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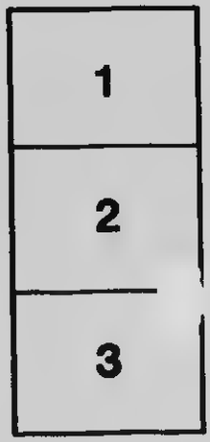

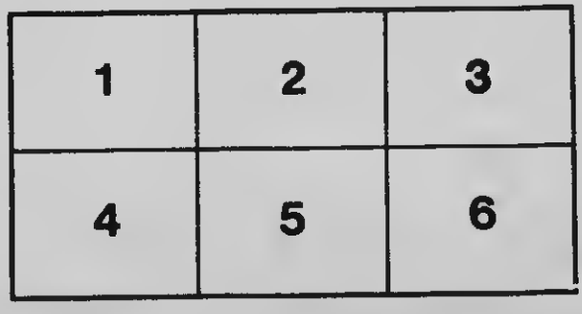

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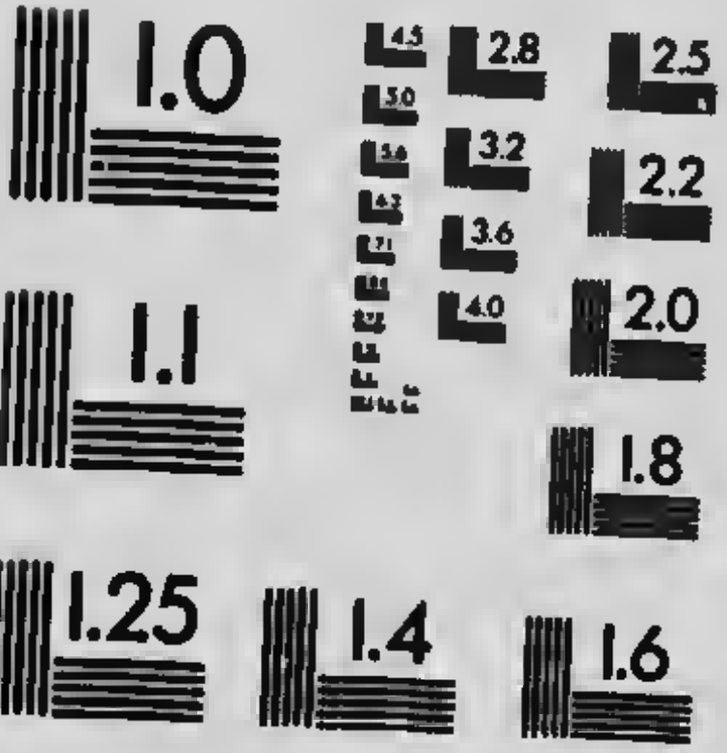

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CONGRÈS GÉOLOGIQUE INTERNATIONAL

XII^e SESSION, CANADA, 1913

SECOND CIRCULAR

2nd Edition

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SECOND CIRCULAR
(2nd Edition)

VICTORIA MEMORIAL MUSEUM,
OTTAWA, CANADA,
MARCH 1ST, 1913.

Sessions—Change of Date.

Important Notice.

The meetings of the Congress will begin at Toronto on Thursday, August 7, instead of August 21, as previously announced, and will terminate on Thursday, August 14.

Patrons.

Honorary President:

As announced in the first circular, Field Marshal, His Royal Highness the Duke of Connaught, Governor-General of the Dominion of Canada, has graciously consented to be Honorary President of the Twelfth Session of the International Geological Congress.

Honorary Vice-Presidents

The Rt. Hon. The Prime Minister of the Dominion of Canada and Secretary of State for External Affairs, Ottawa

The Hon. The Minister of Mines, Ottawa.

The Hon. The Minister of Railways and Canals, Ottawa.

The Hon. The Minister of Lands, Forests and Mines of Ontario, Toronto.

The Hon. The Minister of Colonization, Mines and Fisheries of Quebec, Quebec.

The Hon. The Premier and Minister of Mines of British Columbia, Victoria.

The Hon. The Commissioner of Works and Mines of Nova Scotia, Halifax.

Executive Committee.

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General Secretary.—R. W. BROCK, M.A., F.R.S.C., Director of the Geological Survey of Canada, Ottawa.

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J. B. TYRRELL, M.A., F.R.S.C., 534 Confederation Life Building, Toronto.

Secretary.—W. STANLEY LECKY, A.R.S.M., Victoria Memorial Museum Ottawa.

Organization Committee.

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M. B. BAKER, B.A., B.Sc., Professor of Geology, School of Mining, Kingston, Ontario.

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E. R. FARIBAULT, B.Sc., F.G.S.A., Geological Survey, Ottawa.

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E. Haycock, M.A., Professor of Geology, Acadia University, Wolfville, Nova Scotia.

Robt. R. Hedley, Consulting Mining Engineer, 405 Cotton Building, Vancouver.

Elfric D. Ingall, Assoc. R.S.M., Geologist, Geological Survey, Ottawa.

R. A. A. Johnston, Mineralogist, Geological Survey, Ottawa.

Joseph Keele, B.Sc., Geologist, Geological Survey, Ottawa.

E. M. Kindle, A.B., M.S., Ph.D., Invertebrate Palæontologist, Geological Survey, Ottawa.

C. W. Knight, B.Sc., Assistant Provincial Geologist, Ontario Bureau of Mines, Toronto.

H. Mortimer-Lamb, Secretary-Treasurer, Canadian Mining Institute, Montreal.

Lawrence M. Lambe, F.G.S., F.R.S.C., Vertebrate Palæontologist, Geological Survey, Ottawa.

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Richard G. McConnell, B.A., Geologist, Geological Survey, Ottawa.

James McEvoy, B.A.Sc., Mining Engineer and Geologist 123 Bay Street, Toronto.

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Robert C. Wallace, M.A., Ph.D., D.Sc., F.G.S., Professor of Geology and Mineralogy, University of Manitoba, Winnipeg.

James White, Secretary, The Commission of Conservation, Ottawa.

A. B. Willmott, M.A., B.Sc., Mining Engineer and Geologist, 404 Lumsden Building, Toronto.

George A. Young, M.Sc., Ph.D., Geologist, Geological Survey, Ottawa.

And the members of the Executive Committee.

General Regulations.

1. Session.

The International Geological Congress will hold its Twelfth session in Toronto, Canada, from the 7th to the 14th of August, 1913. The Headquarters will be at the University of Toronto.

2. Membership.

No professional qualification is necessary. Members are entitled to take part in the meetings and discussions at Toronto and to receive, after the meetings, a copy of the Transactions. The rights of members to take part in the excursions are defined in Regulation No. 8, entitled "Excursions."

A fee of five dollars must accompany each application for membership. Remittance should be made by Post Office Money Order. Cheques will not be accepted.

3. Guide Books.

The Guide Books will be sold at the price of two and one-half dollars for the complete set. Single Guide Books will not be sold.

4. Coal Resources of the World.

The monograph on the Coal Resources of the World will be published in the form of two quarto volumes and a folio atlas, the price of which will be twenty dollars per set. Only the discussions on this subject will appear in the Transactions of the Congress.

5. Council.

The Congress is governed by a Council constituted as follows:—

(a) Members of the Organization Committee of the Twelfth Congress.

(b) Presidents in office of Geological Societies.

(c) Directors of important Geological Surveys.

(d) Members of the "Bureau" (Vice-Presidents or other office holders elected by the members at their first meeting.)

(e) Members of the Congress whom the Council may add to its number.

6. Bureau.

A list of names for the "Bureau" will be submitted by the Council for the approval of the members at the first meeting of the Congress. The "Bureau" is charged with the arrangement of the orders of the day for the meetings.

7. Papers and Proposals.

(a) Titles of papers and proposals to be presented should be submitted to the General Secretary as early as possible.

(b) Authors should state whether or not their contributions are to be illustrated by stereopticon views or exhibits of specimens or maps.

(c) The time allowed for the presentation of each paper will be limited to twenty minutes, unless additional time is granted by the committee.

(d) Contributions must be in the hands of the General Secretary by the 1st of May, if they are to be printed in time for distribution before the meeting. Proofs cannot be furnished to authors, therefore copy should be typewritten, and great care exercised that it is correct in all details, such as punctuation, use of capital letters, italics, etc.

(e) The official language of the Congress is French, but contributions may be submitted in French, English or German.

(f) Authors are required to furnish with their papers abstracts, preferably in French or English. The abstracts should not exceed in length five per cent of the paper.

(g) The Executive will not undertake to make translations.

(h) The acceptance of a contribution and its publication before the meeting does not imply that it will be published in the Transactions.

8. Excursions.

(*a*) *General.* There is no restriction to membership in the International Geological Congress, but the excursions will be confined to members of the Congress who are geologists, mining engineers, geographers and others engaged in the study or application of some branch of geology. In adopting this course, the Executive Committee is following the rules laid down by the Tenth and Eleventh Congresses.

(*b*) *Members' Wives.* Arrangements will be made, if possible, to enable the wives of members to participate in the excursions. This privilege cannot be generally extended to other relatives or friends of members.

(*c*) *Reservations.* To reserve accommodation, application should be made in writing on the form provided for this purpose, and must be accompanied by the specified deposit. Should a member find it impossible to take part in an excursion, the deposit will be returned if notice of cancellation is received by the Secretary on or before the fifteenth day of June, or if the excursion is cancelled, deposit may be returned after this date.

9. General Railway Privileges.

To be announced later.

Topics for Discussion.

The following topics have been selected by the Executive Committee as the principal subjects for discussion:—

(1) Coal Resources of the World.

Realizing the great value of the monograph on the Iron Ore Resources of the World, published under the auspices of

the eleventh session of the Congress at Stockholm, the Executive Committee of the twelfth session resolved to compile a similar work on the Coal Resources of the World.

With this object in view, the co-operation of Geological Surveys, Mining Bureaus and eminent geologists and mining engineers was asked early in 1911. The responses have been so cordial that it is hoped to have ready for the meetings of the Congress a monograph which will include reports at length from over 50 countries and many smaller papers. The volumes, it is expected, will contain upwards of 900 pages, will be well illustrated by maps and sections, and will be accompanied by an atlas.

(2) Differentiation in Igneous Magmas.

Messrs. R. A. Daly, A. Harker, F. J. Loewinson-Lessing, D. Platania, and H. Rosenbusch have already promised to present papers and take part in the discussion.

(3) The Influence of Depth on the Character of Metalliferous Deposits.

Messrs. J. F. Kemp, Louis de Launay, W. Lindgren and Malcolm MacLaren have signified their intention of contributing.

(4) The Origin and Extent of the Pre-Cambrian Sedimentaries.

The subject will be discussed by Messrs. H. Bäckstrom, C. K. Leith, J. Sederholm, and other distinguished workers.

(5) The Sub-divisions, Correlation and Terminology of the Pre-Cambrian.

Sir T. H. Holland, Messrs. A. C. Lawson, T. Ogawa, and J. Sederholm have already undertaken to present papers bearing on certain phases of this topic.

(6) To What Extent was the Ice Age Broken by Inter-Glacial Periods?

Messrs. T. W. E. David, G. De Geer, G. W. Lamplugh, A. Penck, F. B. Taylor, and others will present papers on this question.

(7) The Physical and Faunal Characteristics of the Palæozoic Seas, with Reference to the Value of the Recurrence of Seas in Establishing Geological Systems.

Messrs. Charles Barrois, T. C. Chamberlain, Charles Schuchert, E. O. Ulrich, and C. D. Walcott have already promised to present papers.

(8) Miscellaneous.

In addition to papers on the topics mentioned contributions on other subjects of interest will be welcomed. There will also be presented at the meetings of the Congress reports from Committees appointed at the Eleventh Congress, reports from the Committees of the Twelfth Congress, and such other communications as the Executive may consider should be brought to the attention of the Congress.

Exhibitions of Specimens and Maps.

Exhibitions of specimens and maps to illustrate the geology of the districts traversed by the various excursions will be arranged at Ottawa, Montreal, Quebec and Toronto, but the exhibitions will not be confined to this one object and will be of general interest.

In addition, ample space will be provided at Toronto for any exhibits which authors of papers or others may wish to send. It is hoped that as far as the nature of the subject allows, authors will avail themselves of this provision, as the comparison of specimens from various countries adds greatly to the value and interest of the discussions and meetings of the Congress.

Exhibits should reach Toronto as soon as possible after the 1st of June and not later than the 1st of July. They should be addressed to:—

Dr. W. A. Parks,
Royal Ontario Museum,
Bloor Street West,
Toronto, Canada.

Written advice of their having been forwarded should be sent to the Secretary, Twelfth International Geological Congress, Victoria Memorial Museum, Ottawa, Canada. It should be noted that the exhibits should be sent to Toronto, but that any correspondence about them should be addressed to the Secretary at his office in Ottawa.

The Department of Customs has consented to waive formality in this connection and exhibits for the meetings of the Congress in Toronto will enter Canada free of duty.

Excursions.

The Executive Committee has arranged a number of excursions to take place before, during, and after the meeting.

Special Trains.

Most of the excursions will be conducted in special trains to which the public are not admitted. This enables stops to be made at points of special interest which would not be possible if the ordinary train service were used. The special trains avoid delays and make it possible to visit a great many places in a comparatively short time.

The special trains for the Congress excursions will be made up as follows:—

Baggage car (or luggage van) carrying a limited amount of personal baggage. Boxes for each member of the excursion in which he can keep and pack specimens collected will also be provided in this car.

An ordinary first class car or day coach to be used for meetings and lectures, and for general purposes.

A dining car seating about 36 people in which table d'hote meals will be served.

Tourist and standard sleeping cars as required.

Sleeping Cars.

On the larger excursions two kinds of sleeping cars will be provided known as Tourist and Standard. They are similar in general arrangement though the Tourist is not so elaborately finished and upholstered as the Standard. There is a corresponding difference in the cost of tickets.

Reservations.

Some of the excursions are only available for a limited number. It is absolutely necessary that application for participation in the excursions to be held before or after the meeting be received at the earliest possible date, because at the time they are to be conducted both railway and hotel accommodation in Canada are taxed to their utmost limits and arrangements must be made in advance. To reserve accommodation, the application must be accompanied by a deposit,

which, however, will be returned in full if it is not possible to make room for the applicant.

The Executive Committee reserves the right to cancel any excursions for which there are not sufficient applicants.

Alternatives.

Members applying for accommodation are particularly requested to mention alternatives for each excursion for which they apply, so that where there is no room in one excursion they may be placed on another which will be of interest to them.

In the case of the long excursions, provided application is made at once, room can be found for almost any number by ordering extra cars, but it is essential that all applications be made as early as possible. In order that such early application may he made easy, even to those who have not definitely made up their minds, thc Executive Committee have pleasure in stating that, provided notice of the applicant's inability to take part in the excursion is received on or before the 15th of June, his deposit will be returned in full. No deposits, however, will be returned unless notice is received before this date, as any cancellation afterwards would cost the Executive Committee more than the amount of the deposit.

Prices.

The prices mentioned for each excursion include all expenses except purely personal ones, such as tobacco and alcoholie liquors. The prices include railway ticket, meals, hotel accommodation, and side excursions, as well as gratuities to servants which will be paid in every case by the Executive Committee. The prices include one berth in a sleeping car, either upper or lower. Members who wish to secure a whole section may do so by paying an additional amount of one and one-half dollars per day for Tourist sleeping car and two and one-half dollars per day for Standard.

A.—Excursions Before the Meeting.

A.1—Quebec and Maritime Provinces. **Time, 19 Days.**

Cost.—Tourist $130.00, Standard $150.00, Deposit $14.00.

Leader.—G. A. Young.

Assisted by John M. Clarke, E. R. Faribault, and others.

The object of the excursion is to afford an opportunity of obtaining a general idea of the geology of Canada east of Quebec City. The subjects of interest to be examined include: the "Quebec Group" as developed near Quebec and elsewhere; the Devonian of Gaspé and the clearly expressed Appalachian structure of the region; the famous Joggins section and others of the Carboniferous period; the Cambrian of St. John City and the relations of these rocks to the Pre-Cambrian; the Silurian section at Arisaig, where the fauna is more European in derivation than American; and a typical Nova Scotia gold field.

No allowance has been made in the schedule for delays on account of bad weather, so that members should carry clothing suitable for rainy or stormy weather.

Sunday, July 13. Leave Montreal in evening.

Monday, July 14. Quebec City and vicinity; the Lévis and Sillery divisions of Lévis; the Ordovician of Montmorency Falls.

Tuesday, July 15. The south shore of the St. Lawrence; the structure of the Quebec Group at Rivière du Loup; the Bic conglomerates with their Cambrian pebbles.

Wednesday, July 16—*Thursday, July* 17. The Palæozoic strata and Appalachian structure displayed at the eastern extremity of Gaspé Peninsula. On the first day, Percé and vicinity: on the second day, the Devonian section of Grande Grève, thrust over Ordovician-Cambrian beds, will be examined.

Friday, July 18. Partial examination of Black Cape Silurian section, (7,000 feet thick). The upper Devonian of Scaumenac Bay, Quebec, with its remarkable fish fauna.

Saturday, July 19. The Devonian beds and volcanic intrusives of Dalhousie, New Brunswick; iron ore deposits of Bathurst, New Brunswick.

Sunday, July 20. Halifax, the capital city of the Province of Nova Scotia.

Monday, July 21. Choice of two itineraries for the day:—either Oldham gold field, typical of Nova Scotia gold fields; or Horton Series of Horton Bluff and Windsor Series of Windsor, Nova Scotia.

Tuesday, July 22. Section of Riversdale-Union Serics (Carboniferous) and relations with Triassic; the New Glasgow conglomerate.

Wednesday, July 23. At Sydney, Cape Breton; the Carboniferous sections of Sydney Harbour.

Thursday, July 24. Special points of interest in the vicinity of Sydney and North Sydney, including coal mines and industrial plants.

Friday, July 25. Relations of Cambrian and Pre-Cambrian near Sydney; return through Cape Breton by daylight.

Saturday, July 26. By carriage from Antigonish to Silurian section of Arisaig; relations of Silurian with Devonian and Carboniferous.

Sunday, July 27. Antigonish, Nova Scotia.

Monday, July 28. The Joggins Carboniferous section.

Tuesday, July 29. Moncton, New Brunswick. Automobiles will be used to visit the neighbouring Carboniferous area including Moncton oil and gas field, gypsum deposits of Hillsborough, and oil shales of Albert Mines.

Wednesday, July 30. St. John, New Brunswick; the Cambrian and its relation with the Pre-Cambrian; the "Fern Ledges."

Thursday, July 31. The St. John River valley from Woodstock to Edmundston and across the Shickshock Mountains to the St. Lawrence at Rivière du Loup.

Friday, August 1. Arrive in Ottawa in early morning.

A.2—Haliburton-Bancroft (Ontario). **Time, 7 Days.**

Cost.—$80.00. Deposit, $8.00.

Leaders.—F. D. Adams and A. E. Barlow.

Number limited to 40.

This excursion is of special interest to petrographers, and students of Pre-Cambrian geology. The mode of travel will be

by railway train, steamer, carriage, and canoe through a rough and only partially settled country, and the excursion is therefore unsuitable for women.

The area lies to the north of Lake Ontario, on the margin of the Laurentian Protaxis of the continent. In this district is exposed the most notable section of the Grenville Series in Canada. The strata show to a remarkable degree the results of progressive metamorphism, as a consequence of the intrusion of extensive batholiths of granite, producing various types of amphibolite, etc. This district is also interesting by reason of the very extensive development of nepheline and other alkaline syenites, some of which are of the rarer types. In certain localities these rocks contain an abundance of corundum, while elsewhere sodalite, of a fine depth of colour, is conspicuous. The excursion will also include an inspection of the corundum mines and mills at Craigmont.

Thursday, July 24. Leave Montreal in evening.

Friday, July 25. Geological section from Millbridge to Bronson Siding.

Saturday, July 26. Marble quarries at Bronson. Sodalite quarries near Bancroft.

Sunday, July 27. Geological section between Bancroft and Gooderham. Mica and graphite deposits near Mumford. Graphite mill at Wilberforce. Crystalline limestones and associated nepheline syenites.

Monday, July 28. Section from Gooderham to Bancroft. Types of nepheline syenite and gabbro.

Tuesday, July 29. By canoe from Dungannon to Combermere.

Wednesday, July 30. Steamer to Craigmont. Visit corundum mines. Return to Combermere.

Thursday, July 31 Steamer to Barry's Bay. Train to Ottawa, arriving in late afternoon.

A.3—Sudbury-Cobalt-Porcupine (Ontario). Time, 10 Days.

Cost.—Tourist $65.00, Standard $75.00. Deposit $7.00.

Leader.—W. G. Miller

Number limited to 100.

This excursion will be of special interest to students of Pre-Cambrian geology, petrography, economic geology, and

metalliferous mining. It also affords attractions to glaclalogists and students of forestry.

The area is situated north-east of Lake Huron, in the Laurentian protaxis. The chief points of interest are the nickel and copper deposits of Sudbury; the iron mines of Moose Mountain; the iron range at Timagami; the cobalt-silver deposits of Cobalt; and the gold quartz veins of Porcupine. In addition to containing some of the world's most famous metalliferous deposits, the localities to be visited possess unexcelled facilities for the study of typical exposures of the Keewatin, Laurentian and Huronian systems.

Wednesday, July 23. Leave Montreal in morning, or leave Toronto in evening.

Thursday, July 24. } Sudbury. Huge, irregular masses of
Friday, July 25. } nickel and copper bearing sulphides at outer margin of a sill-like body of norite intrusive between a series of tuffs and sediments, and an older complex of Huronian, Keewatin and Laurentian rocks. The norite shows differentiation from a basic, sulphide rich norite to a granitic micro-pegmatite. Mining and smelting operations are conducted on a large scale; the plants will be visited.

Saturday, July 26. Moose Mountain. Banded Keewatin iron formation locally concentrated to massive, magnetite ore. The iron formation occurs in a series of schists intruded by granitoid gneiss.

Sunday. July 27. En route to Cobalt.

Monday, July 28. Cobalt, one of the largest and most remarkable silver producing districts of the world. The character of the Huronian and its relations with the underlying Keewatin-Laurentian complex.

Tuesday, July 29. Haileybury. The character and relations of the Keewatin, Huronian and Niagara (Silurian). Trip by steamer on Lake Timiskaming.

Wednesday, July 30. Porcupine. Large and small irregular masses of gold bearing quartz in Pre-Cambrian schists and sediments.

Thursday, July 31. Steamboat trip on Lake Timagami, a large but otherwise typical, Laurentian lake. Typical example of Keewatin iron formation:—banded jaspilite, quartz, magnetite and hematite.
Friday, August 1. Ottawa.
Saturday, August 2. Montreal.

A.4—Niagara-Iroquois Beach (Ontario). **Time, 3 Days.**

Cost.—$20.00. Deposit $5.00.
Leader.—A. P. Coleman.
Number limited to 100.

This excursion, which is of interest to the general geologist, to the physiographer and to the student of pleistocene geology, provides for a visit to the region south and west of Toronto, where the falls and gorge of Niagara will be seen, and the Silurian section and Iroquois beach at Hamilton will be studied.
Monday, August 4. Leave Toronto in morning. Niagara Falls and Gorge.
Tuesday August 5. Niagara Falls and Gorge.
Wednesday, August 6. Iroquois beach at Hamilton. Silurian section. Return to Toronto in evening.

A.5—Asbestos Deposits of the Province of Quebec. **Time, 4 Days.**

Cost.—$40.00, including ticket and sleeping car berth to Toronto. Deposit $5.00.
Leaders.—T. C. Denis and J. A. Dresser.
Number limited to 50.

This excursion will specially interest petrographers, and economic geologists.

The major portion of the world's supply of asbestos comes from the vicinity of Thetford and Black Lake in the Province of Quebec. This excursion affords an opportunity of examining asbestos and chromite deposits; of studying the process of differentiation in a peridotite magma; and the alteration of peridotite to serpentine.
Saturday, August 2. Leave Montreal in evening.
Sunday, August 3. Asbestos mines at Black Lake.
Monday, August 4. Chromic iron deposits at Chrome.
Tuesday, August 5. Asbestos deposits at East Broughton and Thetford.

Wednesday, August 6. Arrive in Montreal in evening, and leave same night.

Thursday, August 7. Arrive in Toronto in morning.

A.6—The Morin Anorthosite Area (Province of Quebec). Time, 1 Day.

Cost.—$5.00. No deposit.

Leader.—J. A. Bancroft.

Number limited to 50.

This excursion is of special interest to petrographers. A typical anorthosite intrusion of the Laurentian Protaxis will be examined. The area lies north of Montreal in the vicinity of St. Jerome.

Monday, August 4. Leave Montreal in morning for St. Jerome, St. Margaret and New Glasgow. Return to Montreal in evening

A.7—The Monteregian Hills (Quebec). Time, 2 Days.

Cost.—$18.00, including ticket and berth in sleeping car to Toronto but not including hotel or other accommodation in Montreal on Tuesday night. Deposit $2.00.

Leader.—F. D. Adams.

Number limited to 50.

This excursion will specially interest petrographers. These hills constitute a remarkably interesting petrographical province of alkaline rocks in the immediate neighbourhood of Montreal. The nepheline syenite and essexite intrusions, which, together with the accompanying dykes and sills of tinguaite, camptonite, etc., form Mount Royal, will be seen on the first day. On the second day, an excursion will be made to Mount Johnson, an intrusive plug, where a gradual transition from pulaskite to a basic essexite is excellently shown.

On the first day, the excursion will be on foot and by motor car, on the second day, a special train will be employed.

Tuesday, August 5. Montreal. Excursion on foot to Mount Royal in the morning. In the afternoon visit to quarries.

Wednesday, August 6. Leave Montreal in morning for Mount Johnson. Return to Montreal in evening. and leave for Toronto.

Thursday, August 7. Arrive in Toronto in morning.

A.8—Mineral Deposits of the Ottawa District. **Time, 3 days.**

Cost.—$22.00, including ticket and berth in sleeping car to Toronto. Deposit $5.00.

Leader.—J. Stansfield.

Number limited to 30.

This excursion will specially interest petrographers, mineralogists, and economic geologists. The district lies in the Pre-Cambrian area to the north and north-east of the City of Ottawa and is noted for its deposits of mica, graphite and apatite.

Monday, August 4. Leave Montreal in morning. Members wishing to visit the original Eozoon locality at Côte St. Pierre will drive from Papineauville reaching Buckingham in the evening. The others will proceed to Buckingham and visit the Emerald and Lansdowne mines.

Tuesday, August 5. Walker and Dominion mines near Buckingham. Arrive in Ottawa in evening.

Wednesday, Augus 5. Leave Ottawa for Kirk's Ferry. Visit Nellis mica mine. Return to Ottawa in afternoon.

Thursday, August 7. Toronto

A.9—Mineral Deposits near Kingston (Ontario). **Time, 3 Days.**

Cost.—$20.00. Including hotel Tuesday night at Kingston.

Leader.—W. Nicol. [Deposit $5.00

Number limited to 30.

This excursion will specially interest mineralogists and economic geologists. The region in the vicinity of Kingston is noted for the number and variety of its mineral species. The mica-apatite deposits, in addition to containing excellent specimens of these minerals, have as accessory minerals: perthite, zircon, scapolite, anhydrite and others. There are important deposits of feldspar, galena, zincblende, and iron ore. Near Parham, numerous boulders of corundum-bearing anorthosite are to be found. At Bedford, there are large exposures of scapolite gneiss. The Grenville series is well exposed in the region, and there are contacts of the Pre-Cambrian rocks with the Palæozoic.

Monday, August 4. By motor cars from Kingston. Visit galena and zinc blende deposits at Perth Road; apatite mine at Foxton; mica mine at Sydenham.

Tuesday, August 5. By rail from Kingston to Verona, Richardson feldspar mine, Glendower magnetite mine. Apatite and titaniferous iron deposits on Eagle Lake.

Wednesday, August 6. By motor car from Kingston. Visit Kingston Mills and Barriefield. Examine contact between Laurentian and Palæozoic. Arrive in Toronto in afternoon.

A.10—Pleistocene—Montreal and Ottawa. **Time, 3 Days.**

Cost.—$20.00. Deposit $5.00.

Leader.—J. W. Goldthwait.

Number limited to 50.

This excursion will specially interest glacial geologists and physiographers. It will comprise a visit to the marine beaches of Mount Royal, at Montreal, and in the vicinity of Hemmingford, south of the St. Lawrence River. At Ottawa, interesting sections in glacial and post-glacial deposits will be examined.

Monday, August 4. Montreal. Upper marine beach on Mount Royal. Glacial deposits at Mile End. Leave in afternoon for Hemmingford.

Tuesday, August 5. Hemmingford. Drive over marine plain. Examine upper marine beach at Covey gulf and several other points.

Wednesday, August 6. Leave Hemmingford for Ottawa. Visit sections of boulder clay, stratified sands and clays in vicinity of Ottawa and Hull. Leave Ottawa at night.

Thursday, August 7. Toronto.

A.11—Ordovician—Montreal and Ottawa. **Time, 3 Days.**

Cost.—$22.00. Deposit $5.00.

Leader.—Percy E. Raymond.

Number limited to 50.

Palæontolo· 'sts and stratigraphers will be specially interested in this ex· .rsion, which is devoted to an examination of the Ordovician formations exposed in the vicinities of Montreal and Ottawa.

Monday, August 4. Montreal. Visit Chazy at St. Martin and Trenton at Mile End. Leave for Ottawa in evening.

Tuesday, August 5. Ottawa. Trenton at Hull. Utica at Cumming's Bridge.

Wednesday, August 6. Ottawa. Chazy at Rockcliffe. Trenton at Mechanicsville. Leave Ottawa at night.

Thursday, August 7. Toronto.

A.12—Southwestern Ontario. **Time, 3 Days.**

Cost.—$23.00. Deposit $5.00.

Leader.—W. A. Parks.

Number limited to 50.

This excursion is of special interest to palæontologists and stratigraphical geologists. It affords an opportunity for the study and collection of Silurian and Devonian fossils in three of the richest localities in southern Ontario,—the Oriskany and Onondaga at Hagersville; the Hamilton at Thedford; and the Guelph at Guelph, Hespeler, and Elora. The region embraced lies to the west of Toronto between Lakes Huron and Ontario.

Monday, August 4. Leave Toronto.
Hagersville. Silurian (Salina), Devonian (Onondaga and Oriskany).

Tuesday, August 5. Thedford. Devonian (Hamilton formation).

Wednesday, August 6. Guelph. Silurian (Guelph and Niagara).
Return to Toronto.

B.—Excursions During the Meeting.

During the meeting at Toronto, short excursions will be made to various localities in the immediate neighborhood.

Particulars of these excursions will be supplied at a later date, and applications for participation in them need not be made previous to the meeting.

The excursions will be under the general leadership of A. P. Coleman, who will be assisted by F. B. Taylor, W. A. Parks, M. B. Baker, J. Keele, W. A. Johnston, and G. G. S. Lindsey.

Ten excursions have been arranged as follows:—

B.1—Niagara.

Niagara Falls.

B.2—Don.

Glacial and interglacial deposits in the Don Valley and at Scarboro Heights.

B.3—Hamilton.

Silurian and Ordovician. Five formations of the Silurian and one of the Ordovician.

B.4—Credit River.

Forks of Credit. Silurian section similar to that at Hamilton with interesting local differences.

B.5—Moraines North of Toronto.

The moraine deposits north of Toronto.

B.6—Muskoka.

The Laurentian of the Muskoka region.

B.7—Streetsville.

Marine Richmond overlying Lorraine slates. This is the only known locality in Southern Ontario where fossiliferous Richmond is exposed.

B.8—Clay Deposits, Toronto.

Clay deposits and works near Toronto.

B.9—Orillia.

The Algonquin beach.

B.10—Madoc.

Mineral deposits of the Madoc area.

C.—Excursions After the Meeting.

C.1—Transcontinental via Canadian Pacific Railway and Canadian Northern Railway. **Time, 23 Days.**

(C.1 and C.3 of the first circular.)

Cost.—Tourist $200.00; Standard $223.00. Deposit $20.00.

Leaders.—F. D. Adams and J. B. Tyrrell.

Number limited to 200.

This excursion, which is a combination of the C.1 and C.3 excursions announced in the first circular, will be of interest

to all classes of geologists. It will afford an opportunity of obtaining a general idea of Canadian geology between Toronto and the Pacific coast along the main lines of the Canadian Pacific and Canadian Northern railways.

Westbound, the excursion will follow the main line of the Canadian Pacific Railway as far as Port Arthur; thence, along the Canadian Northern Railway to Winnipeg; and from Winnipeg to the Pacific coast, along the main line of the Canadian Pacific Railway. The first section of the route lies within the Pre-Cambrian complex of northern Ontario and crosses the classic districts of Rainy Lake ar ' Lake of the Woods. The second section of the route traverses the plains and prairies of the interior of the continent underlain by gently dipping Tertiary, Cretaceous and Palæozoic strata, the latter overlapping the Pre-Cambrian to the east. The third section traverses the Cordillera and terminates at Victoria on Vancouver Island. The general structure of the cross section of the mountain system and of the component mountain groups; the enormous thickness of strata which in certain districts afford continuous sections from Pre-Cambrian to Mesozoic; the widespread vulcanism and attendant phenomena of the western part of the section; and the general physiographical geography of the region, are displayed in a phenomenal manner.

Eastbound, the excursion returns over the main line of the Canadian Pacific Railway through the Cordillera. From Calgary, situated on the plains in sight of the Rockies, the excursion returns to Winnipeg over the Canadian Northern Railway, following a more northerly route through Saskatoon, than traversed westbound. From Winnipeg, the Canadian Pacific Railway is traversed to Toronto.

Thursday, August 14. Leave Toronto in evening.

Friday, August 15. The Sudbury nickel-copper deposits, the largest and most important of their kind in the world.

Saturday, August 16. The Pre-Cambrian geology of the bold, rugged, north shore of Lake Superior. The Coldwell area of nepheline syenite and related rock types.

Sunday, August 17. The relations of the Keweenawan and Animikie with the Keewatin-Laurentian complex at Loon Lake. The Keweenawan and Animikie in the neighbourhood of Port Arthur.

Monday, August 18. The Keewatin iron formation at Atikokan. The recently discovered fossiliferous, Pre-Cambrian limestone of Steeprock lake.

Tuesday, August 19. Post-glacial faulting at Banning. The unconformity between the Seine river series (Huronian) and the Keewatin-Laurentian complex. At Bass Pass: the relations of the Keewatin and Coutchiching.

Wednesday, August 20. Winnipeg, the capital of Manitoba. The first prairie steppe. The fertile bottom lands of glacial lake Agassiz. The fossiliferous Ordovician of Stony mountain, an erosion remnant. The fossiliferous Silurian (Niagara) of Stonewall.

Thursday, August 21. Excursion passes through Regina, the capital of Saskatchewan, a great wheat growing province of Canada. The open prairie. The natural gas wells at Medicine Hat, Alberta, will be visited.

Friday, August 22. Banff, Alberta, within the Rockies. From Sulphur mountain, a view of the structure of Bow valley east of Banff and of the monoclinal structure of the eastern half of the Rockies. The Bankhead coal mine, the only anthracite coal mine in Canada. A section of the Fernie (Jurassic) and Kootenay (Lower Cretaceous, coal-bearing).

Saturday, August 23. Within the Rockies. The relations of the Pre-Cambrian at Lake Agnes. The Victoria and Lefroy glaciers. Lake Louise is a typical hanging valley.

Sunday, August 24. The base of the Cambrian and structure of the Rockies west of the continental divide. Kicking Horse valley. The famous, richly fossiliferous trilobite bed. Alternative excursions; either the Yoho valley in Lower and Middle Cambrian; its typical U-shape; the Takakaw falls; or Emerald valley and lake; downfold of Cambrian; horizon of famous fossiliferous, trilobite bed.

Monday, August 25. The fault at Donald with a vertical displacement of above 7 kilometres; the fault is the primary cause of the Rocky Mountain Trench. The great synclinorium of the Selkirks affording a most complete section, over 30,000 feet (9,000 metres) in thickness, of the Belt terrane. The great névé at Glacier.

Tuesday, August 26. Continuation of the Selkirk synclinorium. The unconformity at the base of the Belt terrane, the principal unconformity in British Columbia. The Shuswap group, the basal terrane of British Columbia.

Wednesday, August 27. The famous Fraser canon through the Coast-Cascade mountain systems, in the rocks of the Coast Range batholith. The compound delta of Fraser river formed successively in the Eocene, post-glacial and modern epochs. Vancouver, the commercial centre of British Columbia.

Thursday, August 28. Burrard Inlet, a fiord along contact of Eocene sediments and the granitic rocks of the Coast Range. By steamer to Victoria, the capital of British Columbia. A variety of phenomena in the vicinity of Victoria, including examples of ancient vulcanism, contact metamorphism, glacial erosion and deposition.

Friday, August 29. Continuation of examination of the geology of neighbourhood of Victoria. By boat, during night, to Vancouver.

Saturday, August 30. Reception in Vancouver. Excursion to Eocene fire clay beds at Clayburn.

Sunday, August 31—*Monday, September* 1. En route eastwards through the Cordillera.

Tuesday, September 2. Calgary to Saskatoon. Examples of typical "bad lands" topography. The Dinosaurian bone beds near Munson.

Wednesday, September 3. Across the prairies to Saskatoon, the centre of a great wheat growing section.

Thursday, September 4. The foraminiferal Cretaceous limestone at Pine river and the beaches of glacial lake Agassiz between Ethelbert and Pine river. Or the fossiliferous Devonian on Lake Winnipegosis.

Friday, September 5. En route, through the Pre-Cambrian region west of Lake Superior.

Saturday, September 6. Arrive in Toronto in evening.

C.2—Transcontinental via Canadian Pacific Railway, Grand Trunk Pacific Railway, and National Transcontinental Railway. Time, 23 Days.

(C.2 and C.4 of the first circular.)

Cost.—Tourist $200.00, Standard $223.00. Deposit $20.00.

Leaders.—R. W. Brock and James McEvoy.

Number limited to 200.

This excursion, which is a combination of the C.2 and C.4 excursions announced in the first circular, will afford an opportunity of obtaining a general idea of Canadian geology between Toronto and the Pacific coast along the main line and Crow's Nest branch of the Canadian Pacific railway, the Grand Trunk Pacific railway and National Transcontinental railway.

This excursion, as in the case of C.1, will be of interest to all classes of geologists. It will be of special interest to students of economic geology, stratigraphical geology and glacial geology.

Westbound, the excursion will follow the main line of the Canadian Pacific railway to Medicine Hat, thence over the Crow's Nest branch of the Canadian Pacific railway to Kootenay Landing. From Kootenay Landing, the excursion will traverse a combined water and rail route by way of Kootenay lake to Phoenix, thence to Rossland and from Rossland, by way of the Arrow lakes, to Revelstoke. From Revelstoke the excursion will follow the main line of the Canadian Pacific railway to the coast and will terminate at Victoria on Vancouver Island. The first section of the route, on which no stops will be made, passes through the Pre-Cambrian complex of northern Ontario. The second section of the route traverses the plains and prairies of the interior of the continent underlain by gently dipping Tertiary, Mesozoic and Palæozoic strata, the latter overlapping the Pre-Cambrian to the east. The third section of the route crosses the eastern half of the Cordillera in the neighbourhood of the international boundary;

the western half is traversed along the main line of the Canadian Pacific railway. The structure of the Rockies and adjoining mountains and the immense thickness of sediments of which they are formed and which range in age from Pre-Cambrian to Mesozoic, are displayed in an admirable fashion. The widespread vulcanism and attendant phenomena of the western portion of the mountain section are clearly developed, and the physical geography of the whole section is clearly expressed. Special opportunities are afforded for the study of the character of the coal fields of western Canada, and of the important and interesting metalliferous deposits of southern British Columbia.

Eastbound, the excursion returns over the main line of the Canadian Pacific railway through the Cordillera, traversing the Selkirks and western Rockies by daylight. From Calgary, situated on the plains in sight of the Rockies, the excursion will travel over the Grand Trunk Pacific railway northward to Edmonton, thence westward through the northern extension of the Rockies. Returning to Edmonton, the Grand Trunk Pacific railway will be followed to Winnipeg and thence east to the junction with the National Transcontinental railway, and by means of the latter the journey will be continued eastward through the Pre-Cambrian region of northern Ontario, to Cochrane. From Cochrane the route follows the Northern Ontario and Timiskaming railway by way of Porcupine and Cobalt, thus affording an opportunity of studying the general geology of the Pre-Cambrian district, and of examining a gold mining centre and a great silver producing area.

Thursday, August 14. Leave Toronto in evening.

Friday, August 15. En route. A portion of the rugged shore line of Lake Superior during daylight.

Saturday, August 16. Winnipeg, the capital of Manitoba. The first prairie steppe. The fertile bottom lands of glacial lake Agassiz. The fossiliferous Ordovician of Stony Mountain, an erosion remnant.

Sunday, August 17. Regina, the capital of Saskatchewan, the greatest wheat growing province of Canada. The

open prairie. The natural gas wells of Medicine Hat, Alberta, will be visited.

Monday, August 18. Blairmore bituminous coal field with its many collieries developed in the Kootenay (Lower Cretaceous). The monoclinal structure of the Rockies due to repeated step-faulting combined with folding. Crow's Nest mountain, an example of the great overthrusts of the Rockies. The Frank landslide, one of the largest recorded; the mountain considered still to be dangerous.

Tuesday, August 19. At Corbin a coal outcrop 375 feet (114 metres) in width, due to a compressed syncline in a thick coal seam. The Crows Nest Coal field, the largest in British Columbia; upwards of 200 feet (60 metres) of coal in a score of seams.

Wednesday, August 20. A traverse across the gigantic folds in the Purcell range, of the Belt terrane (measured thickness of 26,000 feet, 7,900 metres). By boat on Kootenay lake to Nelson. The valley eroded in granodiorite of Nelson batholith. The lake valley analogous to the fiords of the Pacific coast.

Thursday, August 21. The largest low grade copper deposits of contact metamorphic origin of Phoenix, the largest individual copper camp in Canada. Tertiary lavas (Miocene?) and their relation to Oligocene and Palæozoic rocks. General view of maturely dissected upland of Midway mountains.

A subordinate excursion diverges at Phoenix from the main excursion and rejoins it at Victoria. See description below, under heading,—Subordinate Excursion No. 1, Phoenix to Victoria.

Friday, August 22. The gold-copper deposits of Rossland; the deepest mines in Canada; production to date valued at over $50,000,000. The ore bodies on or near contact of large body of monzonite with augite porphyrite.

A subordinate excursion diverges at Rossland from the main excursion and rejoins it at Victoria. See description below under heading,—Subordinate Excursion No. 2, Rossland to Victoria.

Saturday, August 23. The Columbia trench of the lower and upper Arrow lakes with their fiord-like walls, hanging valleys, cones, fans and truncated spurs. The Shuswap terrane between Arrowhead and Revelstoke.

Sunday, August 24. Kamloops lake. A Tertiary section of 2,500 feet (760 metres) of conformable lavas and pyroclastics. Fish and plant remains in the Tertiary Tranquille beds. The broad terraces of the Thompson river.

Monday, August 25. Vancouver, the commercial centre of British Columbia. Burrard Inlet, a fiord along contact of Eocene sediments and the granitic rocks of the Coast Range. By steamer to Victoria, the capital of British Columbia. A variety of phenomena in the vicinity of Victoria, including examples of ancient vulcanism, contact metamorphism, glacial erosion and deposition.

A subordinate excursion diverges at Vancouver from the main excursion and rejoins it at Victoria. See description below, under heading,—Subordinate Excursion No. 3, Nanaimo Coal Field.

Tuesday, August 26. Continuation of examination of the geology of the neighbourhood of Victoria. By boat, during night, to Vancouver.

Wednesday, August 27. The compound delta of Fraser river formed successively in the Eocene, post-glacial and modern epochs. The famous Fraser canon through the Coast-Cascade mountain systems, in the rocks of the Coast Range batholith.

Thursday, August 28. Daylight trip through the Selkirks and western Rockies. The great névé at Glacier.

Friday, August 29. Calgary to Edmonton, the capital of Alberta. The lignite coal seam (Edmonton formation) at Tofield, the seam in part directly overlain by boulder clay and sands.

Saturday, August 30. Traverse by railroad westward from Edmonton through the ranges of the Rockies. Mount Robson, the highest peak of the Canadian Rockies. The great erosion valley of the Athabasca. The struc-

ture of the Rockies. Devonian measures thrust over Cretaceous.

Sunday, August 31. Edmonton to Saskatoon. Along the southern border of the partly wooded country lying north of the prairies.

Monday, September 1. Saskatoon, the centre of a great wheat growing section. Saskatoon to Winnipeg.

Tuesday, September 2. } The route of the recently opened
Wednesday, September 3. } National Transcontinental railway through the Pre-Cambrian region of northern Ontario.

Thursday, September 4. Porcupine. Large and small irregular masses of gold bearing quartz in Pre-Cambrian schists and sediments.

Friday, September 5. Cobalt, one of the largest silver producing districts of the world. The Cobalt series (Huronian) and relations with Laurentian—Keewatin complex.

Saturday, September 6. Arrive in Toronto in morning.

SUBORDINATE EXCURSION NO. 1, PHOENIX TO VICTORIA.

Cost.—Approximately $50 extra.

Number limited to 15.

Thursday, August 21. Leave Phoenix at noon.

Friday, August 22. The trough-like glaciated valley of Similkameen river, a stream antecedent to the Okanagan range. At Hedley, the gold-bearing arsenopyrite deposits of contact metamorphic origin; a type unique among North American ore deposits. A general view of the surface of the Interior Plateau region.

Saturday, August 23. At Hedley, a study of magmatic differentiation as exhibited on the roof contact of a granodiorite batholith. At Princeton, the coal-bearing rocks of an Oligocene lake basin.

Sunday, August 24. At Tulameen, a stock of [illegible]dotite differentiating to pyroxenite and gabbro, and carrying platinum and diamonds in chromite segregations. Placer deposits containing Platinum.

Monday, August 25. Tulameen to Spences Bridge. Tertiary lavas, and type locality of Coldwater series. Vancouver to Victoria by boat during night.

Tuesday, August 26. Rejoin main excursion at Victoria.

SUBORDINATE EXCURSION No. 2, ROSSLAND TO VICTORIA

Cost.—Approximately $16.00 extra.

Number limited to 15.

Friday, August 22. Leave Rossland for Nelson.

Saturday, August 23. Bonnington falls on Kootenay river. Terraced valley of Slocan river. Nelson granodiorite batholith. Slocan lake, fiord-like walls. Denver glacier.

Sunday, August 24. Section of Slocan series between New Denver and Silverton. Typical silver-lead and zinc deposits.

Monday, August 25. New Denver to Nakusp through north extension of Slocan lake trough. Upper Arrow lake. Shuswap terrane at Arrowhead.

Tuesday, August 26. By boat, in morning, to Victoria to rejoin main excursion.

SUBORDINATE EXCURSION No. 3, NANAIMO COAL FIELD.

No extra cost.

Monday, August 25. By boat, Vancouver to Nanaimo. The Cretaceous coal-bearing Nanaimo series, its basal members, local folding, sandstone dykes, structure and origin of coal seams.

Tuesday, August 26. Rejoin, during forenoon, main excursion at Victoria.

C.5—Lakes Erie and Huron. **Time, 13 Days.**

Cost.—Owing to the nature of the transportation, it is impossible to state an exact figure at present. The cost is estimated not to exceed $125.00 and may be materially reduced if there is a full complement. Deposit $12.00.

Leaders.—W. A. Parks and T. L. Walker.

Number limited to 75.

This excursion affords an opportunity for the examination of the greater part of the Palæozoic section of Ontario and for the study of the Pre-Cambrian region north and east of Lake Huron. Interesting glacial and physiographic features are also presented by the district traversed.

The excursion will be made in a specially chartered steamer from Toronto to Collingwood via Manitoulin Island.

Friday, August 15. Leave Toronto in morning. Niagara Falls. Port Colborne:—Devonian (Onondaga and Oriskany); sand dunes; cement works.

Saturday, August 16. Rondeau:—sand spits; peat bogs; natural forests.

Sunday, August 17. Pelee Island:—Devonian (Onondaga); remarkable glacial grooving.

Monday, August 18. Amherstburg:—passage beds from Silurian to Devonian.

Tuesday, August 19. Windsor:—salt wells; salt and soda plants.

Wednesday, August 20. Thedford:—Devonian (Hamilton formation).

Thursday, August 21. Goderich:—Onondaga and Hamilton formations.

Friday, August 22. Flower Pot Island:—Clay Cliffs on east end of Manitoulin Island; (Ordovician).

Saturday, August 23. Indian village at Wekwemikong:—exhibition by the aborigines.

Sunday, August 24. Benjamin or Granite Island:—contacts of the Palæozoic with the Pre-Cambrian.

Monday, August 25. Little Current:—section across Ordovician; contact of Palæozoic with Pre-Cambrian.

Tuesday, August 26. Manitowaning:—Silurian section (Lock port and Cataract).

Wednesday, August 27. Parry Sound:—Pre-Cambrian formations.

Thursday, August 28. Collingwood:—section of Ordovician and Silurian (Trenton to Niagara). Return to Toronto in evening.

ALTERNATIVE EXCURSION DURING C.5.

Monday, August 25.—*Tuesday, August* 26. Little Current to Sudbury and return:—Pre-Cambrian geology; nickel-copper mines.

C.6—Sudbury-Cobalt-Porcupine, (Ontario). **Time, 9 Days.**

Cost.—Tourist $58.00, Standard $67.00. Deposit $6.00.

See Excursion A.3.

Leave Toronto, Friday night, August 15th.

Arrive Toronto, Sunday morning, August 24th.

C.8—Yukon and Malaspina. **Time, 25 Days.**

Cost.— Estimated at $350.00. Deposit $40.00.

If combined with C.9, cost estimated at $400.00. Deposit $40.00.

Members taking excursion C.8 will not be able to return to Toronto by the special trains of excursions C.1 and C.2, but suitable arrangements will be made for their return journey.

Leader.—R. G. McConnell.

Number limited to 50.

This excursion, while of general interest, will be especially interesting to economic and glacial geologists.

The journey from Vancouver to Skagway, Alaska, will be made by steamboat route passing along the coast of British Columbia. From Skagway, at the head of a long fiord, the summit of the Coast Range is crossed by railway to White Horse, Yukon, and from there the Yukon river is descended to Dawson. Returning, the above route is retraversed to Skagway. From Skagway, the excursion will proceed northward by specially chartered boat to Yakutat Bay and thence to Prince Rupert from which the boats of regular steamship lines will be utilized on return journey to Vancouver.

Members taking part in the excursion should provide themselves with warm clothing. No furs, however, will be necessary.

The principal points of interest are:—the coast of British Columbia, notable for its fiords and mountain scenery; the unglaciated, subartic area of the Yukon; the Klondike placer gold field; the Malaspina glacier and the glacial phenomena and recent earthquake effects at Yakutat Bay; and various classes of mineral deposits.

Friday, August 29. Leave Vancouver by boat

Saturday, August 30. En route.

Sunday, August 31. Leave Prince Rupert.

Members of excursion C.9 wishing to take excursion C.8, join excursion C.8 at this point.

Monday, September 1. En route.

Tuesday, September 2. Arrive at Skagway and proceed by rail to White Horse, following, in a general way, the route traversed before the building of the railway, by thousands of gold seekers who took part in the memorable stampede to the Klondike gold field. At White Horse embark on steamer for Dawson.

Wednesday, September 3.
Thursday, September 4.
Friday, September 5. The Yukon river from White Horse to Dawson, passing from the rugged, highly glaciated mountain region adjoining the coast, into the maturely dissected, non-glaciated, portion of the Yukon Plateau.

Saturday, September 6.
Sunday, September 7.
Monday, September 8. At Dawson; the Klondike gold field from which, in 1900, nearly $25,000,000 of placer gold was removed; the enormous scale on which hydraulicking and dredging is conducted; the Pre-Ordovician strata of the area, the source of the auriferous gravels which range in age from Recent to Pliocene or older.

Tuesday, September 9.
Wednesday, September 10. The Yukon river from Dawson to White Horse, stopping midway to examine the Tantalus coal deposits of Jura-Cretaceous age.

Thursday, September 11. En route.

Friday, September 12. At White Horse; contact metamorphic copper deposits occuring in large irregular bodies along contact of granite and limestone, an example of a general type common to the Pacific coast region.

Saturday, September 13. White Horse to Skagway by railway; by boat to Juneau, Alaska.

Sunday, September 14.
Monday, September 15.
Tuesday, September 16. Two days are spent at Yakutat Bay examining the immense Malaspina glacier, and the present and past

activities of this enormous ice body. The glaciers at Glacier Bay and other points en route can he viewed to advantage from the steamboat.

Wednesday, September 17. Return to Juneau; the Treadwell gold mine, one of the largest in the world.

Thursday, September 18. En route, southbound.

Friday, September 19. The copper deposit at Alice Arm, Portland Canal, British Columbia.

Saturday, September 20. } En route to Vancouver.
Sunday, September 21. }

Monday, September 22. Arrive at Vancouver.

Two days extra should be allowed for unfavourable weather.

C.9—Prince Rupert and Skeena River (British Columbia).
Time, 7 Days.

Cost.—Estimated at $100.00. Deposit $10.00.

Members taking excursion C.9 will not be able to return to Toronto by the special trains of excursion C.1 and C.2, hut suitable arrangements will he made for their return journey.

Leader.—R. G. McConnell.

Number limited to 50.

This excursion, while of general interest, will be specially interesting to economic geologists and glacial geologists.

The journey from Vancouver to Prince Rupert is made by regular steamers sailing from Vancouver. From Prince Rupert, the terminus of the Grand Trunk Pacific, the railway is traversed to Aldermere and back to Prince Rupert. From Prince Rupert, the journey is made by steamer back to Vancouver.

The principal points of interest are:—the coast of British Columbia, notable for its fiords and mountain scenery; a geological section through the batholith of the Coast Range and the Jurassic strata to the east; and the silver-lead deposits and coal seams of the area east of the Coast Range.

Wednesday, August 27. Leave Vancouver by boat.

Thursday, August 28. En route.

Friday, August 29. } Arrive at Prince Rupert. The valley
Saturday, August 30. } of Skeena river; the Coast Range batholith; the silver-lead deposits at Hazelton; the Telkwa coal field.

Sunday, August 31. Return to Prince Rupert.

Members of excursion C.9, wishing to take excursion C.8, join excursion C.8 at this point.

Monday, September 1. Leave Prince Rupert by boat.

Tuesday, September 2. Arrive at Vancouver.

Summary Time Table.

	BEGIN.			END.		
No.	Place.	Day.	Date.	Place.	Day.	Date.
A.1.	Montreal	Sun. Night	July 13	Ottawa	Fri. Morn.	Aug. 1
A.2.	Montreal	Thur. Night	July 24	Ottawa	Thur. Night	July 31
A.3.	Montreal or Toronto	Wed. Morn. Wed. Night	July 23 July 23	Montreal	Sat. Morn.	Aug. 2
A.4.	Toronto	Mon. Morn.	Aug. 4	Toronto	Wed. Night	Aug. 6
A.5.	Montreal	Sat. Night	Aug. 2	Toronto	Thur. Morn.	Aug. 7
A.6.	Montreal	Mon. Morn.	Aug. 4	Montreal	Mon. Night	Aug. 4
A.7.	Montreal	Tues. Morn.	Aug. 5	Toronto	Thur. Morn.	Aug. 7
A.8.	Montreal	Mon. Morn.	Aug. 4	Toronto	Thur. Morn.	Aug. 7
A.9.	Kingston	Mon. Morn.	Aug. 4	Toronto	Wed. Night	Aug. 6
A.10.	Montreal	Mon. Morn.	Aug. 4	Toronto	Thur. Morn.	Aug. 7
A.11.	Montreal	Mon. Morn.	Aug. 4	Toronto	Thur. Morn.	Aug. 7
A.12.	Toronto	Mon. Morn.	Aug. 4	Toronto	Wed. Night	Aug. 6
B.1-10	Toronto	Fri.	Aug. 8	Toronto	Thurs.	Aug. 14
C.1.	Toronto	Thur. Night	Aug. 14	Toronto	Sat. Night	Sept. 6
C.2.	Toronto	Thur. Night	Aug. 14	Toronto	Sat. Morn.	Sept. 6
C.5.	Toronto	Fri. Morn.	Aug. 15	Toronto	Thur. Night	Aug. 28
C.6.	Toronto	Fri. Night	Aug. 15	Toronto	Sun. Morn.	Aug. 24
C.8.	Vancouver	Fri. Morn.	Aug. 29	Vancouver	Wed.	Sept. 24
C.9.	Vancouver	Wed. Morn.	Aug. 27	Vancouver	Tues.	Sept. 2

Special Days:—

Friday, Aug. 1st.....Ottawa.
Saturday, " 2nd....Montreal.
Thursday, " 7th....Toronto.—Opening day of Session.
Thursday, " 14th....Toronto.—Last day of Session. Excursions C.1. and C.2. start at night.

Ottawa and Montreal.

Friday, August 1st, is to be spent in Ottawa, and Saturday, August 2nd, in Montreal This arrangement has been made in order that the political and commercial capitals of Canada may be seen.

Luggage and Clothes.

Luggage should be reduced to the smallest possible limits.

While rugs and heavy ulsters may be desirable for the voyage across the Atlantic Ocean, they are not required while travelling on the excursions, except excursions C.8 and C.9 which involve steamer journeys up the Pacific Coast.

Luggage not required for travel in Canada can he stored in Montreal or Toronto.

For the excursions, members are particularly requested to limit themselves to a single suitcase to accompany them in the sleeping car and one steamer trunk to be carried in the baggage car, and to which, on the Congress special trains, access can he had at any time.

A number of small handbags and parcels in the sleeping cars are unnecessary and serve merely to crowd the cars and make them uncomfortable for every one concerned. The most convenient size suitcase is one 24 inches long by 14 inches wide by 7 inches high, outside measurements.

It is unnecessary for members to bring with them any formal morning dress, such as a frock coat, as, at any reception that may be given, it will be stipulated that such costume is unnecessary.

For their own comfort it is desirable for members to bring an ordinary evening or dinner suit.

Elaborate outdoor or camp outfits are not only unnecessary, but undesirable.

Accommodation at Toronto.

University of Toronto.

As announced in the first circular, accommodation will be provided in the buildings connected with the University of Toronto. It is expected that about four hundred rooms in the

various college buildings will be available. Bedroom and meals are offered to the members at a total cost of one dollar and seventy-five cents per day, gratuities to servants included.

Since beer, wine or other alcoholic liquors may only be sold in licensed premises, members who avail themselves of the University accommodation must personally arrange for any provision in this respect.

Hotels.

For the information of those who prefer to stay at hotels, the following list, with the minimum charges per day, is given. The phrase "with bath" means with private bathroom attached to the bedroom.

ARLINGTON.....$2.50, room and meals included.

ELLIOTT HOUSE...$2.50, room and meals included.

IROQUOIS.....$2.00, room and meals included.

KING EDWARD....$1.50, room only, without bath, meals a la carte.
$2.50, room only, with bath, meals a la carte.

MOSSOP .....$1.50, room only, meals a la carte.
$2.00, room only, with bath, meals a la carte.

PRINCE GEORGE...$3.00, room and meals included.
$1.50, room only, meals extra.

QUEENS .....$2.00, room only, without bath, meals table d'hote.
$3.00, room only, with bath, meals table d'hote.
$4.00, room without bath and meals included.
$5.00, room with bath and meals included.

WALKER HOUSE ..$2.50, room without bath, meals included.
$3.00, room with bath, meals included.

In addition to the charges stated, visitors will find that gratuities to servants will cost from 25 cents per day, in the

more moderate hotels, to 50 cents per day, in the more expensive.

Reservations.

Application for accommodation in Toronto, either at the University or in the hotels, should be made at the earliest possible date to the Secretary of the Twelfth International Geological Congress on the forms of application for membership.

Accommodation at Quebec, Montreal, Ottawa, Winnipeg Vancouver and Victoria.

The Executive Committee is not able to announce any special arrangements for accommodation in any of these cities, but an effort will be made to reserve rooms if application is received by the Secretary early enough. A list of hotels and their tariffs will be published and sent to members at a later date.

The Journey to Canada.

The sailing dates of boats on the Atlantic and Pacific Ocean, which are expected to bring members to Canada in time for the Congress, will be announced later. A list of passenger steamship lines and their principal offices is given below.

Detailed information regarding the boats, routes, charges, proposed sailings, etc., will be gladly furnished by the companies, by their agents, or by the Secretary of the Twelfth International Geological Congress.

Offices and Agents of Steamship Lines Sailing Direct to Canada.

CITY	LINE	ADDRESS
ADELAIDE, Australia.	Canadian-Australian.	Australian United S.N. Co., Ltd., Adelaide S.S. Co.
ANTWERP, Belgium.	Donaldson,	G. Schyns, 41 Ave. de Keyser.
AUCKLAND,	Canadian-Australian.	Union S.S. Co., of N.Z., Ltd.
BERLIN, Germany.	Allan.	Brasch & Rothenstein, Unter den Linden, 39.

CITY	LINE	ADDRESS
BERLIN, Germany.	Canadian Pacific.	Weltreise Bureau Union, Unter den Linden, 5 and 6.
"	White Star Dominion.	Al Peters, Unter den Linden, 6.
BRISBANE, Australia.	Canadian-Australian.	British India & Queensland Agency Company, Ltd.
BRISTOL, England.	Royal.	Canadian Northern Steamships, Ltd., 65 Baldwin Street.
BRUSSELS, Belgium.	White Star Dominion.	R. Beck, Boulevard Anspach, 6.
COLOMBO, Ceylon.	Blue Funnel.	J. M. Robertson & Co.
COPENHAGEN, Denmark.	Canadian Pacific.	Olaf Lassen, General Agent, Nyhavn, 19.
DUBLIN, Ireland.	Canadian Pacific.	A. W. Hewitt, 9 D'Olier Street.
EDINBURGH, Scotland.	Canadian Pacific.	J. & H. Lindsay, Ltd., 18 So. St. Andrew Street.
GLASGOW, Scotland.	Allan.	Allan Line Steamship Co., Ltd., 25 Bothwell Street.
"	Canadian Pacific.	120 St. Vincent Street.
"	Donaldson.	56 Bothwell Street.
"	Royal.	Canadian Northern, Steamships, Ltd., 125 Hope Street.
HAMBURG, Germany.	Canadian Pacific.	Carl F. A. Flugge. Alstersdamm 8.
HOBART,	Canadian-Australian.	Union S.S. Co. of N.Z. (Ltd.).
HONG KONG,	Blue Funnel.	Butterfield & Swire.
"	Canadian Pacific.	Canadian Pacific Railway Co.
"	Osaka Shosen Kaisha American.	
KEELUNG, Japan.	Osaka Shosen Kaisha American.	
KOBE, Japan.	Blue Funnel.	Butterfield & Swire.

CITY	LINE	ADDRESS
KOBE, Japan.	Canadian Pacific.	J. Rankin, 14a Maye Machi.
"	Osaka Shosen Kaisha, American.	
LONDON, England.	Allan.	Allan Bros. & Co'y, Ltd., 14 Cockspur Street, W.
"	Canadian Pacific.	62 Charing Cross, Trafalgar Square, London, S.W.
"	Royal.	Canadian Northern Steamships, Ltd., 65 Haymarket, London, W.
"	Cunard.	29 Cockspur Street, S. W.
"	White Star Dominion.	Oceanic House, 1 Cockspur Street.
MANILA, Phillipine Is.	Blue Funnel.	Smith, Bell & Co.
MELBOURNE, Australia.	Canadian-Australian.	Union S.S. Co. of N.Z. (Ltd.)
MOJI, Japan	Osaka Shosen Kaisba, American.	
NAOASAKI, Japan.	Canadian Pacific.	Hohne, Ringer & Co.
"	Osaka Shosen Kaisha, American.	
PARIS, France.	Allan.	Pitt & Scott, 47 rue Cambon.
"	Canadian Pacific.	A. Catoni, 1 rue Scribe.
"	Royal.	Canadian Northern Steamships, Ltd., 1 bis rue Scribe.
"	White Star Dominion.	Nicholas Martin, 9 rue Scribe.
PENANO, Straits Settlements.	Blue Funnel.	W. Mansfield & Co., Ltd.
ROME, Italy.	Allan	Messrs. French Lemont Co., 49 Piazza-di-Spagna.
"	White Star Dominion.	Hamburg-American Line, Corso Umberto 1°, No 399.

CITY	LINE	ADDRESS
SHANGHAI, China.	Blue Funnel.	Butterfield & Swire.
"	Canadian Pacific.	A. R. Owen.
"	Osaka Shosen Kaisha, American.	
SINGAPORE, Straits Settlements.	Blue Funnel.	W. Mansfield & Co., Ltd.
ST. PETERSBURG, Russia.	Allan.	International Sleeping Car Co., Newsbey Prospect, 22.
"	Canadian Pacific.	Nordisk Reisebureau, 19 Belshaja Konjushenaja.
STOCKHOLM, Sweden.	Allan.	Allan Liniens Kontor, Skeppsbron 6.
"	Canadian Pacific.	Nordisk Risebureau, Royal Opera Buildings.
"	White Star Dominion.	Broderna Larsson & Co., Skeppsbron.
SYDNEY, Australia.	Canadian-Australian.	Union S.S. Co. of N.Z. (Ltd.).
TOKYO, Japan.	Nippon Yusen Kaisha,	Japan Mail Steamships Co.
VIENNA, Austria.	Allan.	S. Altman, 1, Kaerntnerring 8
"	Canadian Pacific.	S. Altman, Kaerntmerring 7.
"	White Star Dominion.	Red Star Line, 14, Kartnerring.
WELLINGTON, New Zealand.	Canadian-Australian.	Union S.S. Co. of N.Z. (Ltd.).
YOKAHAMA, Japan.	Blue Funnel.	Butterfield & Swire.
"	Canadian Pacific.	Canadian Pacific Railway Co., W. T. Payne.
"	Osaka Shosen Kaisha, American.	

Atlantic Ocean Crossing.

Members crossing the Atlantic should, if possible, sail direct to Montreal or Quebec, taking advantage of the beautiful St. Lawrence route, which involves the shortest sea journey and by which route passengers have the pleasure of sailing for two days on one of the finest rivers of the world, and one noted for its beautiful and interesting scenery.

The mail steamships sailing to Quebec and Montreal are provided with every comfort and luxury that can now be obtained in ocean travel.

The cost of a single ticket from Europe to Montreal or Quebec is about one hundred dollars first class, and about fifty dollars second class. As a rule, there is no reduction for return tickets, so that members are advised to purchase single tickets, leaving themselves free to return by the most convenient boat instead of being tied to any one steamship line.

One Class Boats on Atlantic Ocean.

In addition to the fast mail boats there are now a number of slower boats, which are as comfortable though not as luxuriously fitted. These are known as the "one class" boats and the cost of the journey on them is about fifty dollars, or about one-half of the first class fare on the fast mail boats. These steamers are worthy of careful consideration and special attention is therefore drawn to them.

Money Values.

The approximate value of the Canadian dollar in currencies of other countries is shown in the following table:—

One dollar—Five francs, fifteen centimes, French.
" " —Four shillings, two pence, English.
" " —Four marks, eighteen pfennig, German.
" " —Three kronor, seventy ore, Swedish.
" " —Four crowns, ninety hellers, Austrian.
" " —One rouble, ninety-four kopek, Russian.
" " —Five lire, eighteen centesimi, Italian.

Correspondence.

The Seeretary will be pleased to answer all inquiries regarding the arrangements for the Congress. Correspondence should be addressed as follows:—

The Secretary, Twelfth International Geological Congress,
Victoria Memorial Museum, Ottawa, Canada.

Cable address:—GEOCONG, OTTAWA. Messages may be sent in any of these codes:—

A.B.C. 5th, Lieber, Bedford McNeill, 1908.

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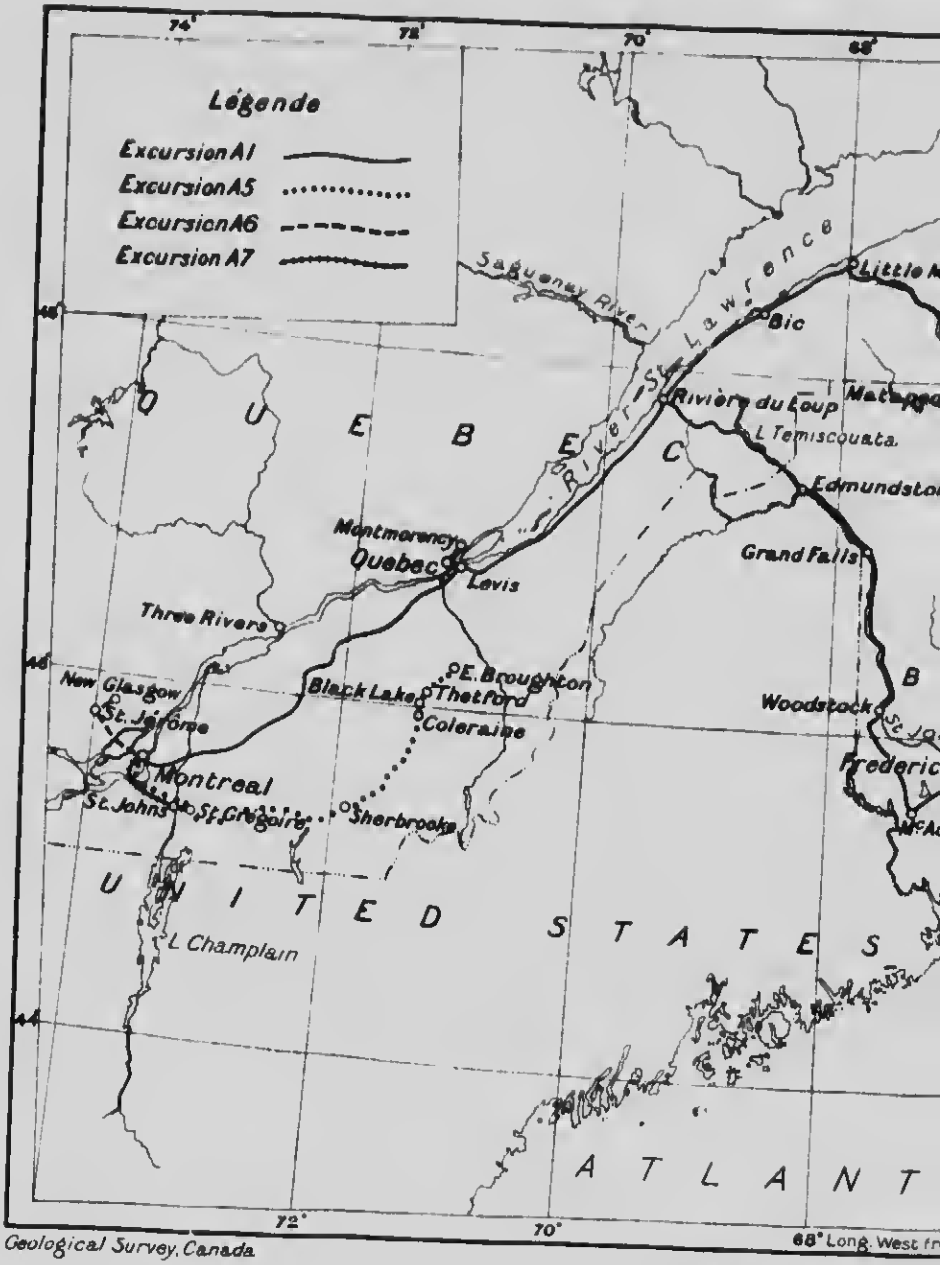
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Montmorency
Quebec
Levis
Three Rivers
New Glasgow
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Black Lake
E. Broughton
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Coleraine
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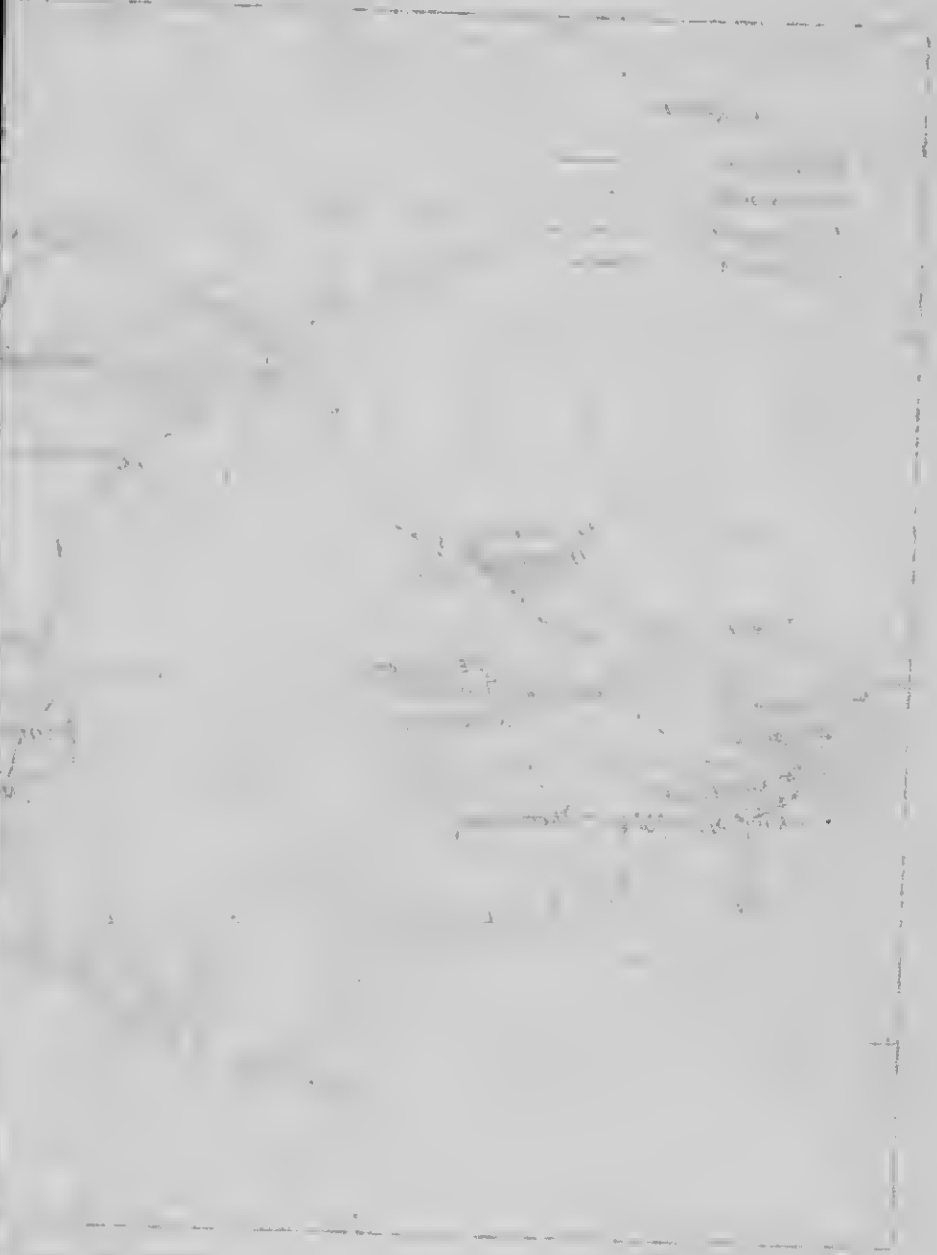


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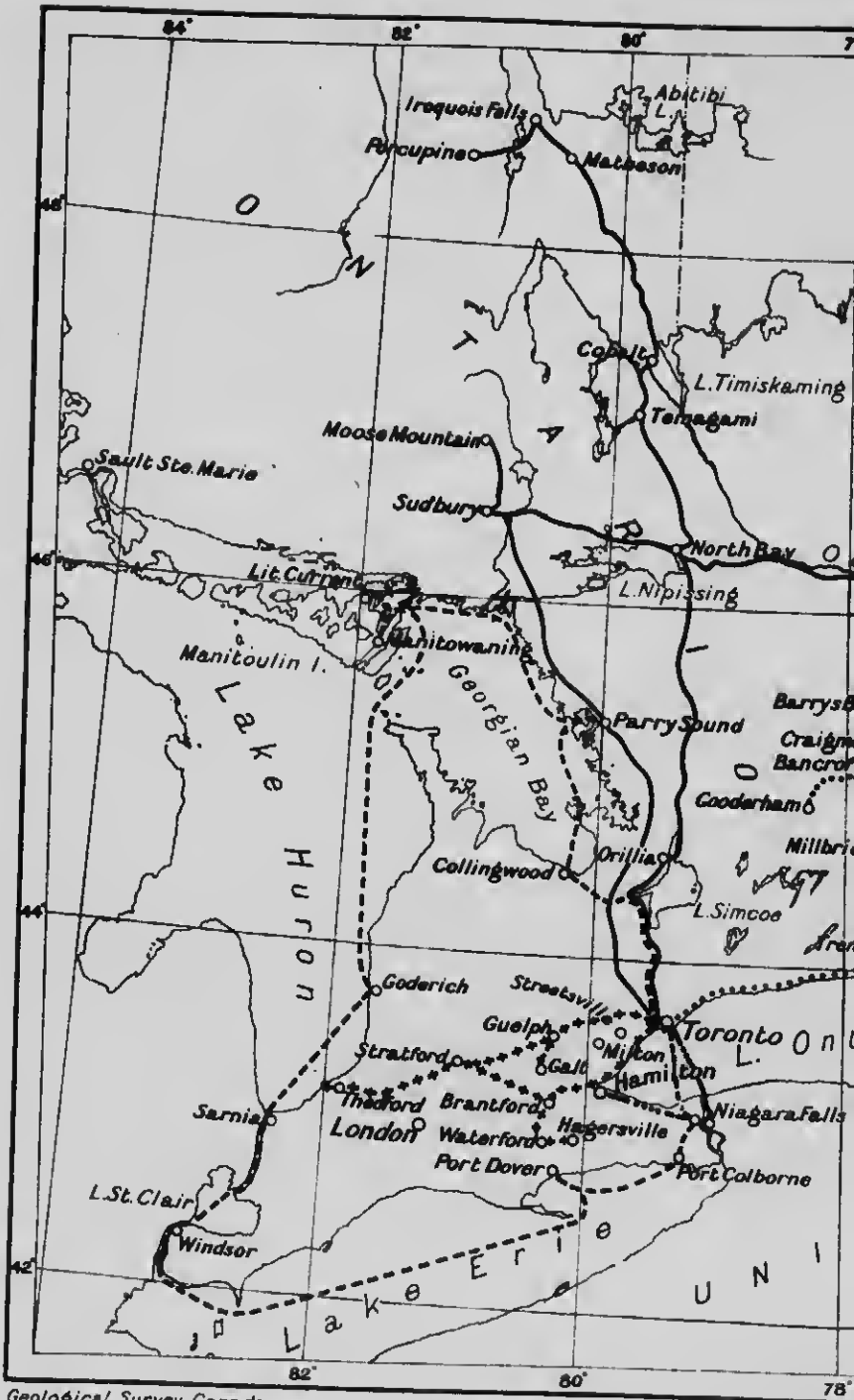

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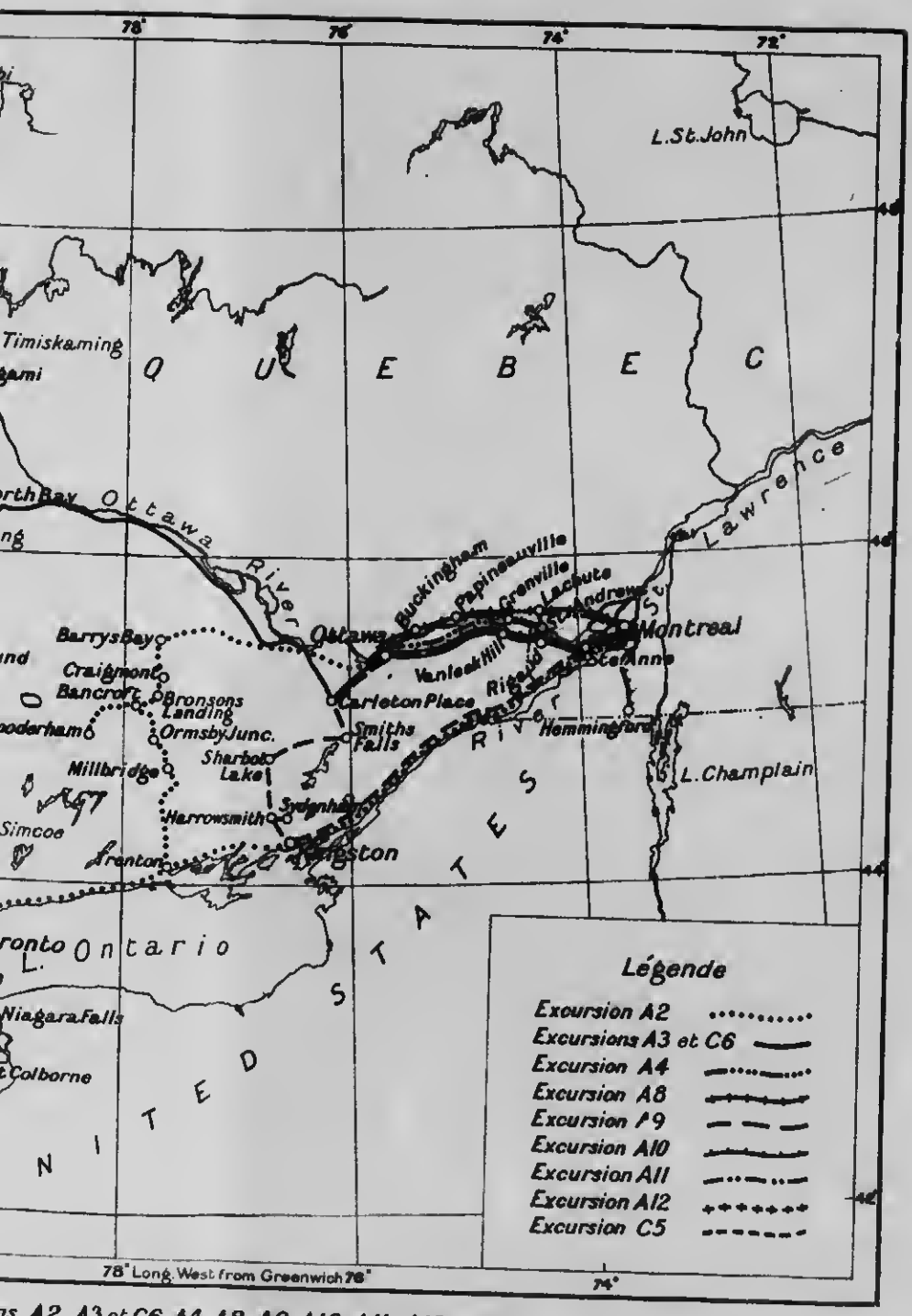

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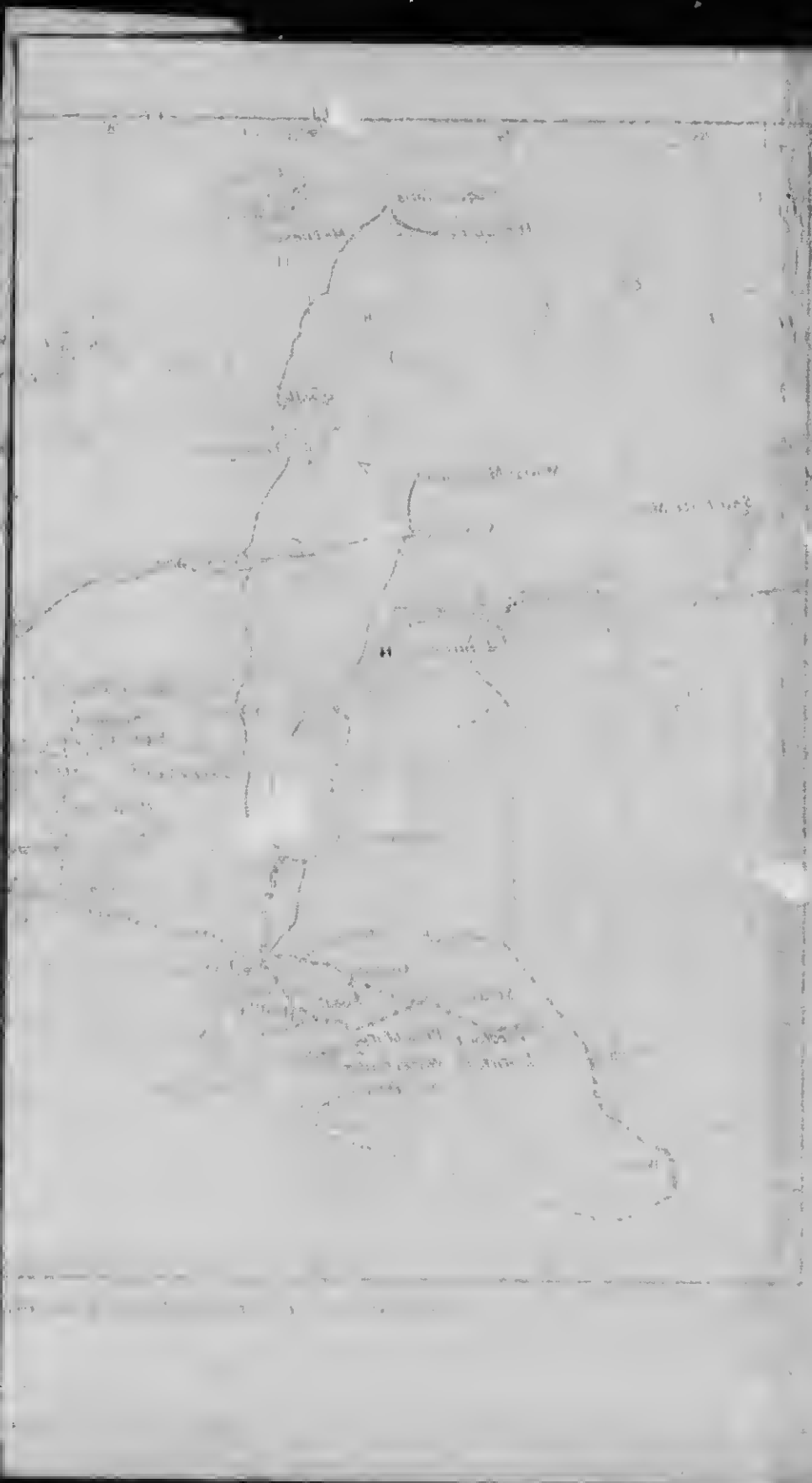

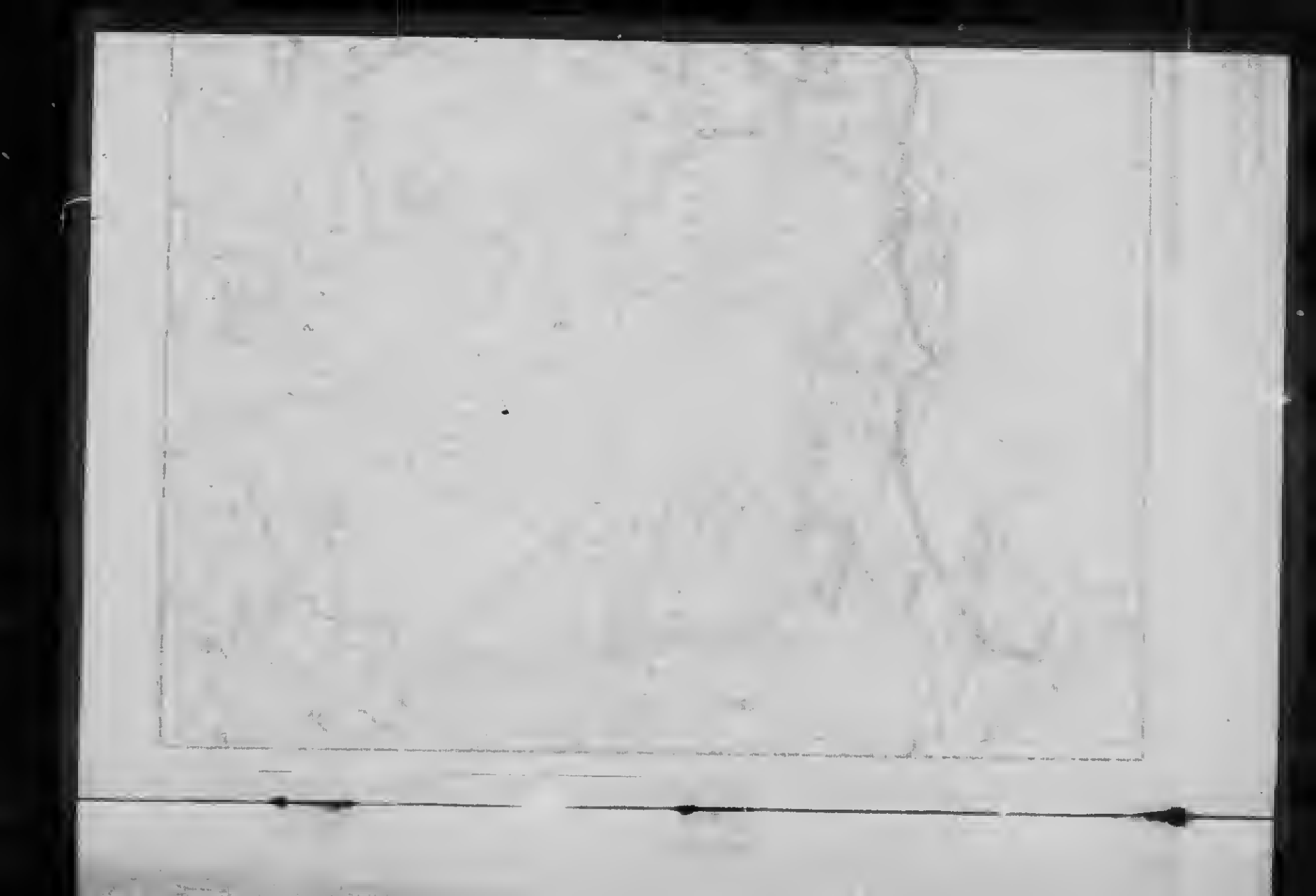

Geological Survey, Canada

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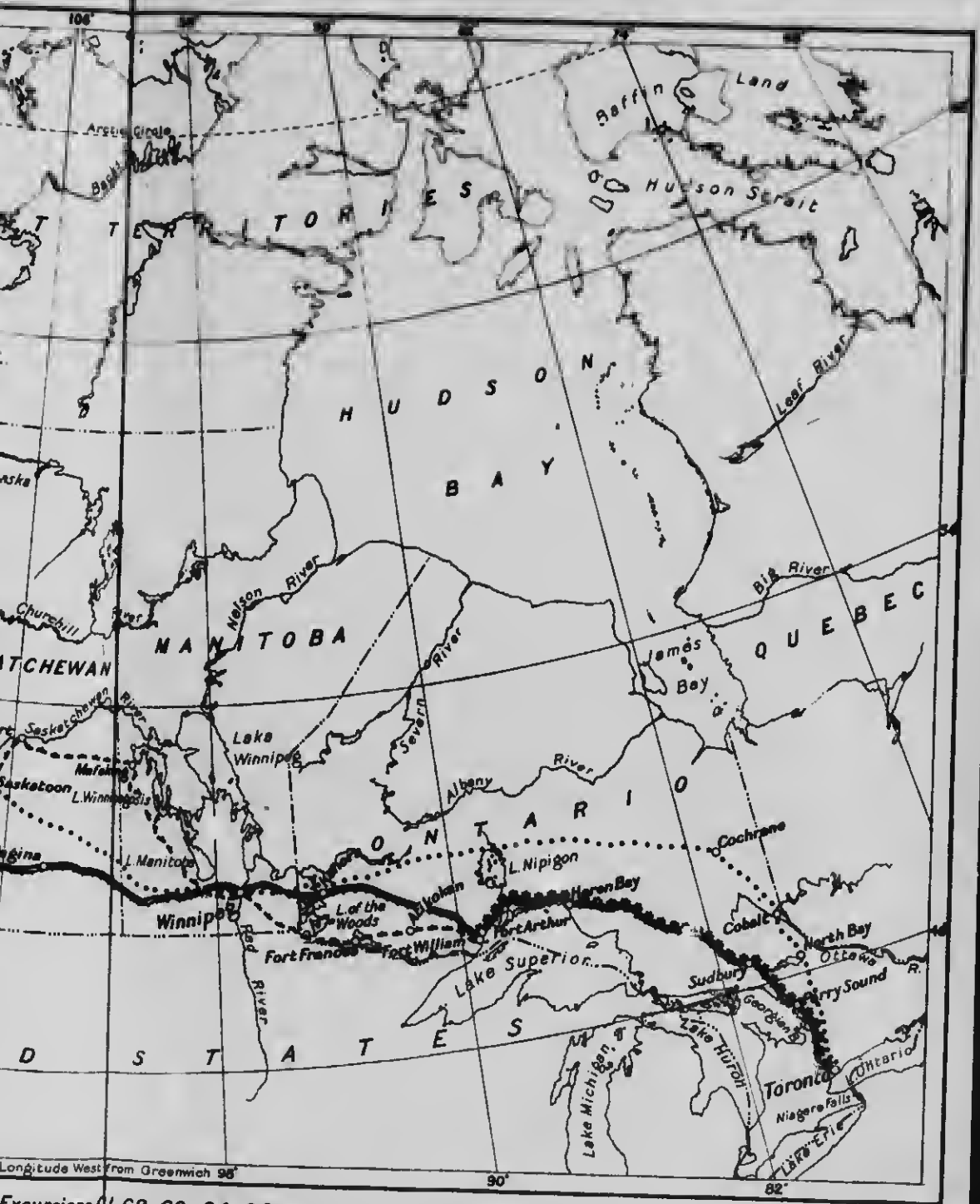

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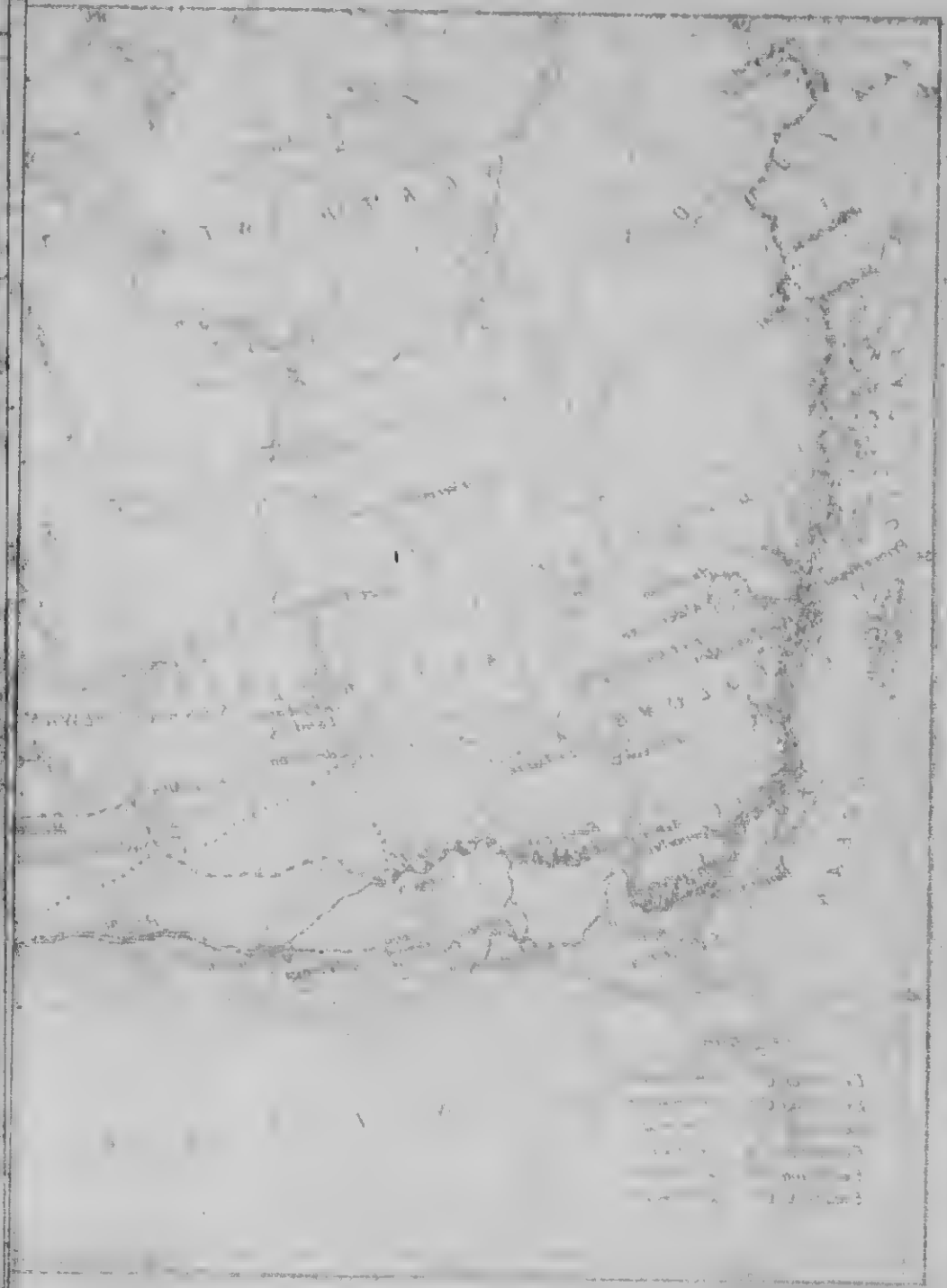

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