

PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF EDUCATION

PROVINCIAL MUSEUM
of NATURAL HISTORY
and ANTHROPOLOGY

Report for the Year 1949



PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.



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To His Honour C. A. BANKS,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The undersigned respectfully submits herewith the Annual Report of the Provincial Museum of Natural History and Anthropology for the year 1949.

W. T. STRAITH,
Minister of Education.

*Office of the Minister of Education,
Victoria, B.C.*

PROVINCIAL MUSEUM OF NATURAL HISTORY
AND ANTHROPOLOGY,
VICTORIA, B.C., May 5th, 1950.

The Honourable W. T. Straith,
Minister of Education, Victoria, B.C.

SIR,—The undersigned respectfully submits herewith a report of the activities of the Provincial Museum of Natural History and Anthropology for the calendar year 1949.

I have the honour to be,

Sir,

Your obedient servant,

G. CLIFFORD CARL,

Director.

DEPARTMENT OF EDUCATION.

The Honourable W. T. STRAITH, *Minister.*

F. T. FAIREY, B.A., LL.D., *Deputy Minister and Superintendent.*

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY.

Staff:

G. CLIFFORD CARL, Ph.D., *Director.*

GEORGE A. HARDY, *General Assistant.*

CHARLES J. GUIGUET, B.A., *Assistant in Biology.*

WILSON DUFF, B.A., *Temporary Assistant in Anthropology.*

MARGARET CRUMMY, B.A., *Secretarial Stenographer.*

BETTY C. NEWTON, *Artist.*

SHELA GRICE DAVIES, *Typist.*

E. J. MAXWELL, *Attendant.*

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY.

OBJECTS.

(a) To secure and preserve specimens illustrating the natural history of the Province.

(b) To collect anthropological material relating to the aboriginal races of the Province.

(c) To obtain information respecting the natural sciences, relating particularly to the natural history of the Province, and to increase and diffuse knowledge regarding the same.

(Section 4, "Provincial Museum Act," R.S.B.C. 1936, c. 231.)

ADMISSION.

The Provincial Museum is open to the public, free, weekdays, 9 a.m. to 5 p.m.; and on Sunday afternoons, 1 p.m. to 5 p.m.

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REPORT OF THE PROVINCIAL MUSEUM FOR THE YEAR 1949.

REPORT OF THE DIRECTOR.

In the following pages will be found an outline of the various activities carried on by the Provincial Museum staff during the calendar year 1949.

SPECIAL EXHIBITS.

Three special exhibits were featured during the year. Chief of these was the Eighth Annual Exhibition of British Columbia Indian Arts and Crafts held in the Museum from July 7th to August 1st under the ægis of the British Columbia Indian Arts and Welfare Society. The display was opened by the Honourable William T. Straith, Minister of Education, who pointed out that both the Provincial and the Federal Governments were interested in the advancement of Indian crafts, not only to preserve their culture, but also to help the natives to make a livelihood. Winner of the memorial art scholarship offered annually by the society was Leonard Thomas, of the Songhees Reserve. Other prize-winners included Sherman Lauder, Erma Gallic, Joy Clutesi, and Charlie Sam, all of the Alberni Indian Day School; Donald Barker, of the Songhees Indian Day School; Frank Lucas and Elmer George, of the Christie Indian Residential School at Kakawis. A number of paintings by Judith Phillis Morgan were also displayed; five of these were subsequently purchased by the Provincial Government.

During the period from October 10th to October 24th original wild-flower paintings by Frank L. Beebe, noted wildlife artist, were placed on display.

For part of the year, space was devoted to an elaborate display provided by the Celanese Corporation of America, featuring a model of the new celanese plant being established near Prince Rupert.

During National Wildlife Week (April 11th to 16th) a display of wild-fowl specimens was set up in two local sporting-goods stores.

FIELD WORK.

In addition to several short visits made to near-by areas during the year, and one to the Comox-Courtenay area at the end of May, two major biological field-trips were made in 1949. The first of these was to Triangle Island, about 40 miles north-west of Cape Scott, where a Museum party composed of G. C. Carl, C. J. Guiguet, and G. A. Hardy, assisted by Frank L. Beebe, of Vancouver, made a survey of animals and plants to be found in this area during the period of June 24th to July 1st. A complete report based on the results of this visit will be presented later when more data are available. In the meantime, grateful thanks are expressed here to the Dominion Department of Fisheries through A. J. Whitmore, Chief Supervisor, who provided transportation of men and gear to and from this otherwise inaccessible area. The crew of the Federal Fisheries patrol vessel "Howay," under command of Capt. W. Redford, and of the patrol vessel "Atlin Post," commanded by Capt. Mitchell Gay, were most helpful and co-operative. Without their services, such a survey would not have been possible. We

are also indebted to the British Columbia Forest Service for the loan of a short-wave radio set, through which we were able to send and receive messages.

From July 12th to July 22nd G. C. Carl, C. J. Guiguet, and G. A. Hardy continued the Manning Park survey, which was commenced in the season of 1945. On this occasion, collections were made along the newly constructed highway, extending from Mile 12 on the Hope end to about Mile 22 near the construction camp. Through the courtesy of the Canam Mining Company, an overnight visit was made to the mine, which lies at an elevation of 4,500 feet above sea-level. Here a collection of sub-alpine plants and animals was made for future reference. We are indebted to Mr. J. W. Heffernan for accommodation and meals while on the mine property.

In December a quick trip was made by the Director to Quadra Island to investigate a report of a stranded whale. The animal proved to be a killer whale, of which the skull was removed for the Museum collection. Again the assistance of the Federal Department of Fisheries is gratefully acknowledged.

In the anthropological field, Mr. Wilson Duff carried out two projects during the summer season. In May, in company with Dr. H. B. Hawthorn, of the University staff, and assisted by funds from the University, he took part in a rapid survey of Indian settlements on the Skeena River. Later in the season he carried out an investigation into the location of old village-sites in the Lower Fraser Valley, as detailed in a later section of this Report.

PUBLICATIONS.

The following publications have originated from the Museum during 1949:—

By G. Clifford Carl—

- “Marine Mammals of British Columbia — A Potential Resource.” Second Resources Conference, 1949, pp. 275–278.
- “Extensions of Known Ranges of Some Amphibians in British Columbia.” *Herpetologica*, Vol. 5, Part 6, pp. 139, 140.
- “Killer Whales.” *Victoria Naturalist*, Vol. 5, No. 7, p. 80.
- “The Steelhead or Rainbow Trout.” *Victoria Naturalist*, Vol. 6, No. 1, pp. 1, 2.
- “The Sharp-tailed Snake in British Columbia.” *Victoria Naturalist*, Vol. 6, No. 5, pp. 50, 51.
- “The Dolly Varden.” *Victoria Naturalist*, Vol. 6, No. 6, pp. 61, 62.
- “Fresh-water Crustacea.” *Victoria Naturalist*, Vol. 6, No. 6, pp. 65, 66.
- “Triangle Island Night Life.” *Vancouver Daily Province*, October 15th.

By George A. Hardy—

- “Squirrel Cache of Fungi.” *Canadian Field-Naturalist*, Vol. 63, No. 2, pp. 86, 87.
- “A Report on a Study of Jordan Meadows, Vancouver Island.” Report of the Provincial Museum for 1948, pp. 20–46.
- “Nature at Home.” *Victoria Naturalist*, Vol. 6, No. 2, pp. 15–17.
- “The Shaggy Mane, *Coprinus comatus* Fr.” *Victoria Naturalist*, Vol. 6, No. 4, pp. 38, 39.
- “Report on the Seventh Annual Fungus Foray.” *Victoria Naturalist*, Vol. 6, No. 6, pp. 63, 64.
- “Notes on the Life History of *Xanthorhoe defensaria* Gn.”
Lepidoptera: Geometridæ. *Proceedings, B.C. Entomological Society*, 49:45, 17–19.
- “Belted Kingfisher and Nighthawk.” *Victoria Naturalist*, Vol. 5, No. 9, pp. 101–104.

By C. J. Guiguet—

“A Day with a Field Collector.” *Victoria Naturalist*, Vol. 5, No. 7, pp. 75–78.

“The Trumpeter Swan.” *Museum and Art Notes*, Vol. 1, No. 1 (Second Series), pp. 32–34.

“Kennicott’s Screech Owl on British Columbia Coastal Islands.” *Canadian Field-Naturalist*, Vol. 63, No. 5, pp. 206, 207.

“The Shoveller and the Pintail.” *Victoria Naturalist*, Vol. 6, No. 3, p. 25.

MOTION PICTURES.

An 800-foot colour film featuring bird-life on Triangle Island was made up from material gathered mainly during the 1949 season and has been used for lecture purposes during the winter months. A copy of the 400-foot film on fur-seals has been obtained by the Division of Visual Education for circulation to the schools of the Province.

More material has been obtained for a film being assembled on sea-shore animals and plants, and footage on birds and other groups has been gathered for future use.

EDUCATION.

MUSEUM LECTURES.

A Saturday morning programme of films was again presented to school-children of the Greater Victoria area, commencing on February 19th. As an experiment, films only were featured—a change in policy which seemed to meet with general approval. The following is a record of the series:—

Date.	Topic.	Attendance.
February 19.....	“ The Earth and Its Formation ”.....	599
February 26.....	“ The Coming of Plant Life ”.....	494
March 5.....	“ The Rise of Animal Life ”.....	493
March 12.....	“ The Insect World ”.....	471
March 19.....	“ Birds ”.....	488
March 26.....	“ Mammals ”.....	439
April 2.....	“ People: Indians of British Columbia; Eskimo Children; Peoples of Canada ”.....	580
April 9.....	“ Countries of the World: Australia; Mexico ”.....	454
	Total.....	4,018

We are pleased to thank the British Columbia Electric Railway Company for again granting special privileges to school-children attending the film-shows and the Audio-Visual Education Branch of the Greater Victoria School Board for distribution of tickets to the schools.

A similar series of motion-picture films was presented for the general public on Sunday afternoons during February and March. More than 2,000 persons attended the eight presentations.

OTHER LECTURES.

During 1949 lectures and film-shows were given by members of the Museum staff to the following organizations: Economic Geography Class of Victoria College, Men’s Guild of St. Mary’s Church, Victoria Natural History Society (two lectures), Phalanx Club of Victoria Y.M.C.A., Salvation Army Young People’s Club (two lectures), St. Michael’s School (two lectures), McKenzie Avenue School Parent-Teacher Association, Men’s Society of St. Stephen’s Church, Capitol City Commercial Club, Victoria Electric Club (two lectures), Victoria Passenger Agents’ Association, British Columbia Indian Arts and Welfare Society, Colwood Community Club, Dominion Fisheries Officers (Nanaimo), Women’s Canadian Club (Victoria), Victoria Recreation Council

Class, Victoria Gyro Club (two lectures), Protestant Orphanage, Bird Group of the Victoria Natural History Society, George Jay School, Victoria Art Centre, Victoria White Cane Club, Qualicum Fish and Game Club, Duncan Rotary Club, Meeting of American Association for Advancement of Science (Vancouver), Victoria Lions Club, Oak Bay Kiwanis Club, Victoria Kiwanis Club, Victoria Cosmopolitan Club (two lectures), Canadian Pacific Railway Employees' Club, Lions Auxiliary, United Commercial Travellers, Men's Club of St. Andrew's Presbyterian Church, Y's Men's Club (Victoria Y.M.C.A.), Pacific Northwest Bird and Mammal Society, Willows Parent-Teacher Association, Men's Club of Oak Bay United Church, Visual Education Workshop (Victoria—two demonstrations), Men's Club of St. George's Church, Junior Group of South Vancouver Island Rangers, Britannia Branch of the Canadian Legion, Canadian Pacific Railway Veterans' Club, Victoria Round Table Club, Victoria Comitas Club, Royal Oak School, St. Alban's Church Group, Fraternal Order of Eagles (Victoria), Toastmasters' Club, Victoria Summer School.

In addition to these, talks and demonstrations were given on several occasions to members of the Junior Group of the Victoria Natural History Society and to school classes visiting the Museum.

During July and part of August Miss Morgan conducted groups of visitors through the Indian exhibits, a service especially appreciated by out-of-town visitors.

SCHOOL LOAN MATERIAL.

Photographic reproductions of the cardboard dioramas featuring Indian life have now been made by the Visual Education Branch. Sets of these were coloured by Miss Betty Newton and are being prepared for school use. In the meantime the type-script material formerly prepared for use along with the dioramas is being edited by Mr. A. F. Flucke, of the Department of Education; some of these accounts will be published in 1950.

The school loan collection of study skins, which was initiated last year, has been enlarged to include additional species of birds and mammals.

In addition to the above, materials for film-strips on the Coast Salish and Haida people have been gathered in part from the Museum and are to be made ready for use in 1950 by the Visual Education Branch.

VISIT TO EASTERN MUSEUMS.

In October the Director attended the annual meeting of the Canadian Museums Association in Ottawa and made use of the opportunity to visit some of the larger museums and other institutions of the East. The following is an outline of the itinerary:—

- October 12th to 15th, Toronto: Royal Ontario Museum and Biology Department, University of Toronto.
- October 16th to 18th, Ottawa: Canadian Museums Association Annual Meeting, National Museum of Canada, Crawley Films Studio, Fisheries Research Board, Systematic Entomology, Division of Entomology, Department of Agriculture.
- October 19th to 20th, Montreal: Redpath Museum of McGill University, Canadian Handicraft Guild.
- October 21st to 26th, New York: American Museum of Natural History, American Museum of Modern Art, National Audubon Society, Columbia University, New York Zoological Gardens, Brooklyn Children's Museum.
- October 27th to 28th, Washington: National Museum, Department of Interior Museum, Department of Interior Aquarium, Library of Congress, Washington Zoological Gardens.

October 30th to November 1st, Chicago: Chicago Museum of Natural History, Shedd Aquarium, Museum of Science and Industry, Chicago Academy of Science Museum.

November 4th, Seattle: Washington State Museum, Pacific Northwest Bird and Mammal Society meeting.

At the museums, particular attention was paid to methods of exhibition, especially those of possible use to an institution of the size and scope of the Provincial Museum. Methods of storage of both entomological and anthropological material were also examined, with a view to adopting similar methods in our own institution. On the whole, a considerable amount of information along these lines was gathered, and many staff members were met and consulted. It is a pleasure here to acknowledge indebtedness and to express thanks to all those persons who graciously gave of their time and knowledge. In each case their help and consideration made the visit a most pleasant and profitable experience.

ATTENDANCE.

The number of visitors to the Museum during 1949 is summarized as follows:—

Month.	Registered.	Estimated.
January	1,018	1,357
February	2,110	2,813
March	4,788	6,384
April	4,125	5,500
May	6,562	8,749
June	5,491	7,321
July	10,967	14,590
August	11,326	15,104
September	5,277	7,036
October	1,932	2,576
November	1,104	1,472
December	625	833
	55,325	73,735

In addition, there were 4,018 children who attended the Saturday morning film presentations, over twenty-six school classes, ten Junior Naturalist classes, and over 2,000 persons who attended the Sunday afternoon programmes in February and March, making an estimated grand total of over 90,000.

The attendance record for the month of July has been analysed by Mr. Maxwell as follows:—

Residence.	Registration.	Residence.	Registration.
British Columbia	2,692	Washington	1,875
Alberta	498	Oregon	1,810
Saskatchewan	378	California	2,007
Manitoba	235	Alaska	9
Ontario	334	Other States	928
Quebec	64	Great Britain	111
New Brunswick	7	Other countries	14
Nova Scotia	8	Country not stated.....	4
Newfoundland	2		
	Total.....		6,758
	4,218		
		Total.....	6,758
		Grand total ...	10,967

Compared to a similar analysis of the attendance for previous years, the registration for this year was higher than in 1948 by 1,719 and appears to be an all-time record.

The sum of \$423.79, collected by the Solarium donation-box during 1949, was turned over to the Queen Alexandra Fund for Crippled Children.

STAFF CHANGES.

Relatively minor changes in staff occurred during 1949. Mr. E. J. Maxwell was permanently appointed as attendant, while Miss Judith Morgan and Mr. Brian Ainscough were temporarily appointed for July and August.

Mr. Wilson Duff, a graduate student in anthropology from the University of British Columbia, was employed part time during the summer months as field assistant. An account of his work appears elsewhere.

Mr. C. J. Guiquet was granted leave of absence for seven months, commencing October 1st, in order to complete graduate studies at the University of British Columbia.

EQUIPMENT.

In January a new GMC panel truck was acquired to replace the old vehicle, which had given many years of service.

OBITUARY.

We record here with regret the death on May 9th of Mrs. Hugh Mackenzie, president of the Society for the Preservation of Native Plants. A well-known conservationist, she assisted in obtaining legislation giving protection to our native dogwood and cascara trees and was mainly responsible for similar protection being extended to the native rhododendron. Her services in this field will long be remembered.

On December 5th there occurred the death of Dr. George M. Weir, formerly Minister of Education and Provincial Secretary. During his period of administration the affairs of the Museum always received his courteous and prompt attention; it is with regret that we record his passing.

REPORT OF THE ASSISTANT IN BOTANY.

ACTIVITIES.

Recorded accessions for the year ended December 31st, 1949, amount to 504 sheets, each sheet consisting of from one to three or more specimens, so that the total number of individual plants dealt with is considerably more than the sheet tally.

Mrs. S. Davies has catalogued 864 sheets and mounted an additional 505; most of these are now incorporated with the classified series, where they are referable at a moment's notice.

While the quantity of plants accessioned has fallen off somewhat, the quality leaves nothing to be desired. Most of the specimens have been acquired during the course of research work in Manning Park area (160 sheets), Triangle Island (70 sheets), and other localities, including a set of 50 sheets from the National Herbarium of Canada at Ottawa, through Mr. A. E. Porsild.

The wild-flower exhibit of living seasonal species has been maintained as usual and continued to be a perennial source of inspiration to the students and others interested in our native plants. The twelve months' succession begins in January with the willow catkins and the bird-cherry, and from thence to spring and summer flowers in order of appearance. During this period, special exhibits, such as of garden weeds, of bog plants, etc., are introduced as opportunity offers. In the fall the wild fruits and berries find a place in the case. These are succeeded by evergreen trees and shrubs,

which are on show for the remainder of the year. This exhibit supplements the cases of pressed flowers which are displayed in the adjoining folding cases. These contain 175 representatives of the commoner wild species in and adjacent to the City of Victoria. Practically all of these are represented in the seasonal case at one time or another.

As in past years, an important feature of the botanist's activities is the identification of weeds, poisonous plants, and those having medicinal or edible qualities.

Two field-trips were made—one to Triangle Island, where a botanical survey was part of a general project for a biological appraisal of this island, and one to the Manning Park area, as a continuance of similar surveys of past years, designed to provide information concerning the natural history of the park.

A percentage of time was devoted to preparation of articles for publication and talks to schools and other organizations, and also to catching up on a backlog of past accessions.

The routine care of the herbarium has been an important, if not spectacular, item in the demand on the botanist's time.

ACKNOWLEDGMENTS.

We are indebted to several specialists, who have reviewed, named, or verified plant material. These include:—

Mr. J. W. Eastham, former Provincial Plant Pathologist at Vancouver, B.C., who has kindly continued to identify the grasses and sedges, despite his retirement from professional duties.

Mr. A. E. Porsild, Chief Botanist, National Herbarium, Ottawa, who has been most generous in identifying and verifying difficult species belonging to many families and genera and from diverse sections of the Province.

Dr. C. R. Ball, Extension Service, U.S. Department of Agriculture, Washington, D.C., for identification of *Salix*.

Dr. LeRoy E. Detling, Curator of Herbarium, University of Oregon, Museum of Natural History, Eugene, Ore., for revision of certain *Lupinus*.

Dr. F. W. Pennell, Curator of Plants, Academy of Natural Sciences, Philadelphia, Pa., for identification of *Castilleja*.

Mr. Charles T. Mason, of Berkeley, Calif., for revision of *Limnanthes*.

To these and all those who have in any way contributed to the sum total of our knowledge of the flora of British Columbia, we wish to extend our thanks and appreciation. Last, but not least, to Miss Marjorie Palmer, of the Department of Lands and Forests, for her continued interest in providing many specimens for the wild-flower exhibit.

MISCELLANEOUS BOTANICAL NOTES.

The following plant has not previously been recorded for Vancouver Island:—

Anemone parviflora D.C. Mount Arrowsmith, June 11th, 1949. O. C. Furniss, Alberni, V.I.

The following plants are of special interest:—

Parrya nudicaule (L) Regel. Log Jam Creek, 50 miles east of Teslin Lake, July 8th, 1945, A. G. Slocomb. A. E. Porsild, who verified this identification, informs me that it is an Asiatic species occurring in the mountains of Alaska, Yukon to Northern British Columbia, and that only one other record is known from British Columbia. This is based on a specimen collected by J. B. Tyrrell in 1898 on Father Mountain, just south of the Yukon border.

Downingia læta Greene. Leach Lake, near the mouth of the west branch of Summit Creek, Creston, B.C., September 3rd, 1947, J. A. Munro. This species has been identified and recorded by A. E. Porsild (Canadian Field-Naturalist, May-June, 1949, p. 112); it appears to be the first record for British Columbia. One other specimen in the herbarium is from Crane Lake, Sask. Of the thirteen or so species and varieties of *Downingia* listed in "A Monograph of the Genus *Downingia*," by R. McVaugh, 1941, only *læta* appears to extend into Canada; the rest are distributed south and west to California.

Crepis nana Rich. This distinctive mountain species is represented in the Museum collection chiefly from the northern and eastern ranges of British Columbia. A specimen collected on Mount Brew, near Lillooet, by L. J. Clark in 1945, and another by G. V. Copley in the Chilcotin District in 1925, gives an indication of its western and southern limits of distribution in the Province.

Ranunculus verecundus Rob. This species occurs in the mountains from Alaska to Oregon. Three specimens are in the Museum herbarium: One from the Selkirk Range, collected by W. B. Anderson in 1923 from Paradise mine; one from Mount Brew, August, 1945, by L. J. Clark; and one from Mount McLean, July 1st, 1947, by H. Coppel. The species appears to be very close to *R. Eschscholtzii*.

Draba paysonii var. *Treleasii* (Schulz.). C. L. Hitchcock. Ilgachy Mountain, Northern British Columbia, September 2nd, 1946, G. C. Emerson, and Mount Brew, July, 1945, L. J. Clark. Hitherto this plant has been represented in the Museum herbarium by specimens from the Selkirk Mountains only.

Lathyrus sylvestris L. Langley Prairie, August 5th, 1949. R. Glendenning, per J. W. Eastham. Apparently this is the first record of this Eurasian plant growing wild in British Columbia. As it is sometimes used as a forage plant, its occurrence here is not unexpected, especially in the neighbourhood of farm lands.

The following plants are additions to the list of Forbidden Plateau flora as given in the Provincial Museum Report for 1943:—

Polypodium vulgare var. *hesperium* (Maxon) Nels. & McBr. Cruickshank Canyon; July, 1949. L. J. Clark.

Asplenium viride Huds. Growing in crevice on vertical face of rock; July 25, 1948. K. Christiansen.

Poa alpina L. Mount Albert Edward; July, 1949. L. J. Clark.

Peranium decipiens (Hook.). Ames, Meadow Lake; July, 1949. L. J. Clark.

Streptopus curvipes Vail. Meadow Lake; July, 1949. L. J. Clark.

Cerastium Beerianum C. & S. Mount Albert Edward; July, 1949. L. J. Clark.

Montia parvifolia (Dougl.) Howell. Mackenzie Lake; July, 1949. L. J. Clark.

Lewisia columbiana (Howell.) Rob. July 25th, 1948. K. Christiansen.

Ranunculus Eschscholtzii Schl. Mount Albert Edward; July, 1949. L. J. Clark.

Ranunculus flammula reptans Mey. August 10th, 1942. L. J. Clark.

Cardamine oligosperma Nutt. Paradise Meadow; July, 1949. L. J. Clark.

Heuchera glabra Willd. Mount Albert Edward; July, 1949. L. J. Clark.

Leptarrhena amplexifolia (Sterub.) Ser. Mount Albert Edward; July, 1949. L. J. Clark.

Saxifraga Mertensiana Bong. Half Dome Ridge; July, 1949. L. J. Clark.

Hypericum Scouleri Hook. August 19th, 1942. L. J. Clark.

- Viola palustris* L. Murray Meadow; July, 1949. L. J. Clark.
Erigeron compositus var. *trifidus* (Hook.) Gray. Mount Albert Edward;
July, 1949. L. J. Clark.
Hieracium gracile Hook. August 1st, 1932. Robert Connell. Mount Albert
Edward; July, 1949. L. J. Clark.

ENTOMOLOGY.

The usual run of large and conspicuous insects was brought into the Museum during the season for identification and information concerning them. These included the polyphemus and Californian silk-moths, the eyed hawk-moth, California wood-borer, electric-light bug, and others of a similar nature—all common species and well known to those interested in such things.

Various insects, spiders, and related forms that frequent our houses, gardens, and fields have also received their share of public notice. In each case it has been the aim to give out helpful suggestions and remedies according to the nature of the pest, or if not immediately known, where such information may be obtained.

A certain amount of material has accumulated as the result of field-trips to Triangle Island and the Manning Park area. These collections are now being worked over and identified; the results will appear in due course in future publications of the Museum.

As a member of the British Columbia Entomological Society, the writer attended the annual meeting in Vancouver on March 19th, where three papers were submitted as part of the programme of activities. These are entitled "Notes on and Additions to the Cerambycidae of Vancouver Island," "Notes on West Coast Coleoptera," and "Notes on the Life History of *Lambdina fiscellaria* var. *somniaria* Hlst. (Oak Looper)."

Extra shelving has been installed to accommodate and to make more easy of access the large number of storage-boxes which house the greater part of the entomological collections. The routine work of caring for these specimens has been constantly sustained.

From time to time a number of insects of various orders have been submitted to specialists for determination. Among those to whom we are indebted for such services are Dr. Melville H. Hatch, of the University of Washington, Seattle, Wash., for Coleoptera; Mr. J. R. Llewellyn Jones, of Cobble Hill, Vancouver Island, for Lepidoptera; Mr. E. R. Buckle, of Kamloops, for Hymenoptera, in particular for naming our bumblebees; Mr. Hugh B. Leech, of San Francisco, Calif., for Coleoptera; and to Dr. T. N. Freeman, at Ottawa, for Lepidoptera. To each and all of these we take this opportunity of expressing our thanks and appreciation for their invaluable work in this direction. These sentiments are also extended to all who have donated specimens or contributed in any way to an increase in our knowledge of the insects of British Columbia.

REPORT OF THE ASSISTANT IN BIOLOGY.

The assistant in biology participated in the major field activities previously reported upon by the Director. In addition, four days of each month were allocated to local biological investigation in order to become familiar with faunal distributions and terrain of Southern Vancouver Island. Local field-trips included visits to the following areas: Jordan River, Sooke traps, Jordan Meadows, Cowichan River area, meadow habitats in the Duncan area, Spectacle Lake, Tofino mud-flats, Saanich Peninsula, and a number of the Gulf Islands in the Victoria area.

In the course of the field work 125 specimens of birds and mammals were collected, prepared, and catalogued. Adequate notes were maintained throughout.

Duck-banding operations were initiated in co-operation with the United States and Canadian wildlife services. A sub-station was established in Beacon Hill Park at

Victoria, and a programme of banding the wintering populations of widgeon (*Mareca americana*) was begun. Snow conditions forced the birds from the park, allowing the banding of only sixty individuals in the preliminary experiments. This work will be continued as part of the yearly programme for this department.

A backlog of several hundred uncleaned small mammal skulls, which had accumulated in the past decade due to lack of personnel, were treated, catalogued, and indexed this year. A collection of bird skeletons was also prepared and will be enlarged in subsequent years until a representative series of British Columbia birds is secured.

The routine curatorial activities which are entailed where large vertebrate collections are housed were carried out continuously, as was a certain amount of lecturing, routine specimen identification, conducted tours, research, writing, and a host of minor activities associated with museum work.

Seven months' leave of absence, beginning in October, were devoted to post-graduate studies at the University of British Columbia. Most of this time was spent in research and analyses of the raw data collected on the Goose Island expedition of 1948. The completed work will eventually be published.

Systematic studies of the animals taken on the Goose Islands and on Triangle Island indicate the presence of undescribed mammals. These descriptions will be published in time, when the Scott Island investigations are completed.

Throughout the year data were accumulated and organized for a comprehensive treatise on the mammals of British Columbia, which will appear shortly.

I wish to acknowledge the voluntary information and co-operation of the many citizens of this Province who contribute annually to our biological knowledge. I thank especially the Greater Victoria Watershed Board and their splendid fieldmen, the personnel of the British Columbia Game Commission stationed at Victoria, and the South Vancouver Island Rangers, both senior and junior groups—all of whom have co-operated voluntarily with this department of the Provincial Museum.

REPORT OF THE ASSISTANT IN ANTHROPOLOGY.

In the latter part of May, jointly sponsored by the Museum and a small research grant from the University of British Columbia, Mr. Duff accompanied Dr. H. B. Hawthorn, of the University, on a three-week anthropological survey of the Nass-Skeena area of the Province. In the short time available a surprising amount of interesting, though fragmentary, ethnographic information was recorded, and many photographs of the country, the villages, and the totem-poles were taken. The main values of the trip, however, were the insight gained into the present status of Indian cultures and arts, and the many contacts established with good ethnographic informants.

Later in the summer, over three weeks were spent in the field working on an archaeological survey of the Fraser Valley between Chilliwack and Hope. Pit-house sites were discovered throughout the area, those examined being in the following places: Two at Hope, two at Katz, three near Laidlaw, two near Agassiz, one near Sardis, four at Chehalis, two on the Harrison River, and two on the Fraser just above Deroche. The house-pits were found singly, in small groups, and in villages of a dozen or more. Most of the pits were round, but at two of the sites, rectangular pits were found. The lower limit of these Interior semi-subterranean dwellings was fairly clearly established to be at Chilliwack on the south side of the river and just above Deroche on the north side. Two of the sites examined, Hope and Chehalis, showed stratigraphic evidence of long habitation, and at the latter place, several ground slate artifacts were found. Several other pit-house sites were reported, but not examined because of lack of time.

In addition, two cave-sites, one pictograph, and a burial-mound site were examined, and several small private collections of artifacts were seen. Mr. James Macallum, of

Agassiz, kindly added several stone artifacts to those he has already donated to the Museum.

It is hoped to extend this survey up the river to Spuzzum, and to begin ethnographic research in the area.

ACCESSIONS.

During 1949 the following specimens were added to the catalogued collections (figures in parentheses indicate the total number on December 31st, 1949): Indian material, 113 (6,743); plants, 504 (21,943); mammals, 196 (5,564); birds, 117 (9,887); reptiles, 5 (290); amphibians, 4 (772); fish, 5 (734).

ANTHROPOLOGICAL ACCESSIONS.

The Dr. A. Maclean Collection.—(Gift.) Through Mrs. W. L. Thompson, of Vancouver, a small collection of West Coast (Nootkan) materials, gathered by the late Dr. A. Maclean, was presented to the Museum.

The Chief John Moses Collection.—(Gift.) A whale-hunter's ceremonial capè, a seal-skin float, other whaling equipment and accessories were presented by Chief John Moses, of Sarita, B.C., one of the last of the Nootkan whale-hunters.

The Mrs. A. J. O'Reilly Collection.—(Purchase.) The collection consists of fifty-two items of North-west Coast material, including six silver bracelets, a number of baskets and stone implements.

H Aidan.

Halibut hook. In Maclean collection.

Black slate figure of Sir James Douglas. Bequest of Joseph Arter Moon, of Vancouver.

Hat, painted basketry. In O'Reilly collection.

Horn spoons, five. In O'Reilly collection.

Wooden spoon. In O'Reilly collection.

Halibut hook. In O'Reilly collection.

Seal spear-point. In O'Reilly collection.

Silver bracelets, six. In O'Reilly collection.

Dagger-handle, ivory. In O'Reilly collection.

Black slate totem. In O'Reilly collection.

Tsimshian.

Rattle, carved wood. Mrs. A. P. Luxton.

Stone axe. In O'Reilly collection.

Portion of nephrite. In O'Reilly collection.

Silver bracelet. A. E. Emmerson, Victoria.

Chilkat blanket. Dr. Noble Wiley Jones, Victoria.

Kwakiutl.

Human skull. G. C. Carl, Victoria.

Nootkan.

Masks, two. In Maclean collection.

Headpiece. In Maclean collection.

Hat, cedar bark. In Maclean collection.

Baskets, six. In Maclean collection.

Basketry (napkin-ring, ink-bottle, abalone-shell). In Maclean collection.

Canoe-paddle. In Maclean collection.

Drum-stick. In Maclean collection.
 Handle of whalebone club. Freeman King, Victoria.
 Ceremonial cape, whale-hunter. Chief John Moses, Sarita.
 Headband. Chief John Moses, Sarita.
 Rattle. Chief John Moses, Sarita.
 Rubbing-sticks. Chief John Moses, Sarita.
 Seal-skin float. Chief John Moses, Sarita.
 Baskets, eight. In O'Reilly collection.
 Table-mat. In O'Reilly collection.
 Bottles encased in basketry, six. Miss Betty May King, Victoria.
 Totem-pole models, two. Miss Betty May King, Victoria.

COAST SALISH.

Human skull. Dr. E. H. W. Elkington, Victoria.
 Human jaw-bone fragments. F. A. Morton, Crofton.
 Human skull and associated bones. Mr. and Mrs. Philpots, Victoria.
 Human skull. Rosewell Auto Court, Qualicum Beach.
 Human skulls, two. Mrs. B. Clowes, Sooke.
 Chisel-point. Don Stewart, Victoria.
 Stone hammer. A. T. Hood, Milner.
 Sandstone point. G. C. Boyd, Lake Cowichan.
 Stone hammer. James Macallum, Agassiz.
 Nephrite celt in antler haft. Wilson Duff, Vancouver.
 Slate point. Wilson Duff, Vancouver.
 Knife fragments and whetstones. Wilson Duff, Vancouver.
 Nephrite celt. R. Mackenzie, Point Roberts.
 Slate knives, two. Wilson Duff, Vancouver.
 Mat. In O'Reilly collection.
 Basket, vase-shaped. In O'Reilly collection.
 Wallet, cedar bark. In O'Reilly collection.
 Stone bowls, two. In O'Reilly collection.
 Stone hammer (portion). S. A. D. Pike, Westview.
 Stone hammer. H. A. Arundell.
 Stone axe. K. Priestley, Victoria.
 Relics (pipe). T. W. S. Parsons, Victoria.

INTERIOR SALISH.

Stone hammers, two. J. M. Macalister, Alkali Lake.
 Human skull. Constable William Drysdale, Enderby.
 Baskets, two. In O'Reilly collection.

DENE.

Moccasins, two pairs. In O'Reilly collection.
 Beaded bags, two. In O'Reilly collection.
 Beaded belt. In O'Reilly collection.
 Paddle, model. In O'Reilly collection.
 Stone, worked. In O'Reilly collection.

TLINGIT.

Baskets, four. In O'Reilly collection.
 Hat, crown only. Miss M. Aylard, Victoria.

CREE.

Baton with weight. Miss M. Simcox, Victoria.
Moccasins, cap and cuffs to match. In O'Reilly collection.

BLACKFOOT.

Moccasins. In Maclean collection.
Moccasins. Hon. Walter Scott, Winnipeg, Man.
Beaded belt. Hon. Walter Scott, Winnipeg, Man.
Beaded apron. Hon. Walter Scott, Winnipeg, Man.
Moccasins, two pairs. In O'Reilly collection.

BOTANICAL ACCESSIONS.

By gift—J. S. Allen, one; J. W. Awmack, two; E. Cavix, one; D. Clark, one;
L. J. Clark, thirty-two; R. Connell, one; W. J. Eastham, one; G. C. Emmerson,
three; O. E. French, two; O. C. Furniss, two; J. J. L. Jones, one; J. B. Munro,
two; P. M. Monckton, one; W. E. Peirce, two; N. E. Putnam, one; A. E.
Sargent, one; E. Smith, one; W. Tildesley, one; L. A. Woodley, one; J. J.
Woods, one.

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ZOOLOGICAL ACCESSIONS.

MAMMALS.

By gift—
A. L. Orr Ewing, Victoria, eight white-footed mice; three shrews.
E. G. Flesher, Phillips Arm, two grizzly skulls.
W. H. Gold, Youbou, one racoon.
W. B. Gwillam, R.R. 2, Victoria, bones of horse.
Bert Robson, Atnarko, ten weasel skulls, one marten skull, three wolf skulls,
two coyote skulls.
Jack Smith, Kye Bay, one whale scapula.

By purchase—
Thomas Widdowson, Read Island, one killer-whale skull.

By the staff 92

BIRDS.

By gift—
Jack Broomfield, Victoria, one cowbird's egg.
Northcote Dimoline, Victoria, one marbled murrelet.
F. Morse, R.R. 3, Victoria, one falcon.
Robert Taylor, Sooke, one albino widgeon.
E. F. G. White, Victoria, leg bones of burrowing owl.

By the staff 33

AMPHIBIANS AND REPTILES.

By gift—
Mrs. A. Brooks, South Pender Island, one sharp-tailed snake.
R. Guppy, Wellington, one red-legged frog.
Mrs. B. J. McGusty, South Pender Island, one sharp-tailed snake.
C. B. Perkins, San Diego, Calif., collection of California reptiles.
Garry Reynolds, Victoria, one alligator lizard.
Mrs. T. L. Thacker, Hope, one green frog.
Dr. W. A. Trenholme, Victoria, one African clawed frog.

FISH.

By gift—

- Brian Ainscough, Victoria, one ratfish.
- K. Collins and S. Reid, Sooke, one herring.
- Dominion Fisheries Department, Victoria, one mackerel shark.
- Mrs. L. Furnseth, Lake Cowichan, one lamprey.
- F. H. Harrison, Victoria, one hake.
- E. B. Stoney, Victoria, one herring.
- Keith Todd and Don Kenyon, Victoria, one blenny.

INVERTEBRATES.

By gift—

- Mrs. Helen Anderson, Victoria, collection of butterflies.
- Charley Bishop and Joie Brown, Victoria, one octopus.
- J. Brown, Duncan, one California silk-moth.
- E. O. Eaton, Osoyoos, one Jerusalem cricket.
- D. R. Foskett and William Tait, Nanaimo, eight black widow spiders.
- T. M. Gilroy, Duncan, one Polyphemus moth.
- B. Gollob, Victoria, one Polyphemus moth.
- Miss Donna Hunter, Victoria, one Aranea spider.
- Mrs. Keith Hynds, Victoria, one Polyphemus moth.
- Miss E. Johnson, Victoria, one California silk-moth.
- A. W. Perkins, Victoria, one California silk-moth.
- Miss P. Robertson, Victoria, one Polyphemus moth with ova.
- A. Stilborn, Victoria, one cockroach.

PALÆONTOLOGY.

By gift—

- J. Forster, Victoria, one mammoth tooth.
- W. G. Heaney, Victoria, one piece of sandstone.
- Garry Reynolds, Victoria, one fossil.
- Les Smith, Shawnigan Lake, one mastodon tooth.
- Aubrey Westinghouse, Victoria, one fossil.

MISCELLANEOUS.

By gift—

- I. E. Cornwall, Victoria, collection of pamphlets on barnacles and sponges.

THE DISTRIBUTION OF FRESH-WATER FISHES IN BRITISH COLUMBIA.*

BY G. CLIFFORD CARL, PROVINCIAL MUSEUM, VICTORIA, B.C.

A study of the present-day distribution of the fresh-water fishes of British Columbia provides further evidence concerning the routes by which animals and plants entered this area following the period of glaciation. In general the picture presented by the fishes ties in well with those presented by the other groups. In fact the pattern is a less complicated one possibly because fishes live in an environment which is less subject to change than is found in non-aquatic surroundings. Water acts as a kind of "buffer" between the organism living in it and the outside world. Temperature



changes are not so extreme and the rate of change is much more gradual. Thus climate, in terms of temperature, has a less direct influence on the presence or absence of fishes.

Of the sixty-five species and subspecies of fresh-water fishes known to occur in the Province, fifty-one are native forms. The remaining fourteen are recent migrant or introduced species. The native fishes may be further divided into those of Old World origin with a more or less circumpolar distribution and those of the New World origin with a distribution restricted to North America.

* Paper presented at the Second Science Conference, B.C. Academy of Sciences, University of British Columbia, April 16th, 1948.

The distribution of our native fishes may be pictured in broad strokes somewhat as follows:—

The lampreys, sturgeons, salmons, and most trouts are found in those river systems which have access to the sea.

Of the chars, the Dolly Varden is found in rivers connected with the sea, while the Great Lakes char (*Cristivomer*) is present only in deep lakes from Shuswap Lake northwards, apparently being absent from the Columbia system and from Vancouver Island.

Of the whitefishes, the cisco (*Leucichthys sardinella*) and the round whitefish (*Prosopium cylindraceum*) are known only from the headwaters of the Yukon River system (Atlin and Teslin Lakes); the inconnu is present in both the Yukon and the Mackenzie systems; the common whitefish (*Coregonus clupeaformis*) is indigenous to the Yukon, Peace, and Upper Fraser systems; while the Rocky Mountain whitefish (*Prosopium williamsoni*) occurs in the Skeena, Fraser, and Columbia systems. Coulter's whitefish is reported from the headwaters of the Columbia (Kicking Horse River in British Columbia) and from Alaska.

The grayling (*Thymallus signifer*) is present only in streams of the Arctic watershed.

Of the suckers, the fine-scaled sucker (*Catostomus catostomus*) and the coarse-scaled sucker (*C. macrocheilus*) are found in the Skeena, Fraser, and Columbia systems, while the white sucker (*C. commersonii*) is known only from the Peace River in British Columbia.

Among the minnows, the chub (*Mylocheilus*), the squawfish (*Ptychocheilus*), the red-side shiner (*Richardsonius*), and the long-nose dace (*Rhinichthys*) occur in the Skeena, Fraser, and Columbia systems, while the lake chub (*Couesius*) and the silver-grey minnow (*Apocope*) are known so far only from the Fraser and Columbia systems, and the red-belly dace (*Chrosomus*) and northern minnow (*Margariscus*) appear to be restricted to the Peace River system.

The pikes are represented only by the northern pike (*Esox lucius*), which is present in both the Yukon and Mackenzie systems.

The perches are also represented by only one native species, the pike-perch (*Stizostedion vitreum*) being found only in the Peace River and its tributaries.

The sculpins are found in coastal rivers and streams, except *Cottus rhotheus*, which is recorded from the Upper Kootenay and Columbia Rivers, and *Cottus cognatus*, which is present in the Yukon system and the Kootenay Lake area.

Of the sticklebacks, the three-spined stickleback (*Gasterosteus*) is present in most rivers and streams of the coastal area, while the brook stickleback (*Eucalia*) is recorded only from the Peace system.

The ling (*Lota lota*), which is a fresh-water cod, occurs in most large lakes on the Mainland as far south as Okanagan and Kootenay Lakes.

In analysing the present-day distribution of fishes in British Columbia the following assumptions are made:—

- (1) That fish-life was eliminated by the Pleistocene ice-sheet.
- (2) That fishes reinvaded the area, spreading from unglaciated regions.
- (3) That river systems which are now separated from one another may have been connected in the past for varying periods, allowing fishes to pass from one system to another.
- (4) That the presence of the same or related species in unglaciated areas outside the Province, but contiguous to it, indicates that such areas may have served as a centre of dispersal for the species being considered.

With these assumptions in mind it is possible to advance an explanation as to how the Province became repopulated with fishes following the retreat of the latest ice-sheet.

There seem to be four main routes by which fishes moved into British Columbia. These and some of the fishes using them are as follows:—

- (1) From the south through the Columbia and Fraser River systems: Cut-throat trout, Rocky Mountain whitefish, squawfish, chub (*Mylocheilus*), red-side shiner (*Richardsonius*).
- (2) From the mid-section of the continent through the Great Lakes, the Manitoba lakes, into the Mackenzie River system, and into British Columbia by the Bear and Liard Rivers: Lake chub (*Couesius plumbeus*), red-belly dace (*Chosomus eos*), long-nose dace, coarse-scaled sucker (*Catostomus macrocheilus*), fine-scaled sucker (*Catostomus catostomus*), Great Lakes char (possibly), northern minnow (*Margariscus margarita*), brook stickleback, ling, and pike-perch.
- (3) From the Lower Yukon River basin, which was unglaciated, into Bennet, Tagish, Atlin, and Teslin Lakes: Common whitefish (*Coregonus clupeaformis*), grayling, red-belly dace, white sucker (*Catostomus commersonii*), fine-scaled sucker (*C. catostomus*), pike, pike-perch, brook stickleback (*Eucalia*), common whitefish, round whitefish (*Prosopium cylindraceum quadrilaterale*), cisco (*Leucichthys sardinella*), inconnu, grayling, northern sculpin, and ling.
- (4) From the sea: Lampreys, sturgeons, salmon, steelhead, cut-throat, Dolly Varden, three-spined stickleback, and sculpins.

Note that some species are credited with entering the Province by more than one route. Thus the cut-throat of South-eastern British Columbia had its origin in the Montana area, while the coastal cut-throat entered from the sea. The ling, fine-scaled sucker, and brook stickleback apparently came in from the east and from the north. Further collecting and study will undoubtedly show that others of our native species also entered the Province by several routes.

Apart from introduced species there are certain non-indigenous fishes which have entered into the picture in recent times, as, for example, from the south the carp, tench, and large-mouth bass, and from the sea the shad. The spreading of certain of these non-native forms is going on at the present time. The outstanding example is that of the European carp, which was first introduced into the West in 1882. Spreading throughout the Columbia River system, it was first noted in Okanagan Lake about 1917. Here, it became very abundant, so that steps were taken to reduce the numbers by operating traps at strategic points. About 1928 carp were first seen in Shuswap Lake on the Fraser watershed, apparently having made their way over the low divide between the Okanagan and Shuswap systems in the vicinity of Armstrong, where irrigation ditches may inter-connect at times of flood. In 1939 or 1940 carp were taken near Chilliwack; in 1944 examples were found in Hatzic Lake, and finally in 1946 a specimen was captured off Point Grey in brackish water, indicating that this species had made its way down the Thompson and Fraser to the coast.

British Columbia is young geologically; consequently it is not surprising to note that only 51 native species of fishes are known to be present. By way of comparison, we may note that in the Province of Ontario approximately 200 forms occur, while in the Great Lakes region 232 native and introduced species are listed.

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