornamental Stones of the Maritime Provinces. Report on—by W. A. Parks.

209. The Copper Smelting Industry of Canada. Report on—by A. W. G. Wilson.

222. Lode Mining in Yukon: An Investigation of the Quartz Deposits of the Klondike Division. Report on—by T. A. MacLean, B.A.Sc.

245. Gypsum in Canada: Its Occurrence, Exploitation, and Technology. Report on—by L. H. Cole.

259. Preparation of Metallic Cobalt by Reduction of the Oxide. Report on—by H. T. Kalmus B.Sc., Ph.D.

† Publications marked thus † are out of print.

263. French translation: Recent Advances in the Construction of Electric Furnaces for the Production of Pig Iron, Steel, and Zinc. Bulletin No. 3—by Dr. Haanel.

264. French translation: Mica: Its Occurrence, Exploitation, and Uses. Report on—by Hugh S. de Schmid.

265. French translation: Annual Mineral Production of Canada, 1911. Report on—by John McLeish.

MAPS.

†6. Magnetometric Survey, Vertical Intensity: Calabogie Mine, Bagot township, Renfrew county, Ontario—by E. Nystrom, 1904. Scale 60 feet=1 inch. Summary report, 1905. (See Map No. 249.)

†13. Magnetometric Survey of the Belmont Iron Mines, Belmont township, Peterborough county, Ontario—by B. F. Haanel, 1905. Scale 60 feet=1 inch. Summary report, 1905. (See Map No. 186.)

†14. Magnetometric Survey of the Wilbur Mine, Lavant township, Lanark county, Ontario—by B. F. Haanel, 1905. Scale 60 feet=1 inch. Summary report, 1905.

†33. Magnetometric Survey, Vertical Intensity: Lot 1, Concession VI, Mayo township, Hastings county, Ontario—by Howells Fréchette, 1909. Scale 60 feet=1 inch.

†34. Magnetometric Survey, Vertical Intensity: Lots 2 and 3, Concession VI, Mayo township, Hastings county, Ontario—by Howells Fréchette, 1909. Scale 60 feet = 1 inch.

†35. Magnetometric Survey, Vertical Intensity: Lots 10, 11, and 12, Concession IX, and Lots 11 and 12, Concession VIII, Mayo township, Hastings county, Ontario—by Howells Fréchette, 1909. Scale 60 feet=1 inch.

*36. Survey of Mer Bleue Peat Bog, Gloucester township, Carleton county, and Cumberland township, Russell county, Ontario—by Erik Nystrom, and A. v. Anrep. (Accompanying report No. 30.)

*37. Survey of Alfred Peat Bog, Alfred and Caledonia townships, Prescott county, Ontario—by Erik Nystrom, and A. v. Anrep. (Accompanying report No. 30.)

*38. Survey of Welland Peat Bog, Wainfleet and Humberstone townships, Welland county, Ontario —by Erik Nystrom and A. v. Anrep. (Accompanying report No. 30.)

*39. Survey of Newington Peat Bog, Osnabrook, Roxborough, and Cornwall townships, Stormont county, Ontario—by Erik Nystrom and A. v. Anrep. (Accompanying report No. 30.)

*40. Survey of Perth Peat Bog, Drummond township, Lanark county, Ontario —by Erik Nystrom and A. v. Anrep. (Accompanying report No. 30.)

*41. Survey of Victoria Road Peat Bog, Bexley and Carden townships, Victoria county, Ontario —by Erik Nystrom and A. v. Anrep. (Accompanying report No. 30.)

*48. Magnetometric Survey of Iron Crown claim at Klaanch river, Vancouver island, B.C.—by E. Lindeman. Scale 60 feet=1 inch. (Accompanying report No. 47.)

*49. Magnetometric Survey of Western Steel Iron claim, at Sechart, Vancouver island, B.C.—by E. Lindeman. Scale 60 feet=1 inch. (Accompanying report No. 47.)

*53. Iron Ore Occurrences, Ottawa and Pontiac counties, Quebec, 1908—by J. White and Fritz Cirkel. (Accompanying report No. 23.)

*54. Iron Ore Occurrences, Argenteuil county, Quebec, 1908—by Fritz Cirkel. (Accompanying report No. 23).

†57. The Productive Chrome Iron Ore District of Quebec—by Fritz Cirkel. (Accompanying report No. 29.)

†60. Magnetometric Survey of the Bristol Mine, Pontiac county, Quebec—by E. Lindeman. Scale 200 feet=1 inch. (Accompanying report No. 67.)

*61. Topographical Map of Bristol Mine, Pontiac county, Quebec—by E. Lindeman. Scale 200 feet=1 inch. (Accompanying report No. 67.)

NOTE.—1. Maps marked thus * are to be found only in reports.
2. Maps marked thus † have been printed independently of reports, hence can be procured separately by applicants.

†64. Index Map of Nova Scotia: Gypsum—by W. F. Jennison.
†65. Index Map of New Brunswick: Gypsum—by W. F. Jennison. } (Accompanying report No.84)
†66. Map of Magdalen Islands: Gypsum—by W. F. Jennison.

†70. Magnetometric Survey of Northwest Arm Iron Range, Lake Timagami, Nipissing district, Ontario—by E. Lindeman. Scale 200 feet=1 inch. (Accompanying report No. 63.)

†72. Brunner Peat Bog, Ontario—by A. v. Anrep.
†73. Komoka Peat Bog, Ontario—by A. v. Anrep. } (Accompanying report No. 71.)
†74. Brockville Peat Bog, Ontario—by A. v. Anrep.

†75. Rondeau Peat Bog, Ontario—by A. v. Anrep.
†76. Alfred Peat Bog, Ontario—by A. v. Anrep. } Accompanying report No. 71
†77. Alfred Peat Bog, Ontario: Main Ditch profile—by A. v. Anrep.

†78. Map of Asbestos Region, Province of Quebec, 1910—by Fritz Cirkel. Scale 1 mile=1 inch. (Accompanying report No. 69.)

†94. Map showing Cobalt, Gowganda, Shiningtree, and Porcupine districts—by L. H. Cole, B.Sc. (Accompanying Summary report, 1910.)

*95. General Map of Canada, showing Coal Fields. (Accompanying report No. 83—by Dr. J. B. Porter.)

*96. General Map of Coal Fields of Nova Scotia and New Brunswick. (Accompanying report No. 83—by Dr. J. B. Porter.)

*97. General Map showing Coal Fields in Alberta, Saskatchewan, and Manitoba. (Accompanying report No. 83—by Dr. J. B. Porter.)

*98. General Map of Coal Fields in British Columbia. (Accompanying report No. 83—by Dr. J. B. Porter.)

*99. General Map of Coal Field in Yukon Territory. (Accompanying report No. 83—by Dr. J. B. Porter.)

†106. Austin Brook Iron Bearing district, Bathurst township, Gloucester county, N.B.—by E. Lindeman. Scale 400 feet=1 inch. (Accompanying report No. 105.)

†107. Magnetometric Survey, Vertical Intensity: Austin Brook Iron Bearing District—by E. Lindeman. Scale 400 feet=1 inch. (Accompanying report No. 105.)

*108. Index Map showing Iron Bearing Area at Austin Brook—by E. Lindeman. (Accompanying report No. 105.)

*112. Sketch plan showing Geology of Point Mamainse, Ont.—by Professor A. C. Lane. Scale, 4,000 feet=1 inch. (Accompanying report No. 111.)

†113. Holland Peat Bog, Ontario—by A. v. Anrep. (Accompanying report No. 151.)

*119–137. Mica: Township maps, Ontario and Quebec—by Hugh S. de Schmid. (Accompanying report No. 118.)

†138. Mica: Showing Location of Principal Mines and Occurrences in the Quebec Mica Area—by Hugh S. de Schmid. Scale 3·95 miles=1 inch. (Accompanying report No. 118.)

†139. Mica: Showing Location of Principal Mines and Occurrences in the Ontario Mica Area—by Hugh S. de Schmid. Scale 3·95 miles=1 inch. (Accompanying report No. 118.)

†140. Mica: Showing Distribution of the Principal Mica Occurrences in the Dominion of Canada by Hugh S. de Schmid. Scale 3·95 miles=1 inch. (Accompanying report No. 118.)

†141. Torbrook Iron Bearing District, Annapolis county, N.S.—by Howells Fréchette. Scale 400 feet=1 inch. (Accompanying report No. 110.)

†146. Distribution of Iron Ore Sands of the Iron Ore Deposits on the North Shore of the River and Gulf of St. Lawrence, Canada—by Geo. C. Mackenzie. Scale 100 miles=1 inch. (Accompanying report No. 145.)

NOTE.—1. Maps marked thus * are to be found only in reports.
2. Maps marked thus † have been printed independently of reports, hence can be procured separately by applicants.

†147. Magnetic Iron Sand Deposits in Relation to Natashkwan harbour and Great Natashkwan river, Que. (Index Map)—by Geo. C. Mackenzie. Scale 40 chains=1 inch. (Accompanying report No. 145.)

†148. Natashkwan Magnetic Iron Sand Deposits, Saguenay county, Que.—by Geo. C. Mackenzie. Scale 1,000 feet=1 inch. (Accompanying report No. 145.)

†152. Map showing the Location of Peat Bogs investigated in Ontario—by A. v. Anrep.
†153. Map Showing the Location of Peat Bogs investigated in Manitoba—by A. v. Anrep.
†157. Lac du Bonnet Peat Bog, Manitoba—by A. v. Anrep.
†158. Transmission Peat Bog, Manitoba—by A. v. Anrep.
†159. Corduroy Peat Bog, Manitoba—by A. v. Anrep.
†160. Boggy Creek Peat Bog, Manitoba—by A. v. Anrep.
†161. Rice Lake Peat Bog, Manitoba—by A. v. Anrep.
†162. Mud Lake Peat Bog, Manitoba—by A. v. Anrep.
†163. Litter Peat Bog, Manitoba—by A. v. Anrep.
(Accompanying report No. 151)

†164. Julius Peat Litter Bog, Manitoba—by A. v. Anrep.
†165. Fort Francis Peat Bog, Ontario—by A. v. Anrep.
(Accompanying report No. 151.)

*166. Magnetometric Map of No. 3 Mine, Lot 7, Concessions V and VI, McKim township, Sudbury district, Ont.—by E. Lindeman. (Accompanying Summary report, 1911.)

†168. Map showing Pyrites Mines and Prospects in Eastern Canada, and Their Relation to the United States Market—by A. W. G. Wilson. Scale 125 miles=1 inch. (Accompanying report No. 167.)

†171. Geological Map of Sudbury Nickel region, Ont.—by Prof. A. P. Coleman. Scale 1 mile=1 inch. (Accompanying report No. 170.)

†172. Geological Map of Victoria Mine—by Prof. A. P. Coleman.
†173. " " Crean Hill Mine—by Prof. A. P. Coleman.
†174. " " Creighton Mine—by Prof. A. P. Coleman.
(Accompanying report No. 170.)

†175. " " showing Contact of Norite and Laurentian in vicinity of Creighton mine by Prof. A. P. Coleman. (Accompanying report No. 170.)

†176. " " of Copper Cliff offset—by Prof. A. P. Coleman. (Accompanying report No. 170.)

†177. " " No. 3 Mine—by Prof. A. P. Coleman. (Accompanying report No. 170).

†178. " " showing vicinity of Stobie and No. 3 mines—by Prof. A. P. Coleman. (Accompanying report No. 170.)

†185. Magnetometric Survey, Vertical Intensity: Blairton iron mine, Belmont township, Peterborough county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†185a. Geological Map, Blairton iron mine, Belmont township, Peterborough county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†186. Magnetometric Survey, Belmont iron mine, Belmont township, Peterborough county, Ont.—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†186a. Geological Map, Belmont iron mine, Belmont township, Peterborough county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

NOTE.—1. Maps marked thus * are to be found only in reports.
2. Maps marked thus † have been printed independently of reports, hence can be procured separately by applicants.

†187. Magnetometric Survey, Vertical Intensity St. Charles mine, Tudor township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†187a. Geological Map, St. Charles mine, Tudor township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†188. Magnetometric Survey, Vertical Intensity: Baker mine, Tudor township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†188a. Geological Map, Baker Mine, Tudor township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†189. Magnetometric Survey, Vertical Intensity: Ridge iron ore deposits, Wollaston township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†190. Magnetometric Survey, Vertical Intensity: Coehill and Jenkins mines, Wollaston township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†190a. Geological Map, Coehill and Jenkins mines, Wollaston township, Hastings county, Ontario —by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†191. Magnetometric Survey, Vertical Intensity: Bessemer iron ore deposits, Mayo township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†191a. Geological Map, Bessemer iron ore deposits, Mayo township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†192. Magnetometric Survey, Vertical Intensity: Rankin, Childs, and Stevens mines, Mayo township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†192a. Geological Map, Rankin, Childs, and Stevens mines, Mayo township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No.184.)

†193. Magnetometric Survey, Vertical Intensity: Kennedy property, Carlow township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†193a. Geological Map, Kennedy property, Carlow township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†194. Magnetometric Survey, Vertical Intensity: Bow Lake iron ore occurrences, Faraday township, Hastings county, Ontario—by E. Lindeman, 1911. Scale 200 feet=1 inch. (Accompanying report No. 184.)

†204. Index Map, Magnetite occurrences along the Central Ontario Railway—by E. Lindeman, 1911. (Accompanying report No. 184.)

†205. Magnetometric Map, Moose Mountain iron-bearing district, Sudbury district, Ontario: Deposits Nos. 1, 2, 3, 4, 5, 6 and 7—by E. Lindeman, 1912. (Accompanying report No. 266.)

†205a. Geological Map, Moose Mountain iron-bearing district, Sudbury district, Ontario. Deposits Nos. 1, 2, 3, 4, 5, 6 and 7—by E. Lindeman. (Accompanying report No. 266.)

†206. Magnetometric Survey of Moose Mountain iron-bearing district, Sudbury district, Ontario: Northern part of Deposit No. 2—by E. Lindeman, 1912. Scale, 200 feet=1 inch. (Accompanying report No. 266.)

†207. Magnetometric Survey of Moose Mountain iron-bearing district, Sudbury district, Ontario: Deposits Nos. 8, 9 and 9A—by E. Lindeman, 1912. Scale 200 feet=1 inch. (Accompanying report No. 266.)

†208. Magnetometric Survey of Moose Mountain iron-bearing district, Sudbury district, Ontario: Deposit No. 10—by E. Lindeman, 1912. Scale 200 feet=1 inch. (Accompanying report No. 266.)

NOTE.—1. Maps marked thus * are to be found only in reports.
2. Maps marked thus † have been printed independently of reports, hence can be procured separately by applicants.

†208a. Magnetometric Survey, Moose Mountain iron-bearing district, Sud ury district, Ontario: Eastern portion of Deposit No. 11—by E. Lindeman, 1912. Scale, 200 feet=1 inch. (Accompanying report No. 266.)

†208b. Magnetometric Survey, Moose Mountain iron-bearing district, Sudbury district, Ontario: Western portion of Deposit No. 11—by E. Lindeman, 1912. Scale, 200 feet=1 inch. (Accompanying report No. 266.)

†208c. General Geological Map, Moose Mountain iron-bearing district, Sudbury district, Ontario—by E. Lindeman, 1912. Scale, 800 feet=1 inch. (Accompanying report No. 266.)

†210. Location of Copper Smelters in Canada—by A. W. G. Wilson, Ph.D. ale, 197·3 miles=1 inch. (Accompanying report No. 209.)

†220. Mining Districts, Yukon—by T. A. MacLean. Scale 35 miles= i (Accompanying report No. 222.)

†221. Dawson Mining District, Yukon—by T. A. MacLean. Scale 2 miles . (Accompanying report No. 222.)

†232. Mineral Map of Canada. Scale 100 miles=1 inch. (Accompanying rep No. 230.)

†249. Magnetometric Survey, Caldwell and Campbell mines, Calabogie distri t, Renfrew county, Ontario—by E. Lindeman, 1911. Scale, 200 feet=1 inch. (Accompany g report No. 254.)

†250. Magnetometric Survey, Black Bay or Williams Mine, Calabogie dis Renfrew county, Ontario—by E. Lindeman, 1911. Scale, 200 feet=1 inch. (mpanying report No. 254.)

†251. Magnetometric Survey, Bluff Point iron mine, Calabogie district, Renf w county, Ontario —by E. Lindeman, 1911. Scale, 200 feet=1 inch. (Accompanying report No. 254.)

†252. Magnetometric Survey, Culhane mine, Calabogie district, Renfrew co nty, Ontario—by E. Lindeman, 1911. Scale, 200 feet=1 inch. (Accompanying report N . 254.)

†253. Magnetometric Survey, Martel or Wilson iron mine, Calabogie dis R nfrew county, Ontario—by E. Lindeman, 1911. Scale, 200 feet=1 inch. (Acco gi ort No. 254.)

†261. Magnetometric Survey, Northeast Arm iron range, Lot 339 E.T.W. Lake Tin ami, Nipissing district, Ontario—by E. Nystrom, 1903. Scale, 200 feet 1 inch.

IN THE PRESS.

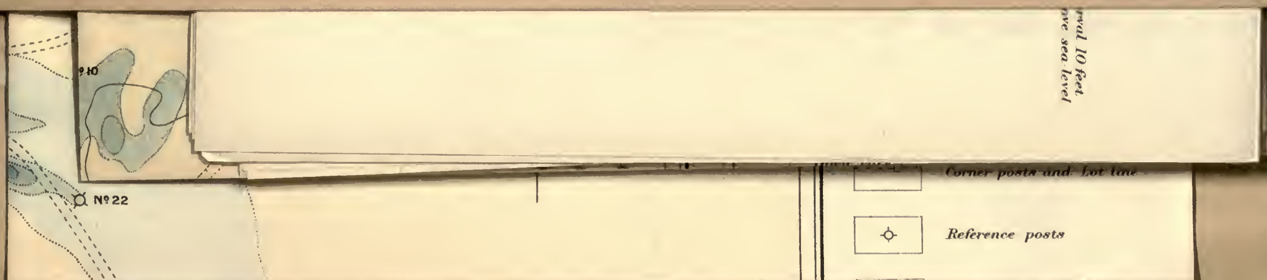
268. Map of Peat Bogs Investigated in Quebec—by A. v. Anrep, 1912.

269. Large Tea Field Peat Bog, Quebec	"	"
270. Small Tea Field Peat Bog, Quebec	"	"
271. Lanorie Peat Bog, Quebec	"	"
272. St. Hyacinthe Peat Bog, Quebec	"	"
273. Rivière du Loup Peat Bog	"	"
274. Cacouna Peat Bog	"	"
275. Le Parc Peat Bog, Quebec	"	"
276. St. Denis Peat Bog, Quebec	"	"
277. Rivière Ouelle Peat Bog, Quebec	"	"
278. Moose Mountain Peat Bog, Quebec	"	"

Address all communications to—

DIRECTOR MINES B H,
DEPARTMENT fIN S,
SUSSE EET, OTTAWA.

NOTE.—1. Maps marked thus * are to be found only in reports.
2. Maps marked thus † have been printed independently of rep ience can be procured separately by applicants.


Nº10
Nº22
Corner posts and Lot line
Reference posts
rval 10 feet
ve sea-level