

CANADA
DEPARTMENT OF MINES

HON. W. A. GORDON, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER

NATIONAL MUSEUM OF CANADA

W. H. COLLINS, ACTING DIRECTOR

BULLETIN No. 76

Annual Report for 1934

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OTTAWA
J. O. PATENAUDE, I.S.O.
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1935

Price, 10 cents

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GENERAL ACTIVITIES OF THE NATIONAL MUSEUM OF CANADA

By W. H. Collins, Acting Director

The curtailment of field work, which, owing to the need for rigid economy, has been nearly complete since 1930, was lessened to a small extent in 1934. C. M. Sternberg collected two skeletons of ancient marine reptiles (mosasaurs) from the Cretaceous strata of southern Manitoba, and fossil footprints from the Pennsylvanian formations of Nova Scotia, near Parrsboro. Douglas Leechman was afforded an opportunity by the Department of the Interior to accompany the annual Government expedition to the eastern Arctic. He collected specimens and information about ancient Eskimo habitations at the various places of call of the ship, *Nascopie*. Some inexpensive collecting of biological material, some moving picture photography, and some other miscellaneous work were done around Ottawa.

The prolonged suspension of field investigations has similarly affected the output of reports and articles of original scientific character. The results of field work prior to 1931 have been written up and such writing as is now in hand is mainly designed for publication outside the Museum. Lists of the publications are given in the several special sections of this report. However, in the case of some subjects dealing with Canadian natural history, an attempt has been made to provide educationists and lovers of nature with comprehensive, authoritative, and non-technical sources of information. Of this class, P. A. Taverner finished the "Birds of Canada," which combines in one volume the information contained in two former books, "Birds of Eastern Canada" and "Birds of Western Canada." This new book was published about the end of the fiscal year. Diamond Jenness prepared a revised edition of his "Indians of Canada," which is now in the press, and R. M. Anderson is still engaged upon a third work of the kind, dealing with the mammals of Canada.

The number of specimens received for scientific collections has been nearly as large as in past years, despite the small amount collected by the staff or purchased. Most of the specimens have come as gifts from individuals and companies throughout the country and from other Departments of the Federal Government. Particular mention is made here of a considerable collection of Eskimo skeletal remains from Richards island, in the delta of Mackenzie river, excavated and presented by Mr. Norman Wilson, of the Hydrographic Survey. This collection has unusual value in relation to a new theory that the Mackenzie River natives, up to 1910, were the purest survivors of a large section of the Eskimo race that spread many centuries ago from Alaska through the Arctic archipelago to Greenland. The botanical and anthropological collections have also been enriched by Mr. A. E. Porsild, who has been representative of the Department of the Interior in moving a herd of reindeer from Alaska to the country east of Mackenzie river. Complete lists of donations are given elsewhere in this report.

Exhibition work continues to be hampered more and more by lack of space. The halls available for exhibition are overcrowded and are of necessity being used as storehouses for surplus material, a condition that detracts greatly from their attractiveness and an effective display.

This congested state is all the more deplorable because of the difficulty of finding accommodation for donations from private benefactors of the Museum. During the fiscal year Mr. Harry Snyder, of Montreal, has offered an exceptionally fine group of wood bison from Great Slave lake, which he collected himself and intends to have mounted and set up in its natural environment at his own expense—altogether a munificent gift. There appears to be a steady increase in the number of such friends of the Museum. Among others whose gifts during the year deserve special mention are the Falconbridge Nickel Mines, Limited, for a large quantity of ore specimens for educational collections, and the International Nickel Company of Canada, Limited, for a collection of pure nickel coins from the various countries of the world.

Where full-size groups of specimens in their natural environment (habitat groups) are impracticable because of their size and cost, it is possible to obtain a similar life-like and instructive representation by making the same groups in miniature. L. S. Russell and C. E. Johnson have completed a miniature group of two dinosaurs in a Cretaceous landscape setting. C. L. Patch has begun work upon another, which is designed to represent a Haida Indian village on Queen Charlotte islands, with the inhabitants engaged in the typical activities of such a community.

The walls alone of the exhibition halls still afford space for permanent exhibition. Miss W. K. Bentley has continued making copies and original portraits in oils of distinguished Canadian naturalists. To those mentioned in last year's report (page 2) she has added another, Dr. George Mercer Dawson, Director of the Geological Survey, Canada, from 1895 to 1900, and generally regarded as the father of Canadian anthropology. She is engaged upon two others, one of Sir Daniel Wilson, once President of the University of Toronto, and a distinguished anthropologist, the other of Professor Arthur P. Coleman, professor-emeritus of the Department of Geology, University of Toronto, and dean of Canadian geologists. The Museum is indebted to President Cody of the University of Toronto for loan of the original paintings, by Sir James Reid and Mr. J. W. L. Forster, respectively. C. E. Johnson has also furthered the mural display by colouring six more enlargements of photographs of characteristic Canadian scenes.

Although permanent exhibition work is restricted, advantage has been taken of opportunities to increase the number of special temporary exhibitions. During August, 1934, the Museum again had a large exhibit at the Central Canada Exhibition at Ottawa, the success of which was due to Clyde Patch, J. A. La Rocque, D. A. Nichols, J. R. Marshall, and other members of the staff. C. M. Barbeau organized three special exhibitions of the traditional arts of Quebec, two at Ottawa and one in Toronto in conjunction with the Toronto Art Gallery. The entrance hall of the Museum has been used, also, for three temporary exhibits of materials loaned to the Museum. One of these was a collection of enlarged photographs illustrative of aeronautical enterprise in the British Empire, loaned by the National

Council of Education and by the R.C.A.F. The other was a collection of oil paintings of the wild flowers of British Columbia, by Mrs. A. E. Planta, of Nanaimo. The third was a collection of paintings by Mr. Coverley Price, made during the expedition to Peru in 1933, when Professor J. W. Gregory, of Glasgow University, was drowned. This exhibit was made in conjunction with the Canadian Geographical Society.

GEOGRAPHY

Geographical work for the Museum is carried on by Mr. D. A. Nichols of the Topographical Division, Geological Survey, and by Mr. Rene Ouimet, relief-map maker.

Over a period of about five years Mr. Nichols has made an excellent contribution to the educational work of the Museum by selecting from our own records and those of other Government departments, particularly the Topographical Survey of Canada, photographs exemplifying the physical geography of Canada, and having sets of photographic prints, enlargements, and lantern slides made for loan or sale to schools and individuals.

Geographical exhibits, comprising relief maps, topographical maps, photographs, etc., are confined as yet to the hallway in the west wing, fourth floor of the building.

Under the supervision of Mr. Nichols, Mr. Ouimet has now nearly completed a great relief map of Canada, constructed on the true curved form of the earth. This model, on a horizontal scale of 1:1,500,000, and the vertical scale exaggerated 10 times, will be about 5 feet high, and have a radius of about 11 feet.

GEOLOGY

Up to the present time geological museum work also has been performed by the Geological Survey.

No study collections exist. Exhibition work has been confined so far to displays of some of the chief economic minerals of Canada, their geological relationships and their commercial products. Only a small part of one exhibition hall is available for display. In the absence of organized work in this subject some attention has been given by the Division of Palæontology to the geological phenomena of stratified rocks.

EDUCATIONAL WORK

This is the sole phase of museum work that has not unduly suffered through restrictions imposed by shortage of money or lack of space.

It is also one of the most valuable services that can be rendered by museums and one that reaches persons at a distance from the museum almost as readily as those living in its immediate vicinity.

MOVING PICTURE FILMS

Some additions, by purchase and by direct composition by Harlan I. Smith, were made to the steadily growing collection of moving pictures. These films, besides being used in lectures and other activities of the Museum, are loaned to schools, scientific societies, and other organizations interested in natural history. Except costs of transportation no charge is made. A catalogue of pictures available is provided to inquirers.

PHOTOGRAPHS

A large collection of photographs that have been taken by officers of the National Museum and Geological Survey furnishes a basis for the Museum's service to the public. Of late years this service has been supplemented increasingly by the photographic collections of other Government organizations, notably the great collection of air photographs of the R.C.A.F., and the select animal and science photographs of the Dominion National Parks Commission. The Museum selects and supplies many of these photographs for writers of books and magazine articles. Sets of lantern slides, mostly coloured, are being assembled increasingly for loans, on the same terms as moving picture films.

PUBLICATIONS

Reference has already been made to the series of well-illustrated, non-technical works on Canadian natural history that are being prepared and published, such as "Birds of Canada" and "Indians of Canada." A third, on the mammals of Canada, is being written by R. M. Anderson.

SALE AND LOAN OF SPECIMENS

The section on mineralogy that follows in this report states how many standard collections of minerals and rocks were distributed to schools and to prospectors. Other kinds of specimens, because of their fragility, are not so easily shipped to places outside Ottawa, but extensive use is made by the Ottawa public schools of specimens of animals and Indian relics set aside for this purpose. An experiment was made last year in the way of preparing special travelling exhibits for loan to schools, colleges, and other museums, but the expense of transportation appears to have been a deterrent to this service.

MUSEUM AND OTHER LECTURES

Lists of the lectures to clubs, societies, and schools, given by officers of the Museum during the fiscal year, are given under each of the special sections of this report that follow.

The Museum Lecture series that is given annually in the Museum lecture hall continued this year to grow in popularity. The titles of the lectures, names of lecturers, and attendances are subjoined. Similar statements covering the period from 1923 may be found in the Annual Reports for 1930-1933. These series of lectures are organized by a committee composed of Mr. C. L. Patch and Mr. M. E. Wilson.

The programs follow:

First Series:

Some Bird Questions Answered, by Hoyes Lloyd, M.A., Supervisor of Wild Life Protection, Canadian National Parks Branch, Department of the Interior, in collaboration with Clyde L. Patch, National Museum of Canada.

Dinosaurs, by C. M. Sternberg, Geological Survey, Department of Mines.

Canadian Viscose Rayon, by D. B. Robb, Assistant Manager, Courtaulds (Canada), Limited, Cornwall.

The Prairies of Canada, by J. M. Humphrey, Malakwa, British Columbia.

Four Reels of Motion Pictures:

The Cradle of Rivers; Hunting Without a Gun; Around the Year in the Big Woods; Canada's Capital on Skis.

Second Series:

Some Friends and Foes in the Insect Kingdom, by C. B. Hutchings, B.S.A., Department of Agriculture.

The Charm of Ceylon, by R. C. Bingham, B.A., F.R.E.S., Ceylon Tea Bureau.

The Story of the Road, by Alan K. Hay, B.Sc., Ottawa Suburban Road Commission.

National Parks Areas, by F. H. H. Williamson, National Parks of Canada.

Roaming through the Botanic Gardens of the Empire, by H. T. Gussow, LL.D., F.R.S. (Can.), Central Experimental Farm.

The Truth About Snake Stories, by Clyde L. Patch, National Museum of Canada.

A Trip Through Germany, by Reverend Stuart Ivison, B.A., B.Th., First Baptist Church, Ottawa.

Gasoline, by P. V. Rosewarne, M.A., Fuel Research Laboratories, Dept. of Mines.

The attendance was as follows:

	<i>First Series</i>	
	Five children's lectures	Four adult's lectures
Total attendance..	3,750	1,515
Average attendance..	750	379

	<i>Second Series</i>	
	Eight children's lectures	Eight adult's lectures
Total attendance..	5,370	2,945
Average attendance..	671	368

	<i>First and Second Series</i>	
	Children	Adults
Total attendance..	9,120	4,460
Total attendance at all lectures..	13,580

ORGANIZATION

The National Museum is an outgrowth of the Geological Survey, with which it has been closely connected since 1842, when the Geological Survey was founded. The association has been natural and mutually advantageous. Nevertheless, it is one that has required modification at various times, chiefly in the interests of the Museum, and a further adjustment appears to be desirable now.

Reference has already been made to the extent to which museum activities, especially exhibition work, are hampered by lack of room in the Museum building, due to the building being shared with several other branches of the Department of Mines, and with the National Art Gallery.

DIVISION OF ANTHROPOLOGY

Field Work

Almost no field work has been done since 1930, a consequence of the depression. This year, at very slight expense to the Department, Douglas Leechman accompanied the expedition that is sent yearly to the eastern Arctic region for delivery of supplies and for administrative purposes. During the voyage, which lasted from July 6 to October 2, Mr. Leechman was able to go ashore for periods of a few hours to a few days at sixteen places on the coasts of Labrador, Hudson bay, James bay, Baffin island, and Ellesmere island, to collect ancient Eskimo remains and to obtain information about ancient habitations with a view to their future examination. Several promising sites were located.

Office Work

Diamond Jenness, who is a member of a committee on Arctic exploration set up by the International Congress of Anthropological and Ethnological Sciences held in London, August, 1934, drew up an outline of archaeological and ethnological work that remains to be done in the Canadian Arctic as part of a larger scheme covering the Arctic regions of the Old and New Worlds. He also worked over part of the Museum's collection of Eskimo specimens from Coronation gulf, which is possibly the largest and most important collection of its kind.

C. M. Barbeau continued a comparative study of Siberian songs with those of northwestern Canada, using phonograph records of the former lent by the American Museum of Natural History. He continued his study of the early art, and handicraft-weaving, wood-carving, and silver-work, folk-lore and songs, of Quebec and Ontario. For an interesting set of Ojibway songs he is indebted to Dr. E. Seaborn of London, Ontario, and for folk-lore and folk songs of Quebec to Mr. Adelard Lambert, of Drummondville.

Harlan I. Smith continued to build up a reference file of information on Canadian archaeology. He received exceptionally valuable and well-prepared records from Mr. Francis J. Barrow, of Sidney, B.C., and from Mr. Russell A. Johnston, of Helmsdale, Alberta. For the second year Mr. Barrow has made a three months' voyage over a thousand miles along the coast of British Columbia, making notes, sketches, maps, and photographic records of Indian remains. Copies of this excellent information he has given to the National Museum and to similar institutions in British Columbia, United States, and England. Mr. Smith also continued his efforts to interest artists and manufacturers in the application of Indian designs.

Douglas Leechman continued, as other duties permitted, his studies of methods of preservation and repair of anthropological relics and the application of light rays and other physical means to the examination of such material. His bulletin on "Technical Methods of Preservation of Anthropological Museum Specimens" has now been translated into French and German.

Publications

Reports and scientific papers published during the year are:

- Traditional Arts of Quebec. By C. M. Barbeau. Toronto Saturday Night, January 5, 1935.
- Cartier Inspired Rabelais. By C. M. Barbeau. Canadian Geographic Journal, September 11, 1934.
- The Siberian Origin of Our Northwestern Indians. By C. M. Barbeau. Proceedings Fifth Pacific Science Congress, 1934.
- Krieghoff découvre le Canada. By C. M. Barbeau. Transactions, Royal Society of Canada, 1934.
- Origin and Antiquity of the American Indians. By D. Jenness. Proceedings Fifth Pacific Science Congress, 1934.
- Myths of the Carrier Indians of British Columbia. By D. Jenness. Journal American Folklore, 1934.
- Whence Came the Eskimo. By Douglas Leechman. The Beaver, March, 1935.

Educational Work

A second edition of the Indians of Canada, by Diamond Jenness, was sent to press during the year. This is one of a series of books on the main natural history features of Canada that the Museum is publishing for the dissemination of reliable information for use in schools and by individuals. These books are written in non-technical language and well illustrated.

Lectures

- How the Country was First Peopled. By C. M. Barbeau. Canadian Club of Kemptville, Ont., October 3, 1934. Canadian Club of London, Ont., November 6, 1934.
- L'art et la vie canadienne (French and English). By C. M. Barbeau. Radio broadcast CKAC, Montreal, October 19, 1934. CRCO, Ottawa, February 15, 1935. Zonta Club, Ottawa, October 24, 1934. Women's Art Association, Hamilton, Ont., November 5, 1934.
- Chansons populaires du Canada (French and English). By C. M. Barbeau. Institut Canadien, Ottawa, November 23, 1934. Art Gallery of Toronto, January 21, 1935.
- Traditional Arts of Quebec. By C. M. Barbeau. Art Gallery of Toronto, January 7, 1935. University Club of Ottawa, February 13, 1935. Le Caveau, Ottawa, December 15, 1934.
- Come with Me to the Island of Orleans. By C. M. Barbeau. L'Alliance Française, London, Ont., November 5, 1934. Women's Canadian Club of Sarnia, November 7, 1934.
- French Survival in Canada. By C. M. Barbeau. Canadian Club of Sarnia, November 7, 1934.
- Folk Movements in Canadian Art and Handicraft. By C. M. Barbeau. Writer's Club, Toronto, January 21, 1935.
- On the Trail of Discovery. By C. M. Barbeau. Heliconian Club, Toronto, January 22, 1935.
- The Changing Arctic. By D. Jenness. Yale-Harvard-Princeton Club, New Haven, Conn., December, 1934.
- Indian Background of Canadian History. By D. Jenness. Sigma Xi Society of McGill University, March, 1934.
- Ultra-violet Light in Museum Work. By Douglas Leechman. American Association of Museums, Toronto, June 1, 1934.
- An Eskimo Igloo Habitat Group. By Douglas Leechman. American Association of Museums, Toronto, June 1, 1934.
- Early History of the Eskimo. By Douglas Leechman. Canadian Arctic Expedition, July 16, 1934.
- The Indians of Canada. By Douglas Leechman. Canadian Arctic Expedition, September 8, 1934.
- National Museum of Canada. By Douglas Leechman. Canadian Arctic Expedition, September 17, 1934.

Mr. Jenness attended the annual meeting of the American Association for the Advancement of Science held at Pittsburgh during the last week of December. Mr. Leechman attended the annual convention of the American Association of Museums, May 30 to June 1.

Exhibition Work

The Eskimo igloo habitat group was finished; this is the first of what is hoped will be numerous natural-scale or reduced-scale reproductions of the modes of life of the native people of Canada. The exhibit represents the interior of an igloo or snow house occupied by a family of Eskimos in process of carrying on their ordinary domestic affairs.

Another exhibit explanatory of the educational services rendered by the National Museum has been prepared. So many inquiries have been received from teachers, teachers-in-training, and students in the course of their visits to the Museum that the need for a visual demonstration of these services has become evident. The exhibit is still in experimental form, but will be made a permanent feature and improved from time to time.

An exhibit of Canadian anthropological specimens was loaned to Australia in September for a centennial celebration. Reference is made earlier in this report to the exhibit at the Central Canada Exhibition, Ottawa, in August.

As the National Museum has no division of geology, being dependent upon the Geological Survey for assistance in this field, the officer in charge of exhibits has had to devote any spare time to reconstructing the exhibit of coal and coal products, which is being transferred from the entrance hall to the adjoining hall to the west.

Mr. Barbeau organized three temporary exhibits of the traditional arts of Quebec, one of these being in the entrance hall of the Museum on the occasion of the visit of the delegates to the Jacques Cartier celebration in August, a second at the Art Gallery of Toronto in January, and a third in the National Museum in March, 1935. The first of these dealt chiefly with the simpler handicrafts and the latter two with architecture, wood-carving, silversmithing, and tapestry.

Accessions to Museum

Accessions to the collections were fewer than usual, comprising 63 ethnological, 197 archæological, 19 osteological, and 1 non-aboriginal, specimens, or a total of 280. Particular acknowledgment is due to Mr. Norman Wilson of the Hydrographic Survey, Ottawa, for a considerable collection of Eskimo skeletal remains which he collected on Richards island in the Mackenzie River delta. This collection has exceptional scientific value in the light of a new theory that the Mackenzie River natives, up to 1910, were the purest survivors of a large section of the Eskimo race that spread many centuries ago from Alaska through the Arctic archipelago to Greenland. The details of the various specimens are as follows:

FROM THE STAFF:

Collected by Harlan I. Smith:

- Basswood and wild rice specimens, Peterborough county, Ont.
- Pottery fragments, Peterborough county, Ont.
- Stone adze, Peterborough county, Ont.

FROM THE STAFF—*Concluded*

Collected by Douglas Leechman:

Archæological specimens, eastern Alberta.

BY EXCHANGE:

From R. A. Johnston, Helmsdale, Alberta:

Four stone hammers, Helmsdale, Alberta.

BY DONATION:

From J. C. Beidelman:

Chipped point from Sturgeon lake, Ont.

From the A. J. Clarke Estate:

Archæological specimens, from Ontario.

From J. M. Amyot:

Archæological material from York county, Ontario.

From Arthur Peake:

Stone adze from Quatsino, British Columbia.

Human cranium from Raft cove, Vancouver island, B.C.

Bone point from Comox bay, Vancouver island, B.C.

From Mr. F. J. Alcock:

Pottery fragments from Lac La-Ronge, Saskatchewan.

From W. Cheland and J. B. Morton:

Pottery and pipe fragments from Wentworth county, Ont.

From Dr. John Cooper:

Five Cree specimens from Rupert House, James bay, Que.

From Ernest Guignard:

Two chipped stone points from Rimouski county, Que.

From C. N. Haldenby:

Pottery fragments from Rice lake, Ontario.

From Dr. H. F. Lewis:

Arrow point and spear point from Saguenay county, Que.

From J. H. Mailloux:

Pottery fragments from Beauharnois county, Que.

From Thomas Manning:

Archæological specimens from Southampton island.

From A. E. Porsild:

Osteological material from Richards island, Mackenzie river.

From W. A. Newcombe:

Osteological specimens from the British Columbia coast.

From P. M. Pringle:

Pottery and a perforated stone from Florida, U.S.

Pottery and pipe fragments from York county, Ont.

From Mr. L. J. Weeks:

Fish gig from west coast of Hudson bay.

BY PURCHASE:

From R. S. Sargent (via C. M. Barbeau):

Dance apron from Hazelton, British Columbia.

From H. T. Ford (via Douglas Leechman):

Archæological specimens from Cape Dorset, Baffin island.

Ethnological specimens from Chesterfield inlet.

A new electrical sound recording machine was bought from Sound Specialties Company, Waterbury, Conn., U.S.A., to replace the old Edison cylinder phonographs hitherto used for recording and repeating Indian and Eskimo songs and other oral records. The old wax cylinders are no longer obtainable and are subject to mould and rapid wear. With the new machine, which records on aluminium disks, it is proposed to transcribe in this modern and durable form, as time permits, the large collection of wax records. The new machine can be used in the field for recording as well as for copying and playing records.

DIVISION OF BIOLOGY

R. M. Anderson, Chief of the Division, reports:

Field Work

Since 1930 field work has been limited to the immediate vicinity of Ottawa and to the collecting of specimens and exhibition material needed as working materials in the Museum. Some fresh material was collected in this way during 1934 by C. L. Patch, C. E. Johnson, and D. Blakely to make replacements in the school loan collection and for settings for exhibition groups. C. H. Young was loaned to the Entomological Branch, Department of Agriculture, to collect insects for the systematic collection. He secured and mounted over 1,000 specimens, mostly of minute species. Also, by collecting and rearing larvæ, he has learned a good deal about the feeding habits of various species.

Other Investigational Work

Routine occupied much of the time of the head of the division. He continued the compilation of two books, upon which he has been engaged for some years. One of these, a Check List of Canadian Mammals, is now in card-catalogue form. The other, "The Mammals of Canada," is designed to be one of the series of works, like "Birds of Canada" and "Indians of Canada," intended for dissemination of knowledge concerning Canadian natural history. Outside the department he continued to serve as a member of the Interdepartmental Advisory Board on Wild Life Protection, the Northern Advisory Board, the Interdepartmental Reindeer Committee, and as honorary member of the Fish and Game Protective Association of Gatineau, Hull, Papineau, and Pontiac counties.

P. A. Taverner also served on the Interdepartmental Advisory Board on Wild Life Protection. He completed writing "Birds of Canada," a book that now takes the place of the two former books, "Birds of Eastern Canada" and "Birds of Western Canada."

Since the death of Dr. M. O. Malte in 1933 his position as museum botanist has been vacant and botanical work has been suspended.

Publications

Reports and scientific papers published during the year are:

- Notes on the Distribution of Hoary Marmots. By R. M. Anderson. Canadian Field-Naturalist, April, 1934.
- Sorex palustris brooksi*, a New Water Shrew from Vancouver Island. By R. M. Anderson. Canadian Field-Naturalist, November, 1934.
- Mammals of the Eastern Arctic and Hudson Bay. By R. M. Anderson. In Canada's Eastern Arctic; Dept. of the Interior, December, 1934.
- Arctic Flora. By R. M. Anderson. In Canada's Eastern Arctic; Dept. of the Interior, December, 1934.
- Effects of the Introduction of Exotic Animal Forms. By R. M. Anderson. Proceedings Fifth Pacific Science Congress, June, 1934.
- The Distribution, Abundance, and Economic Importance of the Game and Fur-bearing Mammals of Western North America. By R. M. Anderson. Proceedings Fifth Pacific Science Congress, June, 1934.

- The Birds of Churchill. By P. A. Taverner. Annals Carnegie Museum of Pittsburgh (in collaboration with C. M. Sutton), May, 1934.
- Birds of the Eastern Arctic. By P. A. Taverner. In Canada's Eastern Arctic, Dept. of the Interior, Ottawa, 1934.
- Birds of Canada. By P. A. Taverner. Nat. Mus. of Canada, Bull. 72.
- The Waterfowl Situation in Brief. By P. A. Taverner. Proceedings American Game Association, January, 1935.
- Antennaria of Arctic America. By M. O. Malte (Posthumous publication). Rhodora, April, 1934. (With M. L. Fernald.)
- Critical Notes on Plants of Arctic America. By M. O. Malte (Posthumous publication). Rhodora, May 1934. (With M. L. Fernald.)
- Eumeces in Canada. By C. L. Patch. Copeia, April, 1934.
- Die Arbeiten des Bibers. By C. L. Patch. Natur und Volk Frankfurt-am-Main. August, 1934. (With Rud. Richten.)

Educational Work

Twenty-two new mounted specimens were added by Mr. Patch and his assistants to the school loan collection and 657 specimens were lent to schools in Ottawa for use in nature study and art classes. This service to the schools of Ottawa has been in operation for a good many years and is steadily increasing in volume.

Reference is made again here to the recent publication of "Birds of Canada," by Mr. Taverner. Some indication of the popularity of this book is afforded by the fact that 53,000 copies of its predecessors, "Birds of Eastern Canada" and "Birds of Western Canada," have been sold and otherwise distributed.

Lectures

- The Mammal Life of Ontario and Quebec. By R. M. Anderson. Civil Service Lodge, Ottawa, October 9, 1934.
- The Mammals of Ontario. By R. M. Anderson. Boy's Club of Ottawa, November 9, 1934.
- The What, How, and Why of a National Museum. By P. A. Taverner. Radio broadcast, CRCO, Ottawa, April 6, 1934.

R. M. Anderson and P. A. Taverner attended the annual meeting of the American Ornithologists Union at Chicago, October 22 to 25, 1934.

Exhibition Work

C. L. Patch and his assistants prepared a biological, and also an anthropological, display for the Central Canada Exhibition at Ottawa in August. He is constructing a miniature Haida Indian village, on a scale of 1 inch to 1 foot, for one of the two Indian and Eskimo halls. This exhibit, which is the first of several miniature habitat groups that are planned, will consist of houses, totem poles, boats, and other typical features of a village as seen from the water, with a forest background and with human figures engaged in the ordinary activities of such a community.

Mr. Patch and staff, D. Blakeley and J. E. Perron, also continued to mount mammals and birds that will eventually be incorporated into habitat groups when space in the Museum becomes available for this purpose. With the same purpose in view Mr. Johnson has been preparing quantities of coloured wax leaves, flowers, and other accessories. He also did a large share in preparing a miniature dinosaur habitat group for the hall of vertebrate

fossils, painting a landscape background and preparing the vegetation of extinct species of plants for the foreground.

Miss Bentley continued oil portraiture of distinguished Canadian naturalists for hanging in the Museum halls. Altogether, there are now six portraits, and two others are in preparation. For like decoration purposes Mr. Johnson coloured six enlarged photographs of Canadian scenes.

Accessions to Museum

At the end of the fiscal year, March 31, 1935, the catalogued specimens of mammals numbered 12,655; of birds 25,886; of reptiles and amphibians 4,784; and of plants 129,211. Additions made during the year are due mainly to the beneficence of other institutions and persons, since the Museum was unable to send out collecting parties. Particular thanks are due to the Northwest Territories and Yukon Branch, Department of the Interior, from which were received over 1,000 specimens, representing the remainder of the collections made by J. D. Soper in Wood Buffalo park (1932-34), and collections made by A. E. Porsild in the Mackenzie River delta while engaged on reindeer work; also to the National Parks of Canada and the Royal Canadian Mounted Police.

ZOOLOGICAL COLLECTIONS

Mammals received and catalogued..	351
Birds received and catalogued..	159
Amphibians and reptiles received and catalogued..	223
Nests and eggs received and catalogued..	1

MAMMALS

By Gift

Royal Canadian Mounted Police: 1 skull of white fox, 1 skull of red fox, collected by Constables Macara and Abraham, Stony Rapids, Saskatchewan; 12 skulls white fox, 1 skull of collared lemming, 2 skins with skulls of brown lemming, collected by Staff-Sergt. J. E. F. Wight, Chesterfield inlet, Keewatin district, N.W.T.; 1 Greenland lemming, 1 tundra weasel (Pond inlet, Baffin island); 1 Arctic hare, *Lepus arcticus arcticus* Ross (Bylot island, near topotype), collected by Constable J. C. M. Wishart, Pond inlet, Baffin Island detachment; 3 Polar caribou (*Rangifer arcticus pearyi*) skins and complete skeletons, 2 Arctic weasels (*Mustela arctica*), 6 Ellesmere Island Arctic hare (*Lepus arcticus monstrabilis* Nelson).

National Parks of Canada, Department of the Interior, Ottawa: 2 complete skeletons of male and female Wapiti (*Cervus c. canadensis*), drowned in Banff National park, in crossing Bow river, Alberta; 1 skull of male mule deer (*Odocoileus hemionus*) from Wainwright Buffalo park, Alberta; 2 plains mule deer (*Odocoileus hemionus*), male and female, 1 female white-tailed deer (*Odocoileus virginianus*), 2 Manitoba wapiti (*Cervus canadensis manitobensis*), male and female, all with skins, skulls, and leg bones, from Riding Mountain National park, Manitoba; 6 beaver skins, skulls, from Banff National park, Alberta.

Lands, Northwest Territories and Yukon Branch, Department of the Interior, Ottawa: 46 mammals collected by J. D. Soper during investigations in Wood Buffalo park, Alberta; 2 pelts of wolf cubs from Reid island, Dolphin and Union strait, turned in for bounty; 6 specimens of Dawson red-backed mouse from Reindeer Station, east side of Mackenzie River delta, N.W.T., collected by A. E. Porsild.

MAMMALS—Continued

By Gift—Continued

- John C. Shelford, Wistaria post office, B.C.: 30 small mammals—6 red-backed mice (*Clethrionomys gapperi saturatus*), 1 flying squirrel (*Glaucomys sabrinus alpinus*), 1 red squirrel (*Sciurus hudsonicus*), 4 long-tailed shrews (*Sorex c. cinereus*), 9 Drummond meadow mice (*Microtus pennsylvanicus drummondii*), 1 jumping mouse (*Zapus princeps*), 1 British Columbia woodchuck (*Marmota monax petrensis*), 1 Chilcotin hoary marmot (*Marmota caligata raceyi*), 3 white-footed mice (*Peromyscus maniculatus*), 2 water shrews (*Sorex palustris navigator*).
- Major Allan Brooks, Okanagan Landing, British Columbia: 1 water shrew, skin and skull, taken near Comox, Vancouver island, March 24, 1934; (Type of *Sorex palustris brooksi*), a new water shrew from Vancouver island, described by R. M. Anderson, The Canadian Field-Naturalist, Ottawa, vol. 48, No. 8, November, 1934, page 131; 1 cranium (without lower mandible) of western wapiti (*Cervus canadensis occidentalis*) from Vancouver island.
- Harry S. Swarth, California Academy of Sciences, Golden Gate park, San Francisco, California: 26 skins of small mammals from Atlin, British Columbia, 6 white-footed mice (*Peromyscus maniculatus*), 6 Dawson red-backed mice (*Clethrionomys dawsoni*), 7 Drummond meadow mice (*Microtus pennsylvanicus drummondii*), 6 long-tailed mountain vole (*Microtus mordax*), 1 grey-headed chipmunk (*Eutamias amoenus caniceps*).
- William H. Lund, Hillier, Prince Edward county, Ontario: 4 woodchucks (*Marmota monax rufescens*) in the flesh, 4 skins of woodchuck salted, 1 red squirrel (*Sciurus hudsonicus loquax*) in summer coat, 15 red squirrels in the flesh, in winter coat, 1 small eastern flying squirrel (*Glaucomys volans volans*) in the flesh, 1 black squirrel (*Sciurus carolinensis leucotis*) in the flesh.
- M. L. Preble, Entomological Laboratory, Fredericton, New Brunswick, specimens from Cascapedia river, Quebec: 1 woodchuck (skin and skull), 3 long-tailed shrews (*Sorex cinereus*), 1 water shrew (*Sorex palustris gloveralleni*), 1 jumping mouse (*Zapus hudsonius*).
- Dr. Ivan W. Parnell, Institute of Parasitology, McGill University, Macdonald College post office, Quebec: 54 small mammals from northern and eastern Quebec and eastern Arctic, obtained for parasitology investigations and brought to National Museum for determination of hosts; skulls salvaged for osteological collection; also 2 Mearns cottontails (*Sylvilagus floridanus mearnsi*) in the flesh, taken near Macdonald College, Quebec, December 6 and 18, 1934; 1 short-tailed shrew (*Blarina brevicauda*) and 1 big brown bat (*Eptesicus fuscus*).
- Hubert N. Green, Dauphin, Manitoba: 24 salted skins and 23 skulls of small mammals from Clear lake, Riding Mountain National park.
- W. E. Swales, Macdonald College, Quebec: 1 Mearns cottontail (*Sylvilagus floridanus mearnsi*), taken on Macdonald College campus, May 1, 1934. This is the first specimen of this species received from the province of Quebec.
- Hoyes Lloyd, Rockcliffe Park, Ottawa, Ontario: 1 Mearns cottontail in the flesh, 1 big brown bat (*Eptesicus fuscus*) in the flesh, found dead on street, February 21, 1935.
- Charles Guiguet, Shaunavon, Saskatchewan: 5 skins—skulls, 1 black-tailed prairie dog (*Cynomys ludovicianus*), 1 black-footed ferret (*Mustela nigripes*), 1 hoary bat (*Nycteris cinerea*), 2 least weasel (*Mustela rixosa*).
- Dr. A. H. Leim, Director, Atlantic Coast Station, Biological Board of Canada, St. Andrews, New Brunswick: 2 skulls of young, male, Atlantic harbour seal (*Phoca vitulina concolor*), from Booth Bay harbour, Maine.
- Wm. H. Moore, Mouth of Keswick, Scotch lake, York county, New Brunswick: 1 water shrew (*Sorex palustris*).
- Reid McManus, Jr., Memramcook, New Brunswick: 1 flat skin with skull of brown bat (*Myotis keenii septentrionalis*).

MAMMALS—Concluded

By Gift—Concluded

- W. W. Coleman, Saskatoon, Saskatchewan: 1 red-backed mouse (*Clethrionomys gapperi*) from lake Wasquesieu, Prince Albert National park, Saskatchewan.
- L. S. Russell, Geological Survey, Ottawa: 1 skull of pronghorn antelope, 2 skins—skulls of pocket gopher (*Thomomys talpoides*) from southern Alberta.
- Dr. Seymour Hadwen, Ontario Research Foundation, Toronto: lemming skins, flat, without skulls, 69 (*Dicrostonyx groenlandicus*); 8 *Lemmus trimucronatus* secured by the Rev. Father Girard, O.M.I., of Pond inlet, Baffin island; 3 flat skins of Arctic hare from Pond inlet, Baffin island.
- Charles F. Holmes, Dollard, Saskatchewan: 1 Black Hill cottontail (*Sylvilagus nuttallii grangeri*) in the flesh. Mounted for exhibit series.
- W. Ray Salt, Rosebud, Alberta: 3 Bonaparte weasels, 1 long-tailed weasel, 1 least weasel, 1 Drummond meadow mouse, 1 white-footed mouse, 1 house mouse.
- Stuart Criddle, Treesbank, Manitoba: 1 male white-tailed deer (*Odocoileus virginianus*), skin and skull.
- H. H. Blanchet, Ottawa: 1 large piece of beaver-cut birch stump, collected many years ago at Meach lake, Quebec, and obtained from the Tudhope family, Ottawa.
- E. F. G. White, Ottawa: 1 summer skin of Arctic fox taken at Pond inlet, Baffin island, September 12, 1934.
- Russell A. Johnston, Helmsdale post office, Alberta: 10 skulls of Coyote (*Canis latrans*) killed during winter of 1933-1934.
- Hamilton M. Laing, Comox, British Columbia: 1 skin—skull spotted juvenile male Vancouver Island cougar (*Felis concolor vancouverensis*), one of three taken near Comox, September 25, 1934, by C. J. ("Cougar") Smith.
- Ronald W. Smith, Wolfville, Nova Scotia: 2 Bonaparte weasels in the flesh.
- Victor Eugene Gould, Wolfville, Nova Scotia: 2 brown bats (*Myotis keenii septentrionalis*), 6 long-tailed shrews (*Sorex cinereus cinereus*), skins without skulls.
- Kenneth Racey, Vancouver, British Columbia: 2 skins, skulls, western bushy-tailed wood rat (*Neotoma cinerea occidentalis*) in winter coat, adult male from Beaverdell, British Columbia, young male from North Arm, Burrard inlet, B.C.
- F. Bradshaw, Director, Provincial Museum, Regina, Saskatchewan: 1 partial specimen of Wyoming kangaroo rat (*Dipodomys ordii luteolus*) killed by motor car near Tompkins, southwestern Saskatchewan, November, 1934 (the third Canadian record for this species).
- The Rt. Hon. William Lyon Mackenzie King, Ottawa: Eastern porcupine (*Erethizon dorsatum*) from Kingsmere, Gatineau county, Quebec.
- P. McLaren, Ashton, Lennox county, Ontario: 1 eastern porcupine, killed in wheat field.
- Edward R. Bailey, Wellington, Ontario: 1 small eastern flying squirrel (*Glaucomys volans volans*).
- Cyril Caldwell, Gaspereaux, Kings county, Nova Scotia: 7 Nova Scotia snowshoe rabbits (*Lepus americanus struthopus*) in the flesh.
- R. W. Tufts and Victor E. Gould, Wolfville, Nova Scotia: 5 brown bats (*Myotis keenii septentrionalis*) in the flesh, found hibernating in a gypsum quarry cave, in February, 1935.
- By Purchase* 2
- D. McDonald, Fairford, Manitoba: 1 cranium of musk-ox, incomplete, considerably weathered, found by an Indian near lake in south-central Manitoba.
- Victor E. Gould, Wolfville, Nova Scotia: 1 large male Nova Scotia wildcat (*Lynx gigas*) caught in Forks River district, Hants county, Nova Scotia, February 11, 1935. For mounting.
- By Staff* 10

BIRDS

By Gift

- Royal Canadian Mounted Police: 1 old squaw duck, 1 herring gull, 4 rock ptarmigan, 3 horned larks, collected by Staff-Sergt. J. E. F. Wight, Chesterfield inlet, Keewatin district, N.W.T.
- Lands, Northwest Territories and Yukon Branch, Department of the Interior, Ottawa: 78 bird skins collected by J. D. Soper during investigations in Wood Buffalo park, Alberta; 9 bird skins collected in Mackenzie River delta, N.W.T., by H. E. Porsild.
- E. F. G. White, Ottawa: 3 heads of black duck (*Anas rubripes rubripes*) killed by a native about 16 miles northeast of cape Dorset, Baffin island, in 1934, and presented by G. C. Russell through Mr. White; 1 semi-downy murre (*Uria lomvia*) taken at Wolstenholme, Hudson strait, Quebec, August 27, 1934; Eastern Arctic Patrol; 2 purple sandpipers from Grand Manan, New Brunswick.
- Harry S. Swarth, California Academy of Sciences, Golden Gate park, San Francisco, California: 2 Canada jays (*Perisoreus canadensis*), 2 juncos (*Junco hyemalis connectens*), 2 myrtle warblers (*Dendroica coronata*), 1 western Savannah sparrow (*Passerella sandwichensis alaudinus*).
- H. C. Cooke, Ottawa: 1 common loon, collected at Assinika lake, Quebec, in 1915.
- R. W. Tufts, Wolfville, Nova Scotia: 2 Iceland gulls, 1 American golden-eye, 7 juvenile gulls, 1 Holboell's grebe, 1 great horned owl in the flesh.
- Edward McIsaac, Ottawa: 1 sparrow hawk in the flesh.
- A. H. McAdam, Ottawa: 2 willow ptarmigan in the flesh, from Grand Lake Victoria, Quebec.
- A. E. Bourguignon, Ottawa: 1 willow ptarmigan in the flesh, from Cochrane, Ontario.
- Hermann Koch, Ottawa: 1 horned grebe in the flesh, found dead near Pretoria bridge, Ottawa.
- R. D. Bird, Entomological Laboratory, Brandon, Manitoba: 1 Swainson's hawk, found dead on road near Aweme, Manitoba; 1 albino bronzed grackle from Icelandic river.
- John Arkell, Britannia, Ontario: 1 marsh hawk in the flesh, mounted for habitat group.
- C. T. Hunt, 1 osprey in the flesh, from Black Rapids, Rideau river, near Ottawa.
- R. T. D. Wickenden, Geological Survey, Ottawa: 1 eastern goldfinch.
- W. W. Coleman, Saskatoon, Saskatchewan: 1 spotted sandpiper, downy young, from Prince Albert National park, Saskatchewan.
- Dr. Ralph E. DeLury, Ottawa: 1 black and white warbler, 1 screech owl in the flesh.
- Ned Roberts, Britannia Heights, Ontario: 1 albino robin fledgling, hatched on grounds but abandoned by parents.
- F. D. and J. S. Jenkins, Charlottetown, Prince Edward Island: 4 adult and 3 nestling great horned owls, in the flesh.
- Hoyes Lloyd, Rockcliffe Park, Ottawa: 1 nest of redstart in situ.
- T. E. Randall, Boyle, Alberta: 1 bobolink.
- Prof. V. C. Wynne-Edwards, Department of Zoology, McGill University: 2 fulmars, 4 greater shearwaters, 1 Leach's petrel, 1 ring-billed gull, taken in Grand Banks, Newfoundland, 1934.
- H. M. Kilburn, Casselman, Ontario: 1 grey partridge (*Perdix cinerea*) in the flesh.
- Edith Rowell, Ottawa: 1 great horned owl in the flesh.
- A. La Rocque, Ottawa: 1 blue jay, skin.
- R. W. Tufts, Wolfville, Nova Scotia: 7 juvenile gulls and 1 Holboell's grebe in the flesh, 1 great horned owl in the flesh.
- Allan Moses, Grand Manan, New Brunswick: 1 Iceland gull in the flesh, 1 shoveller skin.
- Dr. C. Bowles, Shawville, Quebec: 1 waxbill (cage bird) in the flesh.

BIRDS—Concluded

By Gift—Concluded

- C. D. McIntyre, Ottawa: 1 male ring-necked pheasant, killed by motor car near Williamsburg, Ontario, November 2, 1934.
 Prof. Wm. Rowan, University of Alberta, Edmonton: 5 skins of Savannah sparrow (*Passerculus sandwichensis*).
 L. S. Russell, Geological Survey, Ottawa: 1 skin of redstart, taken at Deer Creek ranch, southern Alberta.
 Cyril Rennie, Ottawa: 1 starling found dead.
 Dr. H. F. Lewis, Chief Federal Migratory Bird Officer for Ontario and Quebec: 1 American coot and 1 baldpate (mounted), from Mingan, Saguenay county, Quebec.
 J. Skillen, Geological Survey, Ottawa: 1 ring-necked duck, 1 old squaw duck, taken at Beckett Landing and Constant lake, Ontario, November, 1934.
 Charles Guignet, Shaunavon, Saskatchewan: 1 male and 1 female hybrid flicker (*Colaptes auratus* x *C. cafer*) with brood of 5 fledgling young, and 1 additional adult male.

By Exchange

- J. H. Fleming, Toronto: 1 California quail (*Lophortyx californica*), and 1 mountain quail (*Oreortyx picta*).
 Allan Brooks, Okanagan Landing, British Columbia: 1 Queen Charlotte woodpecker (*Dryobates villosus piceoides*).

By Staff..... 12

AMPHIBIANS AND REPTILES

<i>By Gift</i>	223
R. D. Bird, Brandon, Manitoba.....	1
W. W. Coleman, Waskesieu lake, Sask.....	2
Stuart Criddle, Treesbank, Manitoba.....	183
B. J. Hales, Brandon, Manitoba.....	1
D. Leechman, Charlton island, James bay.....	2
R. O. Merriman, Matamek Factory.....	1
Clyde L. Patch, Georgetown, D.C., and Edgewater, Maryland.....	21
L. S. Russell, Writing-on-Stone, Alberta.....	3
Harlan I. Smith, Rice lake, Ont.....	9

INVERTEBRATES, MOLLUSCS

By Gift

- C. E. Johnson, National Museum, Ottawa: 4 lots of microscopic shells from Long swamp, near Ottawa.
 Ned Roberts, Britannia Heights, near Ottawa: 8 lots of shells from Britannia and vicinity.
 A. La Rocque, Geological Survey: 3 lots, Wakefield lake, Quebec (freshwater); 15 lots, Taylor lake, Quebec (freshwater and land); 60 lots, Meach lake, Quebec (freshwater and land); 35 lots, vicinity of Urbana, Illinois (freshwater); 6 lots, Fairy lake, Quebec (land).
 W. J. Wintemberg, National Museum, Ottawa: 3 lots from near Lakeville, Sunbury county, New Brunswick (1933).
 Institute of Parasitology, McGill University, Macdonald College post office, Quebec: 6 lots from Montmagny and Ste.-Anne-de-Bellevue, Quebec, and 12 lots from Wainwright Buffalo park, Alberta; collected by W. E. Swales and H. T. Griffiths (1934).
 G. E. Fairbairn, Geological Survey, Ottawa: 10 lots of microscopic shells, 5 lots of freshwater shells from near Ottawa (1934).
 C. L. Patch, National Museum, Ottawa: 2 marine and 2 land shells from Edgewater Beach, Maryland.
 R. E. Ouimet, Geological Survey: 8 lots, Taylor lake, Quebec (freshwater).

INVERTEBRATES, MOLLUSCS—*Concluded**By Gift—Concluded*

- L. S. Russell, Geological Survey: 3 lots, Percé, Quebec; 2 lots, Danford lake, Quebec.
- C. H. Young, National Museum: 1 specimen *Oxystyla*.
- Norman Mattox, 301 Natural History Building, Urbana, Illinois: 15 lots land shells, Camp Friedlander, Ohio.
- Bros. Etienne and Alphonse, Hull, Quebec: 15 specimens *Helisoma trivolvis*, Leamy lake, Quebec.
- C. E. Johnson, National Museum: 3 lots, Rideau park (land).
- Miss A. E. Wilson, Geological Survey: 1 lot *Stagnicola palustris nuttalliana*, Moosonee, Ontario.
- J. Skillen, Geological Survey: 15 lots freshwater shells, James island, south of Kars, Ontario.

By Exchange

- Dr. W. J. Clench, Museum of Comparative Zoology, Cambridge, Mass.: 2 lots, paratypes of *Physa johnsoni* Clench and *P. plena* Clench.
- J. P. Oughton, Royal Ontario Museum of Zoology, Toronto, Ontario: 35 lots Canadian mollusca.
- Miss B. T. Bauer, Hamilton Scientific Association Museum, Hamilton, Ontario: 8 species Canadian *Naiades*.
- W. J. Eyerdam, Seattle, Washington, U.S.A.: 27 species land and freshwater molluscs, Washington, Oregon, British Columbia, and Alaska.
- Dr. F. C. Baker, Museum of Natural History, University of Illinois, Urbana, Illinois: 300 named lots, land, freshwater, and marine mollusca.

Specimens Distributed on Account of Exchange

- J. P. Oughton, Royal Ontario Museum of Zoology, Toronto, Ontario: 35 lots Canadian mollusca.
- Miss B. T. Bauer, Hamilton Scientific Association Museum, Hamilton, Ontario: 6 lots Canadian mollusca.
- D. H. Baker, Auckland, New Zealand: 20 lots Canadian mollusca.
- Dr. F. C. Baker, Museum of Natural History, University of Illinois, Urbana, Illinois: 50 lots Canadian mollusca (Exchange incomplete).
- Norman Mattox, 301 Natural History Building, Urbana, Illinois: 15 lots land and freshwater shells of Canada.
- Dr. W. J. Clench, Museum of Comparative Zoology, Cambridge, Mass.: 2 lots Canadian *Physa*.
- Sr. Marie-Jean-Eudes, Pensionnat de Ste.-Anne, Lachine, Quebec: 29 lots land and freshwater shells of Canada—presented.

INSECTS

- By Gift*..... 1,115
- Charles H. Young, National Museum, Ottawa, 1,115 specimens of mounted *Lepidoptera*, collected in the vicinity of Ottawa, and in some cases raised from pupæ in laboratory, deposited in the National Collection of Insects.

National Herbarium

In the herbarium the work of mounting, labelling, and filing specimens from the large mass of material that has accumulated in past years, and frequent accessions from the regular exchange correspondents of the institution has been carried on. During the time from August 1, 1934, to March 31, 1935, 2,523 sheets of specimens were labelled and numbered. The number of sheets officially registered and numbered totalled 129,211 on March 31, 1935. A considerable proportion of the 1934-1935 accessions have not yet been catalogued. Considerable time is taken in making lists of specimens sent on loan to other institutions, checking specimens on

return and placing them in proper place in the systematic collections, as well as looking up botanical literature. Visitors and students who come to work in the herbarium are assisted and shown material, and care is taken that specimens are properly handled.

The details of accessions follow:

<i>Plants received on account of exchange</i>	951
New York Botanical Garden, New York, N.Y.	76
Gray Herbarium, Harvard University, Cambridge, Mass.	492
H. L. Masson, University of California, Berkeley, Cal.	170
Dr. F. W. Pennell, Academy of Natural Sciences, Philadelphia, Pa.	100
U.S. National Museum, Washington, D.C.	113
 <i>Plants received as donations</i>	 1,324
John Dearness, London, Ontario	1
René E. Ouimet, Ottawa, Ontario	2
R. M. Anderson, Ottawa, Ontario	1
Dr. A. J. Grout, Newfane, Vermont	2
D. A. Mackay, M.A., Ottawa, Ont.	207
Marcel Raymond, St. John, Quebec	11
Dr. H. F. Lewis, Ottawa, Ontario	1,100
 <i>Plants distributed on account of exchange</i>	 319
Gray Herbarium, Harvard University, Cambridge, Mass.	263
M. P. Porsild, Danish Arctic Station, Godhavn, Disko, Greenland.	56

DIVISION OF PALÆONTOLOGY (Geological Survey)

E. M. Kindle, Chief of Division, reports:

Field Work

The work of the staff during the year has been confined largely to office work. Some valuable collections have, however, been made in the field by members of the division.

C. M. Sternberg collected two incomplete skeletons of mosasaurs from the base of the Pembina beds (Upper Cretaceous) in Manitoba. These are the first and only skeletons of this marine reptile that have been collected in Canada. Mr. Sternberg also made a collection of fossil footprints from Pennsylvanian rocks near Parrsboro, N.S.

L. S. Russell made a small collection of dinosaurian, turtle, and fish remains from the Upper Milk River sandstone in southern Alberta. These are the first vertebrate fossils from this horizon.

Some systematic collecting of lake shells from the standpoint of contrasted environments has been done by A. La Rocque in certain lakes of the Ottawa district, selected with reference to their geological setting. It is expected that the contrasts between the living molluscan faunas from hard and soft water lakes will suggest the extent to which contemporaneous fossil lacustrine faunas may be expected to differ from one another according to facies.

Office and Laboratory Work

C. M. Sternberg made a careful study of the hooded hadrosaurs of the Belly River Cretaceous and prepared a paper setting forth his observations and describing three new species. Most of the work done by the vertebrate laboratory staff was confined to specimens that would aid in the above research. In this connexion a considerable part of the skeleton of a new species of *Lambeosaurus* and two other skulls were prepared. Four skulls were mounted for museum exhibits and four collections sent in for identification were reported on.

L. S. Russell has completed studies on fossil turtles from Saskatchewan and Alberta, with publication of result. His office work has also included preparation and study of invertebrates and vertebrates from the Milk River formation of Alberta, preparation of a paper entitled "Musculatum and Functions in the Ceratopsia," preparation of casts of specimens for exchange with other palæontologists, and sorting and packing of S. R. Kirk collection of Manitoba Cretaceous fossils at Winnipeg.

The office work of A. E. Wilson has included: study of Ostracoda in connexion with the wells of the Borings Division; study of fossils in connexion with the Ottawa map sheet; continuation of work on type catalogue; completion of labels for case in Exhibition Hall.

F. H. McLearn has devoted some time to a study of Triassic fossils from Peace River district.

W. A. Bell has been engaged chiefly in the preparation of a memoir on the fossil plants of the Sydney coal field which deals with their description, illustration, and stratigraphic distribution.

About the usual number of special reports on fossils for members of the staff have been prepared. Reports on fossils sent in by the Quebec Bureau of Mines and on collections from other sources have been furnished on request.

Museum Exhibits

Additions to the Museum exhibits include a case showing various types of lamination. A case has been prepared by A. La Rocque displaying many of the brilliantly coloured tropical molluscan shells, examples of the several classes of the mollusca, and the uses that man makes of the molluscs. A habitat group of Cretaceous dinosaurs, with restorations by L. S. Russell, of *Gorgosaurus libratus* and *Chasmosaurus belli*, $\frac{1}{10}$ natural size, has been prepared by C. E. Johnson.

The services of L. S. Russell were loaned to the Manitoba Museum for the purpose of mounting there a skeleton of the plesiosaur *Trinacromerum*. A description of the specimen was also prepared.

Educational Work

A dinosaur habitat exhibit, on a scale of $\frac{1}{10}$ natural size, including two dinosaurs and associated plant life of Cretaceous times, was shown at the Ottawa Exhibition as part of the National Museum exhibit.

Guides were supplied for a series of visits of Normal School students to the Museum. The natural science students in the Ottawa Collegiate Institute were also supplied with guides on two field trips to study geological

features near Ottawa. The Princeton Summer School of geology and economics following its summer visit to the Museum was furnished with a guide from the staff to point out and explain local geological features to be seen near Ottawa river. Both launch and airplane excursions were made during the Ottawa visit of this school.

One hundred sets of fossils were supplied during the year for the use of high school teachers.

A collection of Manitoba fossils was sent to the Riding Mountain National Park Museum in Manitoba.

A series of fossils representing the several geological systems was supplied to Musée du Présent et au Musée du Pensionnat de Ste. Anne, Lachine, Que., and a collection of molluscs was identified by A. La Rocque for this institution.

The following addresses were given by members of the division:

- Dinosaurs, by C. M. Sternberg. Museum lecture course, Nov. 24 and 28, 1934.
 Collecting and Mounting Vertebrate Fossils, by C. M. Sternberg. Ann. meeting Ottawa Field-Naturalist Club, Dec. 11, 1934.
 Hooded Hadrosaurs of the Upper Cretaceous, by C. M. Sternberg. Palæontological Society, Rochester, N.Y., Dec. 28, 1934.
 Prehistoric Animals of Western Canada, by L. S. Russell. United Church, Milk River, Alberta, Sept. 15, 1934.
 Geology of the Canadian Great Plains, by L. S. Russell. Engineering Institute, Winnipeg, Man., Oct. 18, 1934.
 Plesiosaur from the Upper Cretaceous of Manitoba, by L. S. Russell. Palæontological Society, Rochester, N.Y., Dec. 28, 1934.
 Dinosaur Restoration Group in the National Museum of Canada, by L. S. Russell. Palæontological Society, Rochester, N.Y., Dec. 28, 1934.

Publications

The following papers were published by members of the division during the year:

- Rôle of Facies in Stratigraphic Palæontology, by E. M. Kindle. Presidential address (1933), Proc. Geol. Soc. of Am., 1933 (June, 1934).
 Concerning "Lake Balls," "Cladophora Balls," and "Coal Balls," by E. M. Kindle. Am. Midland Naturalist, vol. XV, pp. 750-758 (Nov., 1934).
 Adaptive Coloration in a Freshwater Gastropod, by E. M. Kindle. Bull. Wagner Free Inst. of Sci., vol. 9, No. 4, pp. 136-143, Figs. 1 and 2 (1934).
 A New Silurian Eurypterid Locality in Eastern Canada, by E. M. Kindle. Roy. Soc., Canada, sec. IV, vol. 28, pp. 43-47, Figs. 1 and 2 (1934).
 A Middle Eocene Mammal from British Columbia, by L. S. Russell. Am. Jour. of Science, Jan., 1935.
 Fossil Turtles from Saskatchewan and Alberta, by L. S. Russell. Trans. Roy. Soc., Canada, March, 1935.
 Revision of the Lower Oligocene Vertebrate Faunas of the Cypress Hills, Sask., by L. S. Russell. Trans. Roy. Can. Inst., Toronto, Nov., 1934.

Accessions to Museum

VERTEBRATE FOSSILS

Presented:

- W. R. Wilson: lower jaw fragment with 4 teeth of *Trogosus minor*, from British Columbia.
 H. F. Hughes: lower jaw fragment of small mammal from Cypress hills, Sask.
 S. R. Kirk collection: incomplete fish.
 J. A. Greig: half of hair-ball from stomach of cow.
 Manitoba museum: ? humerus of plesiosaur (? *Trinacromerum*).

Exchange:

Wards Nat. Sci. Estab.: skull and jaws of Oligocene cat (*Dinictis*); camel skull (*Poebrotherium wilsoni*); most of skull of rhinocerosus (*Caenopus*); skull of Entelodon.

From Members of Staff:

H. S. Bostock, collector: lower right last molar of *Mastodon americanus*, Klondike river, B.C.

INVERTEBRATE FOSSILS

Presented:

G. E. Fairbairn, Geol. Surv., Canada: nine trays of Ordovician and Pleistocene fossils from Ottawa region.

H. N. Mullin, York Centre, Gaspe, Que.: 2 specimens corals. Ordovician or Silurian.

Olaf O. Nylander, R.R. 4, Caribou, Maine: 3 species of fossils from Stuart Cove, Dalhousie, N.B. (*Leptostrophia becki* Hall, *Camarotoechia acutiplicata* Hall, *Camarotoechia* sp.). Devonian.

Quebec Bureau of Mines, Quebec, Que.: a collection of fossils from Gaspe peninsula, Que., collected by I. W. Jones, 1934. Devonian and Silurian.

Exchange:

G. A. Cooper, U.S. National Museum: Canadian Beekmantown *Pomatotrema muralis* Ulrich and Cooper—4 miles east of Hennepin, Okla.; '*Eoorthis lineocosta* Walcott—canyon of Deadman ck., Colo.; *Taffia planoconvexa* Butts—1 mile northeast of Garry, Alberta.

From Members of Staff:

Borings Division: fossils from cores of Avonlea well near Avonlea, Sask. Jurassic.

C. E. Cairnes: indeterminate fossils from BRX group of mineral claims between South Fork and Bralorne mine, Bridge River district, B.C.

G. S. Hume: 1 tray fossils—north side of Kootenay pass, 600 feet above Lewis fault. Devonian?

F. A. Kerr: 2 lots fossils—(a) Jurassic, 1 mile east of Doughty Station by Bulkley river, B.C. (b) Jurassic? Fiddler creek, Doreen, B.C.

F. A. Kerr: 2 lots fossils—(a) fossil plants—Lake Kathlyn coal, Smithers, B.C. Lower Cretaceous. (b) fossil plants—Encomb Station and Driftwood creek, B.C. Tertiary.

D. F. Kidd: 2 lots fossils—(a) scarp on west shore Mazenod lake, 70 miles north of Rae, N.W.T. (b) 3 miles west of Bedford point, west shore Marian lake, near Rae, N.W.T.—age not determinable. (Discarded as of no value.)

E. M. Kindle: limestone, near contact with granite, Kingston Mills, near Kingston, Ont. Ordovician.

E. M. Kindle: a collection of fossils, west of Athens, N.Y., 2 or 3 miles on Elmira road. Devonian: Chemung.

E. M. Kindle: 1 tray Black River fossils—roadside $\frac{1}{2}$ mile west of Calabogie lake on Calabogie and Black Donald highway.

D. Leechman: 1 slab fossils, Churchill, Man. Silurian.

B. R. MacKay: a collection of fossil plants, Canmore coal area, Alberta. Lower Cretaceous.

B. R. MacKay: a small collection of Rundle (Carboniferous) invertebrates, Canmore coal area, Alberta.

L. S. Russell: 5 trays invertebrates, vertebrates, and plants, vicinity of Milk River, southern Alberta? Tertiary.

A. E. Wilson: a small collection of invertebrate fossils from Ottawa and vicinity. Ordovician.

A. E. Wilson: 2 lots of Pleistocene fossils, Moosonee, Ont.

SHELLS

Presented:

Ward's Nat. Sci. Establishment, Rochester, N.Y., U.S.A.: 1 shell of *Cypraea tigris* etched with acid. Recent.

From Members of Staff:

E. M. Kindle: a small lot of shells from the shore at Jacquet river, Chaleur bay, N.S. Aug., 1933. Recent.

E. M. Kindle: shells, Sackett harbour, lake Ontario, N.Y., coll. June 25, 1934. Recent.

E. M. Kindle: 1 tray modern shells—Atlantic beach, east of Jacksonville, Fla. Recent.

E. M. Kindle: *Ostrea* sp., Long Island sound at New Rochelle, N.Y. Recent.

E. M. Kindle: 2 trays of shells, crab, echinoderms, St. Augustine beach, Fla. Modern.

E. M. Kindle: 1 tray Tide Marsh shells, 10 miles west of Charleston, S.C. Modern.

D. Leechman: 4 valves *Pecten islandicus*, Port Harrison, east coast of Hudson bay. Recent.

Purchase:

H. G. Richards: a collection of freshwater shells from northern Ontario and Charlton island, James bay. Recent.

CONCRETIONS AND SEDIMENTS

Presented:

H. M. Ami estate: geodes, left bank of Flint river, Bainbridge, Ga., coll. H. M. Ami. ? Formation.

Nelson Loomer, Falmouth, N.S.: concretions, mud bank on the mountain at Falmouth, 5 miles from Windsor. Pleistocene?

Quebec Bureau of Mines, Quebec, Que.: concretion with fossil, Mistassini river, Pelletier tp., Que., coll. B. T. Denis.

I. G. Reimann, Buffalo Museum, Buffalo, N.Y.: 1 specimen conglomerate with manganese oxide and ferruginous cement. Tuscaloosa formation, Mississippi.

H. C. Wigney, Thurso, Que.: 3 concretions, Thurso, Que. Pleistocene.

Exchange:

F. Bradshaw, Provincial Museum, Regina: hairball, Saskatchewan. Recent.

From Members of Staff:

E. M. Kindle, Coquina, St. Augustine, Fla. Recent.

E. M. Kindle: iron spike with conglomerate, Long Island sound at New Rochelle, N.Y. Recent.

D. Leechman: 1 smooth rounded stone, produced by pot hole in Allen rapids. Moose river, James bay. Recent?

D. Leechman: lime deposited by algae, Southampton Island lake, N.W.T. (See "A Note on Lime separating Algae from Subarctic Canada" by E. M. Kindle, Geol. Mag., London. 1 fig. In press.)

C. M. Sternberg: ripple-marked sandstone slabs (4), Gilbert's cliff, 3 miles south of Parrsboro, N.S. Lower Carboniferous.

Purchase:

Ward's Nat. Sci. Establishment, Rochester, N.Y., U.S.A.: 1 specimen Zebra rock, near Argyle station, West Australia. Cambrian.

DIVISION OF MINERALOGY (Geological Survey)

Eugene Poitevin, Chief of the Division, reports:

Laboratory Work

During the fiscal year just ended Eugene Poitevin and H. V. Ellsworth have examined and described a very large number of minerals and rocks sent in from various parts of Canada by mining organizations, departmental officers, prospectors, and others interested in the mineral industry. Over five hundred written reports were issued and a large number of verbal reports were furnished to visitors and departmental officers. Altogether more than four thousand specimens were studied and reported upon, which is considerably more than last year.

In addition to his duties as Chief of the Division, Eugene Poitevin has, at the request of the Ontario Department of Health, continued his investigations of mineral residues obtained from human silicotic lungs. So far, he has studied twenty-three lungs and the work is still in progress. A special report on the subject is being prepared.

H. V. Ellsworth continued work on the rare-element minerals, radioactive minerals, and vanadium. He also spent considerable time on spectroscopic investigations on behalf of other departments, on research involving the analytical chemistry of vanadium and chromium, and on the determination of tellurides from various gold mines.

R. J. C. Fabry has carried on the following chemical analyses:

- Two samples of kaolin: from north of highway near Willows, Sask., for F. J. Fraser.
 Norite: east of Ross mine, Foy tp., Sudbury dist., Ont., for W. H. Collins.
 Andesite: Beaver hill, Dufresnoy tp., Abitibi co., Que., for M. E. Wilson.
 Rhyolite: north Waite trail, Duprat tp., Abitibi co., Que., for M. E. Wilson.
 Concretion: Grand Lake, N.S., for iron and manganese, for E. M. Kindle.
- For H. C. Cooke:
- Asbestos: Deloro tp., Porcupine dist., Ont.
 Q. A. C., Ltd., lot 13, range XI, Broughton tp., Que.
 Johnston mine, Thetford, Que.
 Beaver mine, Thetford, Que.
 King mine, Thetford, Que.
 Vimy Ridge, southwest of Black Lake, Que.
 Bell pit, Thetford, Que.
 British Canadian pits, Black Lake.
- Asbestos-like fibre: King mine, Thetford, Que. (2).
 Serpentine: Lambly mine, Coleraine, Que.
 Lot 19, NW., range X, Coleraine tp., Que.
 Slip serpentine: King mine, Thetford, Que. (2).
 Peridotite: Frechette pit, Coleraine tp., Que.
 Bell pit, Thetford, Que.
- Alt. peridotite: Frechette pit, Coleraine tp., Que.
 Picrolite: King mine, Thetford, Que. (2).
 Picrolite (brucite?): King mine, Thetford, Que.
 Talcose alteration product: Bell pit, Thetford mine, Que.
 Pseudo-asbestos: north of Robertsonville, Thetford tp., Que.
 Fault fibre: King mine, Thetford Que.
 Serpentine: Bell pit, Thetford, Que.

In addition, the usual routine tests for the commoner elements occurring in samples brought in or mailed to the division were carried out throughout the year (Ni, S, P, etc.).

Upwards of 100 specific gravity determinations were made on some rock specimens for W. H. Collins, the samples originating in the Sudbury area of Ontario.

The acquisition of additional laboratory equipment (platinum, mechanical grinder, etc.) has permitted a considerable increase in the output of analytical work, as shown above.

Exhibition

In 1934 a large exhibit was prepared for the Central Canada Exhibition at Ottawa, by Mr. J. R. Marshall. At the request of Mr. F. P. Cosgrove, Canadian Government Exhibition Commission, Department of Trade and Commerce, a mineral exhibit was prepared for display during the British Empire Week at Johannesburg, South Africa.

Educational Collections

There was an increased demand from the public for mineral collections and specimens. The Bureau of Mines of the Province of Quebec ordered no less than 1,025 sets of a special collection of minerals and rocks assembled according to their specifications. There were distributed 53,630 specimens broken to proper size, numbered, and assembled. The greatest previous demand for specimens and collections was in 1930-31 when 850 collections containing 36,313 specimens were issued to the public of Canada. Mr. Marshall reports that the educational collections assembled by him were distributed as follows:

Province	Standard	Grade 2	Grade 3	Grade 4	Miscel- laneous	Prospector's	
						Minerals	Rocks
Yukon.....						1	1
British Columbia.....		2	3		7	77	51
Alberta.....					2	10	8
Saskatchewan.....	1				3	26	21
Manitoba.....					15	7	6
Ontario.....	5	1	40		23	54	25
Quebec.....	1	1	26	1,000	9	10	4
New Brunswick.....						2	
Nova Scotia.....					1		
Foreign.....	1		2		12	3	3
	8	4	71	1,000	72	190	119
No. of specimens.....	1,152	176	2,840	40,000	2,806	3,800	2,856

Total number of collections..... 1,464
 Total number of specimens..... 53,630

In addition to the above three boxes of mineral chips, consisting of 120 bags, were sent out, and a large number of specimens were prepared for loan to students of the Normal School.

Accessions

During the fiscal year the following specimens were received. Particular thanks are due to Falconbridge Nickel Mines, Limited, for a large supply of material for the educational collections, and to the International Nickel Company of Canada for nickel coins.

DONATIONS

Four samples of bauxite from Greece, France, British Guiana, and Dutch Guiana; 1 sample of cryolite from Greenland. Mr. A. M. Campbell, Perth, Ont.

Vein material carrying silver chloride from Nipissing mine. Mr. Arthur A. Cole, Cobalt, Ont.

Selen sulphur from undescribed locality in United States. Mr. Wm. P. Crawford, Bisbee, Arizona.

Twenty-one bags of pyrrhotite (approximately 2,000 pounds). J. R. Gill, Smelter Superintendent, Falconbridge Nickel Mines, Limited, Falconbridge, Ont.

One bag (about 100 pounds) of stannite from Snowflake mine, B.C. H. C. Gunning, Geological Survey.

Five specimens (weighing about 100 pounds each) of nickel-copper ore from Sudbury, representative of the different types of ore. International Nickel Company of Canada, Limited.

Collection of 75 pure nickel coins of various denominations from 29 different countries. Robert C. Stanley, President of the International Nickel Company of Canada, Limited.

Molybdenite ore from Martel gold mine, Venable valley, B.C. Mr. Jamieson, the mine manager.

Three specimens containing tetradymite-gold ore from Glacial Gulch mine, west of lake Kathryn near Smithers, B.C. F. A. Kerr, Geological Survey.

Diopside and ouvarovite garnet from a small island near Asbestos island, McKenzie bay, Chibougamau. G. W. H. Norman, Geological Survey.

Two specimens of native silver from Keeley silver mine, Keeley Centre, Cobalt district, Ont. Capt. H. E. Silver.

EXCHANGE

Four pieces of carved rock crystal. Mr. Shimmatsu Ichikawa of Kitashinjo-mura, Imatate-gun, Fukui-ken, Japan.

The following specimens were received from O. Ivan Lee, Jersey City, N.J.: willemitite, franklinite (fluorescent) from Franklin Furnace, N.J. Clarkeite, gummite, uranophane, uraninite, etc. (assorted fragments) from headquarters of Crabtree creek, Yancey county, North Carolina. Six uraninite crystals (bröggerite?) from headwaters of Crabtree creek, Yancey county, North Carolina. Uraninite crystals in matrix with clarkeite, uranophane and gummite; clarkeite, gummite, uranophane, uraninite, etc., in matrix, from headwaters of Crabtree creek, Yancey county, North Carolina (Erwin Feldspar Corporation mine, No. 1). Fluorite and antozonite (radiofluorite), from Morencos quarries, Cordoba province, Argentine Republic—five specimens.

