PROVINCE OF BRITISH COLUMBIA

REPORT

OF THE

PROVINCIAL MUSEUM

OF

NATURAL HISTORY

FOR THE YEAR 1932

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1933.

To His Honour J. W. FORDHAM JOHNSON,
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 for the year 1932.

SAMUEL LYNESS HOWE,
Provincial Secretary.

Provincial Secretary's Office,
Victoria, B.C., March 27th, 1933.

PROVINCIAL MUSEUM OF NATURAL HISTORY,
VICTORIA, B.C., March 27th, 1933.

The Honourable S. L. Howe,
Provincial Secretary, Victoria, B.C.

SIR,—I have the honour, as Director of the Provincial Museum of Natural History, to lay before you the Report for the year ended December 31st, 1932, covering the activities of the Museum.

I have the honour to be,
Sir,
Your obedient servant,

FRANCIS KERMODE,
Director.

DEPARTMENT *of the* PROVINCIAL SECRETARY.

The Honourable S. L. Howe, *Minister.*

P. de Noe Walker, *Deputy Minister.*

PROVINCIAL MUSEUM OF NATURAL HISTORY.

Staff:

Francis Kermode, *Director.*

William A. Newcombe, *Assistant Biologist.*

Nancy Stark, *Recorder.*

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REPORT *of the*
PROVINCIAL MUSEUM OF NATURAL HISTORY
FOR THE YEAR 1932.

By Francis Kermode, *Director.*

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 diffuse knowledge regarding the same.

ADMISSION.

The Provincial Museum is open to the public, free. November 1st to April 30th, week-days, 9 a.m. to 5 p.m.; Saturdays, 9 a.m. to 1 p.m. May 1st to October 31st, week-days, 9 a.m. to 5 p.m.; Sunday afternoons, 1 to 5 p.m.

The Museum is closed on New Year's Day, Good Friday, Remembrance Day, and Christmas Day.

VISITORS.

The following figures show the difference between those who registered and those who were checked by the staff. While only 20,373 people registered, the total of the check was 40,434.

	Registered.	Checked.
January	721	1,756
February	861	2,607
March	1,135	2,373
April	850	1,832
May	1,667	3,540
June	2,020	3,756
July	4,352	7,760
August	4,611	8,349
September	1,980	3,822
October	1,034	1,975
November	543	1,375
December	599	1,289
Totals	20,373	40,434

ACTIVITIES.

During the year 1932 a decrease was very noticeable in the number of visitors in comparison to the previous year; approximately 10,000 less. This was no doubt due to present world-wide conditions. However, there was one point to be added in its favour, as it proved convenient to have the Public Works Department thoroughly renovate and paint the entire interior of the building without any necessity of closing to the public; though the problem of arranging the exhibits and making them still accessible to the visitors necessitated a great deal of time and work.

School students of the city and surrounding municipalities are taking more interest in our Natural History Museum to assist them in their nature-studies. The exhibits are also used regularly by the Normal School students, under the supervision of their nature instructor, Mr. Freeman. Members of the Museum staff are always on hand to supply whatever information may be desired.

The seasonal wild-flower exhibit is always a great attraction, being continually replaced by fresh flowers or evergreens throughout the year. This is done particularly by members of the

staff, and a few other persons, who are very much interested in botany, occasionally contribute to the display.

In our 1931 Report, page 9, a note was published from Mr. Stanley Boys, Halfmoon Bay, reporting he had collected a specimen on Texada Island of scented musk (*Mimulus moschatus*). The find is of great scientific interest, due to the fact that musk has lost its scent for over a period of twenty years. Many reports of it having been secured in other localities were investigated by Dr. Arthur W. Hill, Director, Royal Botanic Gardens, Kew, Surrey, England, but all proved to be wanting. This report has also been followed up by Dr. Hill, he having been put in touch with Mr. Boys through this Department. The most recent note received by the Museum from Mr. Boys is as follows: "Your Museum report sums up the position for 1931; all I can add is that I visited the spot again this summer, found one plant scentless and one with faint odour, both of which are planted now in suitable position for observation to see what will develop next year. In 1931 there were three plants near one another, but only one had the strong musk odour." A number of other persons in England and elsewhere noting this discovery wrote to the Museum for information.

The Department has done very little field-work, as expenses for the year had to be kept down to a minimum. However, specimens in different branches were presented to the institution by persons interested in natural history, as will be noticed in the list of accessions, for which the Director wishes to extend many thanks for their donations.

Continued interest, particularly in Anthropology, has been shown by T. W. S. Parsons, Assistant Commissioner of B.C. Police. During the year he secured a very fine specimen of a bone spindle whorl from an old shell-heap at Cadboro Bay. He also contributed many other specimens and arranged with other members of the Provincial Police to be on the lookout for material, so as to enrich our collections and save it for our Province. Others also worthy of mention in this connection are: Constable D. O. Tweedhope and A. Dryden; W. B. Anderson; F. J. Barrow; A. N. Mouat; C. L. Bland; H. Varney and Rev. T. F. W. De Pencier, of Lytton, who sent two specimens, an Indian skull and forearm; the latter being encased in a large copper band, extending from the elbow to the wrist, probably about 5 by 7 inches. The condition of the copper band shows that it had undoubtedly been buried for a very long time.

A case of birds from the vicinity of Victoria, collected and mounted by Mr. A. H. Maynard during the years 1889 and 1895, was donated by his daughter, Miss J. R. Maynard.

Dr. M. Y. Williams, of the British Columbia University, having obtained permission from the Provincial Government to publish separately various parts of his report on the Pacific Great Eastern Survey, this Department at his request has undertaken to publish his article on the Fauna of the Former Peace River Block, British Columbia, which will be found on pages 14–22.

A Report and Directory of all the known Canadian Museums has been issued by Sir Henry Miers, D.S.C., F.R.S., and S. F. Markham, M.A., B.Litt., President and Secretary of the British Museum Association, who made a survey of the Canadian Museums of the British Empire for the Carnegie Corporation of New York in 1931. The Report is a volume of 63 pages, giving a very full and comprehensive statement of the Museums of this Dominion—namely, Distribution, History, and Character; Buildings, Equipment, and Display Methods; Types of Collections; Staff; Administration and Finance; Co-operation; Museums and the Public; Museums and Schools; Museums and Research Work; Criticisms and Suggestions. Acting on this Report to the Carnegie Corporation, the following letter was received from the President:—

"CARNEGIE CORPORATION OF NEW YORK.

522 FIFTH AVENUE,
NEW YORK, January 4th, 1933.

"OFFICE OF THE PRESIDENT.

"*F. Kermode, Esq., Director,*
Provincial Museum of Natural History,
Belleville Street, Victoria, British Columbia.

"DEAR MR. KERMODE,—Sir Henry Miers, who with Mr. Markham is engaged in a study of museums in the British Empire, has suggested that there be set up in Canada a small group of informed persons who would informally discuss Canadian museum problems and proposals with a view to advising the Corporation as to significant opportunities for service.

"Could you find the time to serve as a member of such a group in association with Messrs. H. O. McCurry and Eric Brown, of Ottawa; J. C. Webster, of Shediac; and E. L. Judah, of Montreal? Others can be co-opted as may seem desirable.

"We are asking Mr. McCurry to act as secretary.

"Sincerely yours,

"F. P. KEPPEL."

This invitation was accepted with the consent of the Provincial Government.

ACCESSIONS.

The following additions have been received during the past year and cordial thanks are extended to the donors:—

ANTHROPOLOGY AND ARCHÆOLOGY.

Salish (Interior).

Dish, sandstone. Adams Lake (W. B. Anderson).
Skull, copper-stained. Lytton (Rev. T. F. W. De Pencier).
Forearm bones, encased in copper band. Lytton (Rev. T. F. W. De Pencier).
Bone point, incised designs. One mile north of Swan Lake (C. W. Patten; presented by J. B. Munro).
Spear-point, chipped basalt. Spences Bridge (A. Dryden; presented by T. W. S. Parsons).
Knife-blade, chipped basalt. Spences Bridge (A. Dryden; presented by T. W. S. Parsons).
Awl, chipped basalt. Cisco (A. Dryden; presented by T. W. S. Parsons).
Spear-point, chipped basalt. Lillooet (A. Dryden; presented by T. W. S. Parsons).
Fish-knife, slate. Lillooet (A. Dryden; presented by T. W. S. Parsons).
Copper ornament. Stein River, Lytton (A. Dryden; presented by T. W. S. Parsons).
Dagger, iron blade. ? Lytton (A. Dryden; presented by T. W. S. Parsons).

Salish (Coast).

Bark-chopper, mica-schist. Sidney (T. W. S. Parsons).
Stone hammer. Southern Vancouver Island (A. H. Maynard).
Spindle whorl, whalebone. Cadboro Bay (T. W. S. Parsons).
Barbs (2). Cadboro Bay (T. W. S. Parsons).
Chisel, bone. Cadboro Bay (T. W. S. Parsons).
Disk. Sidney (C. Mitchell).
Maul, stone. Esquimalt (W. Rasmussen).
Charm, etched concretion. Saltspring Island (A. Beddis, per Constable Tweedhope).
Dressing-stone, limestone. McKenzie Bay, Saanich Inlet (Alex. Gaunt, per A. P. McConnell).
Fish-knife, bone. Fulford Harbour, Saltspring Island (T. W. S. Parsons).
Bone tube. Bedwell Harbour, Pender Island (T. W. S. Parsons).
Fish-knife. Cadboro Bay (T. W. S. Parsons).
Skull and jaw. Uplands Gate, Cadboro Bay (G. E. McCulloch).
Skull, part of. Victoria West (? donor).
Spear-point, slate. Southern Vancouver Island (P. W. Martin).
Labret-pin. Bedwell Harbour, Pender Island (T. W. S. Parsons).
Club, stone. Esquimalt Harbour (W. Rasmussen).
Cradle, basket-work. Saturna Island (Constable D. O. Tweedhope).
Skull, part of. Mouth of Chemainus River (Constable J. C. Sweeney).
Skull and jaw, parts of. Macdonald Estate, Victoria (presented by City Detective Jarvis).
Chisel, grey stone. Flea Village, Prideaux Haven (B. Saulter).
Chisel, black, triangular. Melanie Cove, Prideaux Haven (B. Saulter).
Painted stones (3). Queens Reach, Jervis Inlet (presented by F. J. Barrow).
Trade beads, blue, Hudson's Bay Co. Kakaekae Village, Malaspina Inlet (F. J. Barrow).
Skeleton. Coal Island (Miss Sue Kelley).
Haft of elk-horn. Rocky Point (T. W. S. Parsons).
Arrowhead, slate. Uplands, V.I. (A. N. Mouat).
Bone point. Cadboro Bay (T. W. S. Parsons).

Elk-horn, showing method of cuttings. Esquimalt Lagoon (A. H. Marrion).
Skull and jaw, artificially deformed. N.E. end of Discovery Island (Mr. and Mrs. E. G. Beaumont).

Nootkan.

Bow, child's. West coast of Vancouver Island (presented by S. Sellick, R. Longfield, D. Least).
Dagger, model. Nootka (Ed. Frost).
Dagger, model. Nootka (Ed. Frost).

Kwakiutl.

Whale-tooth charm (cast). Quatsino (C. L. Bland).
Game-stone, ? sandstone. Quatsino Sound (C. L. Bland).
Whetstone, brown sandstone. Granite Island, Quatsino Sound (Mr. Cross).
Chisel. Marble Creek, Quatsino Sound (H. Varney).
Chisel, polished greenstone. Marble Creek, Quatsino Sound (H. Varney).
Chisel, polished dark stone. Marble Creek, Quatsino Sound (H. Varney).
Polished stones (7). Marble Creek, Quatsino Sound (H. Varney).
Rubbing-stone, granite. Pender Point, Quatsino Sound (T. W. S. Parsons).
Whetstone, grey stone. Pender Point (T. W. S. Parsons).
Barbs (2), bone. East Cove, Koprino, Quatsino Sound (T. W. S. Parsons).
Dish, model of feast-dish. Collected by R. Maynard; presented by Miss J. R. Maynard.
Basket, split spruce-root. Collected by R. Maynard; presented by Miss J. R. Maynard.
Hammer, brown stone. Bella Bella (A. Dryden; presented by T. W. S. Parsons).
Club-head, black stone. Bella Bella (A. Dryden; presented by T. W. S. Parsons).

Haida.

Paint-dish, ? schist. Delkatla (J. C. Frizell).

PALÆONTOLOGY AND GEOLOGY.

Shark's tooth. Limestone Quarry, near New Westminster (Mr. Hepburn).
Glacial shells. Savary Island (Stanley Boys).
Bivalve. Pym Island (Sergeant C. C. Clarke, Provincial Police).
Ammonite (*Desmoceras* (?) *newberryanus* Meek.), encased in nodule. McNeil Bay, near Victoria. Found while excavating for concrete wall (C. Maves).
Ammonite in nodule. Cumshewa, Queen Charlotte Islands (J. S. Hewison).
Section of belemite, drilled by marine animal. Ganges Harbour (Mrs. D. O. Tweedhope).
Aucella sp. Phillips Arm (Mrs. G. Fox, per C. N. Sowerby).
Glacial marine shells. Mill Bay, V.I. (A. H. Marrion).
Chrysodomus ? *hiratus.* In blue clay, Sandstone Point, Shirley District (A. H. Marrion).
Standstone (natural erosion). Stratford's Crossing, Cowichan District (H. F. Armstrong).
Concretion. Found 15 miles up Powell Lake (Mr. Black).
Concretions (2). One from Quesnel, one from Junction of West Road and Nazko Rivers (G. E. Malcolm, per Mrs. Bullen).

BOTANY.

A number of botanical specimens were presented to the Museum during the year, the more valuable being mounted for the Herbarium. The following list gives the localities and names of the donors: Aleza Lake, B. G. Griffiths; Cameron Lake, H. Rawlins; Comox, T. A. Bonser, T. Pearse; Cordova Bay, R. P. Bishop; Denman Island, F. N. Turner; Duncan, Mrs. E. A. Galloway, D. Ashby; Enderby, T. H. Bond; Errington, V.I., H. Rawlins; Forbidden Plateau, H. Warren, Rev. R. Connell, R. Stanier, J. G. Greig; Fraser Lake, Mrs. Sills; Fraser Valley, D. Munday; Garibaldi, H. Toms; Gorge, V.I., Gordon Bentham; Happy Valley, Miss Keevil; Ladysmith, J. Travis; Malahat, Miss Dugan; Mill Bay, Mrs. G. D. Sprot, Miss P. Sprot; Mount Arrowsmith, N. B. Sanson; Mount Waddington District, D. Munday; Nanaimo, Mrs. Planta; Nicola, T. H. Bond; Nootka, Dr. E. Gunther; Oak Bay District, Rev. R. Connell; Parksville, D. Ashby, Miss M. A. Newcombe, Mrs. A. K. Harrison; Peace River Block, Miss M. Birley, J. G. Corry Wood; Penticton, Mr. Robinson; Port Haney, Dr. G. Morse; Portage Inlet, Miss S.

Cunningham; Pouce Coupe, Sergeant Greenwood, Mr. Moody; Saanich District, W. H. A. Preece, H. Dugan, E. A. Cooke, Mrs. W. Patterson, J. Neaves, J. C. Bridgman; Saturna Island, F. Wiper; Shawnigan, H. Toms, H. Nation, Mrs. Thacker; Shirley District, Mrs. Clark; Sooke District, C. C. Pemberton, R. Gidley, J. C. Bridgman, Miss Ravenhill, A. V. Pineo; State of Washington, W. Downes; Texada Island, S. Boys; Trial Island, F. Kemp; Tulameen Mountain, F. Perry; Uplands, V.I., Miss Izard; Victoria District, Miss M. Izard, Rev. C. J. Young, Miss M. Tolmie, A. R. Sherwood, Mr. Peden, A. Gillam, C. N. Sowerby, Mr. Terry, W. Harvey, P. P. Henson, W. B. Anderson, C. F. Newcombe; Whaletown, J. Pool, Miss Siddaway; Westholme, J. Travis, W. Downes. The Museum staff also collected plants for the Herbarium and the seasonal wild-flower exhibit.

Mosses, Lichens, and Hepatics.

Interior of British Columbia (Mrs. MacFadden).
Sooke District (Miss Ravenhill).
Fraser Lake (Mrs. M. G. Sills).
Eastern U.S.A. (Miss C. C. Haynes, per Mrs. H. Mackenzie).
Victoria District and Mainland (Mrs. H. Mackenzie).

Miscellaneous.

"Wavy" growth found in splitting fir-tree, 8 feet from the ground in a tree 5 feet in diameter. Metchosin (J. W. Mawle).

Cross-section of Mountain Hemlock (*Tsuga mertensiana*) (about 193 years old). Collected at Mount Arrowsmith by Dr. Fletcher and J. R. Anderson in 1903; presented by C. C. Pemberton.

Douglas Fir, section from a large Douglas Fir log 4 feet in diameter at 40 feet from the stump, which lies partially embedded in the soil about 3 miles north of Alco. Presented by Hon. Nels Lougheed, Minister of Lands.

Mushrooms. Victoria District (E. A. Cooke).

Earth Star (*Geaster hygrometricus*). C. C. Pemberton.

REPTILIA.

Garter Snake, black, no diamonds showing. Esquimalt District (P. W. Martin).

ENTOMOLOGY.

Orthoptera.

Victoria District (Dr. Price).

Hemiptera.

Victoria (H. Neaves).

Neuroptera.

Victoria (G. B. Blake).

Lepidoptera.

Langford, V.I., D. Bullen, P. W. Martin; Saanich District, Mrs. J. Dobbs, D. B. Moraes; Parksville, H. K. Harrison; Victoria District, Mrs. Hawkes, Dr. Price, J. D. Anderson, Miss Grace Carr, Miss R. Smith, C. Ferris, Frances Berry, F. Crockford, E. A. Cooke; Crofton, V.I., Dr. J. T. Taylor; Cumberland, B. Davis; Prospect Lake, W. Gibson, Jr.; Uplands, V.I., Miss Melville; Ucluelet, G. Fraser.

Diptera.

Victoria District (F. Abbott).

Coleoptera.

Victoria District, Dr. Price, Barbara Hill-Tout, E. Protheroe, Miss A. Sherwood, C. Hickman, W. Graham, R. Banks; Nanoose, C. Hole, M. Kellett; Chemainus, S. A. Guilbride; Texada Island, S. Boys; Langford, V.I., P. W. Martin.

Hymenoptera.

Victoria District, E. A. Cooke, E. G. Marriot, D. B. Moraes, C. Ferris; Langford, V.I., P. W. Martin.

General Entomology.

Hope, T. L. Thacker; Victoria, Mr. McKie.

Miscellaneous.

Larvae of *Ergates*. South Saanich (Miss P. J. Gill).
Spiders. Victoria, Mrs. Blackmore, H. Neave, Ralph Clarke, Dr. Price; Saanich District, F. Russel, N. H. McMillan.
Hairworms (*Gordiacea* sp.) Tranquille, G. Darling, presented by P. de Noe Walker; Lake Cowichan, Mr. Sworder.

MARINE AND FRESH-WATER ANIMALS.

Goeduck (*Panope generosa* Gld.). Sidney Island Spit (L. Young).
Clam (*Mactra dolabiformis* Conr.). San Diego, California (Mrs. I. S. Oldroyd).
Pearls found in California Mussel (*Mytilus californianus*). Rocky Point, V.I. (Constable A. G. Carmichael).
Shell. Strait of Juan de Fuca (Cableship "Brico"; Superintendent, Mr. McCartney).
California Mussel (*Mytilus californianus* Conr.). Dallas Road, Victoria (J. Bond).
Burrowing Mollusk, the common Piddock (*Pholadidea penita* Conr.). Shirley District (Mrs. Clarke).
Marine Mollusca (Pecten) (*Hinnites* ? sp.). Sooke (A. Jenkins, per E. M. Worth).
Barnacle (*Balanus* sp.). Phillips Arm (C. N. Sowerby).
Barnacle (*Balanus* sp.). Clover Point (Naismith and Charlton).
Crustacean. Strait of Juan de Fuca (Cableship "Brico"; Superintendent, Mr. McCartney).
Crab (*Fabia subquadrata* Dana), from mantle cavity of California Mussel. Dallas Road, Victoria (J. Bond).
Prawns. Burrard Inlet (W. B. Anderson).
Crustacean. Saanich Inlet (H. B. Nash, per W. Downes).
Basket Star (2) (*Gorgonocephalus caryi* Lyman). Strait of Juan de Fuca (Cableship "Brico"; Superintendent, Mr. McCartney).
Red Star. Strait of Juan de Fuca (Cableship "Brico"; Superintendent, Mr. McCartney).
Starfish (*Pisaster* ? *ochroe*). Willows Beach, V.I. (J. Enoch).
Urchin. Strait of Juan de Fuca (Cableship "Brico"; Superintendent, Mr. McCartney).
Nudibranck (*Melibe leonina*). Crofton (Dr. J. T. Taylor).
Nudibranck. Victoria Harbour (C. N. Sowerby).
Egg-sacs (? sp.). Brentwood (E. M. Worth).
Fresh-water Limpets (*Ancylus fragilis* Tyron). Beacon Hill Park (P. P. Henson).
Fresh-water Crayfish (*Astacus trowbridgii* Stimpson). Shawnigan Lake (F. Risser).

ICHTHYOLOGY.

Young Herring. Victoria District (E. A. Cooke).
Rock Fish. Ogden Point (J. Engnes).
Skate (young). Esquimalt, V.I. (E. A. Cooke).

ORNITHOLOGY.

Western Golden-crowned Kinglet (*Regulus satrapa olivaceus* Baird). Sidney Inlet, V.I. (Captain Henderson, per W. B. Anderson).
Surf Scoter (*Melanitta perspicillata* (Linnæus)). Cadboro Bay (P. W. Martin).
Black Pigeon Hawk (*Falco columbarius suckleyi* Ridgway). Gordon Head, V.I. (E. G. Kermode).
Northwestern Crow (*Corvus brachyrhynchos caurinus* Baird). Victoria (S.P.C.A.).
Case of 29 specimens collected between 1889–95 by A. H. Maynard. Donated by Miss June R. Maynard.

OOLOGY.

Hungarian Partridge egg. Mount Tolmie (A. G. Bolton).
Ostrich egg. South Africa (A. G. Bolton).

Crow egg. Victoria (E. A. Cooke).
Sooty Grouse (set of eight eggs). Albert Head (F. Kermode).
Humming-bird nest and 1 egg. Esquimalt (A. G. Bolton).
Junco nest and eggs. Saanich (Miss C. G. Cox).
Skylark nest and eggs. Saanich (Miss C. G. Cox).
Patridge nest. Saanich (Miss C. G. Cox).
Gairdner Woodpecker nest. Uplands (R. P. Bishop).
Robin's nest (3-tier). Highland District (E. A. Cooke).

MAMMALOGY.

Bat (*Myotis* sp.). Victoria (W. A. Newcombe).
Bat (*Myotis* sp.). Hope (T. L. Thacker).
Tanned Porpoise Skin, showing hair. Victoria (E. Esposito).
Bison (American Buffalo) calf (*Bison bison*). Beacon Hill Park (Victoria Park Board).
Shrew (*Sorex vancouverensis*). Cadboro Bay District, V.I. (P. W. Martin).

PUBLICATIONS RECEIVED FROM OTHER INSTITUTIONS.

American Association of Museums, Washington, D.C.	14
American Museum of Natural History, New York	1
American Ornithologists' Union, Lancaster, Pa.	3
Art Historical & Scientific Society, Vancouver, B.C.	3
Australian Museum, Sydney, Australia	3
Bernice Bishop Museum, Honolulu	5
Biological Board of Canada	7
Biological Society of Washington	7
Boston Society of Natural History	4
Bristol Museum & Art Gallery, England	1
British Museum Association, South Kensington, England	15
Brooklyn Children's Museum, Brooklyn, N.Y.	7
California Academy of Sciences, San Francisco	8
Cambridge University Library	1
Carnegie Museum, Pittsburgh, Pennsylvania	1
Charleston Museum, Charleston, S.C.	1
Chicago Academy of Sciences	3
Cleveland Museum of Natural History	2
Colorado Museum of Natural History, Denver, Colorado	2
Condor, Cooper Ornithological Club	6
Connecticut Archæological Appraisal, Hartford, Conn.	1
Division of Fish & Game of California	4
Dominion Government Publications	24
Emergency Conservation Committee, New York	1
Field Museum of Natural History	7
Illinois Natural History Survey	4
Independent Biological Laboratories, Palestine	1
Insular Experiment Station, Rio Piedras, P.R.	7
John Crerar Library, Chicago	1
Kansas Academy of Science, Manhattan, Kansas	2
Leicester Museum & Art Gallery	1
McGill University, Montreal, Canada	3
Manchester Museum	1
Museum of the American Indian, Heye Foundation	1
Museum of Fine Arts, Boston, Mass.	6
National Museum of Ireland	1
New York Botanical Garden	1
New York State College	1
New York Zoological Society	12
Carried forward	173

PUBLICATIONS RECEIVED FROM OTHER INSTITUTIONS—*Continued.*

Brought forward	173
Nova Scotian Institute of Science	1
Ohio Agricultural Experiment Station	6
Orleans Museum	1
Ottawa Field-Naturalist, Ottawa, Canada	9
Oxford University Press	2
Peabody Museum, Harvard University	5
Peabody Museum, Yale University	5
Philadelphia Academy of Natural Sciences	2
Portland Society of Natural History, Portland	1
Provincial Game Commissioner	1
Public Museum, Milwaukee, Wis.	5
Rochester Academy of Science, Rochester, N.Y.	2
Royal Ontario Museum, Toronto	1
Santa Barbara Museum of Natural History	2
San Diego Society of Natural History	14
Smithsonian Institution, U.S. National Museum	69
Staten Island Institute of Arts & Sciences	11
Sun Yatsen University, College of Science	1
U.S. Department of Agriculture	4
University of California, Berkeley, California	45
University of Colorado, Boulder, Colorado	1
University of Montreal, Montreal, Quebec	3
University of Nebraska, Lincoln, Nebraska	5
University of Oklahoma	5
University of Toronto, Toronto, Ontario	2
University of Washington, Seattle, Washington	1
Wagner Free Institute of Science, Philadelphia	3
Zoological Society of Philadelphia	2
Total	382

FAUNA OF THE FORMER DOMINION PEACE RIVER BLOCK, BRITISH COLUMBIA.*

BY M. Y. WILLIAMS, B.SC., PH.D.

INTRODUCTION.

The Peace River Block falls within the warmest or Canadian Zone of the Boreal region of Canada. This zone extends to the northern limits of practical cultivation of field crops, and includes the flats along the Peace River Valley through the Rocky Mountains to Finlay Forks, and up both the Finlay and Parsnip Rivers for some distance. The mountains pass upward through the Hudsonian Zone into the Arctic Zone. Within the Block, only the top of Table Mountain, and some of the higher plateaus occurring about Moberley Lake and south-westward to the Pine Valley, may be classed as belonging to the Hudsonian Zone. The mountains a short distance to the south and west, however (e.g., Tuskoola Mountain and Mount Bickford), reach the Arctic Zone at their tops.

The Block includes in its south-western corner a portion of the Foothills belt, the rest of its area belonging to the great plains. The Rocky Mountains form a natural faunal and flora barrier, as is clearly demonstrated by the difference in species and subspecies on the two sides of the mountains. Many forms of life cannot pass through the colder zones of the mountains

* The area here referred to was known prior to August, 1930, as the Dominion Peace River Block. It comprises a block of land in north-eastern British Columbia approximately 80 miles square, extending westward from the British Columbia-Alberta boundary, and being practically bisected by the Peace River.

This paper is based on a report prepared by the author in 1930 for the Pacific Great Eastern Survey of Resources and is published with the permission of Provincial authority.

FINLAY RAPIDS, WHERE THE PARSNIP AND FINLAY JOIN TO FORM PEACE RIVER.

MOUNT SELWYN, WHERE THE PEACE RIVER PASSES THROUGH THE ROCKY MOUNTAINS.

and so remain east or west, as they happen to find themselves. Birds migrate north and south for thousands of miles without crossing from one side of the Rockies to the other. As a result of this separation, distinct geographical races or subspecies or even species have developed. Among the most distinctive birds of the Parsnip Valley are the black-tailed Spruce Grouse (probably *Canachites canadensis osgoodi* or the Alaskan Spruce Grouse), the Red-breasted Sapsucker (probably *Sphyrapicus varius ruber*), Brewer's Blackbird (*Euphagus cyanocephalus*), and the Western Tanager (*Piranga ludoviciana*). Immediately east of the mountains the first three of these are replaced by the Hudsonian Spruce Grouse (*Canachites canadensis canadensis*), the Yellow-bellied Sapsucker (*Sphyrapicus varius varius*), and the Rusty Blackbird (*Euphagus carolinus*), and the Western Tanager is much reduced in numbers. A detailed study of the lower portions of the Parsnip and Finlay Rivers and the area along the Peace River just east of the Rocky Mountains would bring out many more similar examples, and this in spite of the short 12-mile canyon by which the Peace River passes from the Rocky Mountain Trench through the mountains to the Foothills belt. The Peace River Pass is about one-quarter the length of the passes to the south, and is at water grade or about 2,000 feet elevation, whereas divides in the more southerly passes range upward to a mile above sea-level, as in the case of the Kicking Horse Pass. In consequence, the Peace Pass is the only one south of the Liard where life migration may cross the continental divide without passing through a colder zone than that of its natural habitat. The Peace River area adjoining the mountains will therefore remain a region of intense scientific interest.

The following notes upon the fauna of the Peace River Block are based upon observations made by the writer on a trip up the Peace River and overland to the Sikanni Chief River in 1922, and upon summer explorations within the Block in 1929 and 1930. Observations upon game and other life include information gathered by Mr. J. B. Bocock during the summer seasons of 1923, 1929, and 1930, which were spent by him in the Peace River region. The following information is far from complete, but will give some idea of the wealth of life to be found within the Block.

Game Animals.

Black Bear (*Euarctos americanus*) is still quite common in all but the more thickly settled districts.

Grizzly Bear (*Ursus horribilis*) occurs sparingly in the broken and plateau country south and west of Moberly Lake.

Wapiti (*Cervus canadensis*). Alexander Mackenzie states in his narrative of his trip to the Pacific that Elk (Moose), Stag (Wapiti), and Buffalo were so common along the banks of the Peace as to make the country resemble a barnyard. The Wapiti were exterminated many years ago, but antlers are still found. A very fine one, with 7 points, is in possession of the ferryman at Taylor Flats.

Mule-deer (*Odocoileus hemionus*) is the common deer of the Peace River Block, loving the semi-open areas, more especially those adjacent to the larger streams. These fine deer occur in fair numbers, except in some of the more thickly settled areas. A doe with three young fawns was seen on June 26th, 1930, a few miles above the head of the Hudson Hope portage.

Moose (*Alces americana*) occur in all parts of the Block, except some of the very thickly settled areas. Although they form the chief meat-supply of the Indians and frontier settlers, they appear to be holding their own.

Caribou (*Rangifer caribou*), subspecies undetermined, probably do not occur within the Block. They are found on Mount Bickford to the west, and a herd was seen in 1929 on Tuskoola Mountain, a short distance south of the Block. The hills within the Block are rather low for the growth of the lichen which forms the staple diet of the Caribou. Some of the hills in the south-west corner of the Block may, however, have been inhabited by Caribou in the past, during some parts of the year.

Bison (*Bison bison*). The Buffalo formerly occupied the Peace River Valley in great numbers as recorded by Alexander Mackenzie. Mr. Neil Gething found a skull at the head of the portage a short time ago. Dr. Selwyn reports that the last Buffalo, six in number, were seen near Pouce Coupe in 1879, and that the Beaver Indians killed one of them.

Mountain-goat (*Oreamnos americanus*). A mountain-goat was accidentally caught in a snare near the centre of the Peace River Canyon during the winter of 1929–30. Although we have no record of their occurrence within the Block, they may enter it occasionally.

Fur-bearing Mammals.

The catch of fur within the Block has been disappointing for the last two or three years. Although this is thought to be due mainly to the almost complete disappearance of rabbits, the fur-bearers' prey, it seems certain that overtrapping has so depleted the breeding stock that only a period of close seasons can restore it.

Marten (*Martes americana*); Fisher (*Martes pennanti*); Weasel (*Mustela cicognani*); Mink (*Mustela vison*); Fox (*Vulpes fulva*), including red, cross, silver, and black varieties; Coyote (*Canis latrans*); Timber-wolf (*Canis nubilus*); and Lynx (*Lynx canadensis*) are all taken on the trap-lines. Beaver (*Castor canadensis*) and Muskrat (*Ondatra zibethica*) were formerly very common, but have been greatly reduced by trapping and the drying-up of swamps following repeated forest fires. The failure of the Indians to register trap-lines and their assumption of the right to take beaver on trap-lines registered by white men has not only led to much trouble, but has caused the depletion of whole beaver colonies. A suitable adjustment of this difficulty is most desirable and is a necessary preliminary step before beaver can be conserved.

Smaller Mammals.

Bat (probably Little Brown *Myotis altifrons*). Fairly common in August, 1929, at Sunset Creek, Coal Creek, and Hudson Hope. Reported as common about the barns at Bear Flats, July 8th, 1930.

Chipmunks (probably Northern or *Eutamias minimus borealis*). Very common throughout the Block.

Red Squirrel (*Sciurus hudsonicus*). Common throughout the Block.

Vole or Meadow-mouse (*Microtus* sp.?). Probably very common, but seldom observed.

Wood-rat (*Neotoma floridana*). Sparingly present in rocky cliffs as indicated by signs. Not much of a nuisance.

Porcupine (*Erethizon dorsatum* ?). Rather rare within the Block.

Varying Hare (*Lepus americanus*). Very common about Taylor Flats, Fort St. John, and north to Blueberry River in 1922. One of party shot sixteen at Taylor Flats in about one-half hour. Rare now for several years. Perhaps six or seven seen during all the explorations of 1929 and 1930.

Birds.

Diving Birds.

Holboell's Grebe (*Colymbus grisegena holbœlli* (Reinhardt)). Grebes, evidently of this species, were seen on Peace River near Alberta boundary, May 12th, 1922, and on Moberly Lake, July 27th, 1930.

Common Loon (*Gavia immer immer* (Brunnich)). Two seen on Moberly Lake, July 16th, 1930.

Long-winged Swimmers.

Herring-gull (*Larus argentatus smithsonianus* Coues). Large gulls occur sparingly along Peace River and on Moberly Lake. These appear to be "Herring." In 1922 the author took a specimen of Herring-gull on the Fort Nelson River which showed affinities with the Eastern species.

Sieve-billed Swimmers.

American Merganser (*Mergus merganser americanus* Cassin). A fine male was seen on Peace River just above the canyon on June 26th, 1930.

Mallard (*Anas platyrhynchos platyrhynchos* Linnæus). Fifteen were seen on Peace River near Alberta boundary, May 12th, 1922. A male seen on Jackfish Lake, July 28th, 1930.

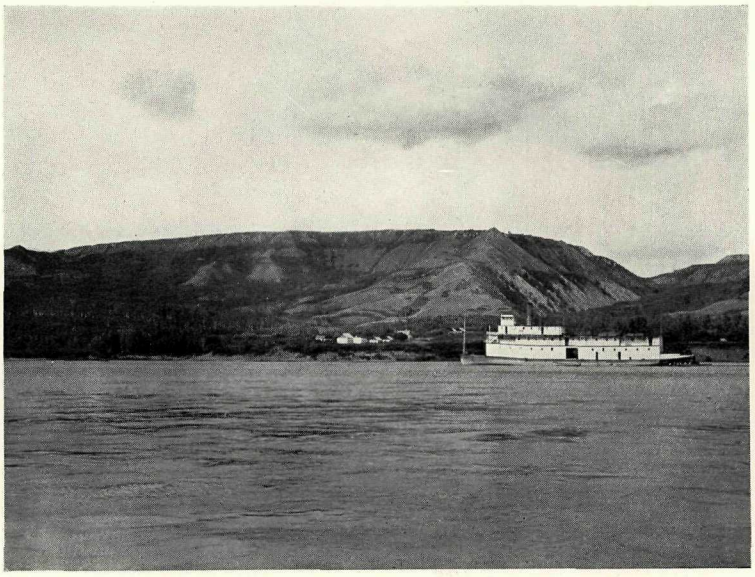
Green-winged Teal (*Nettion carolinense* (Gmelin)). Two were seen near Alberta boundary on Peace River, May 12th, 1922, and twenty 10 miles north of Fort St. John, May 17th, 1922.

Scaup-duck, probably Lesser (*Nyroca affinis* (Eypton)). Two were seen on Peace River near Alberta boundary, May 12th, 1922.

Barrow's Golden-eye (*Glaucionetta islandica* (Gmelin)). Seen 30 miles north of Fort St. John, May 19th, 1922. A female probably of this species was seen on Peace River above Half-way River, July 9th, 1930. Twenty young birds probably of this species were seen on Moberly

This manuscript was prepared before the publication of the 4th Ed. of the A.O.U. Check-list. Names have been changed, but not the order.

LOOKING DOWN PEACE RIVER CANYON, SHOWING COAL-SEAMS.



OLD FORT ST. JOHN AND STEAMER "D. A. THOMAS."

Lake on July 18th, 1930. Golden-eyes were common on Jackfish Lake, July 28th, 1930. Much confusion arises between this species and its near relative, the American Golden-eye. The author took a fine male "Barrows" on the Fort Nelson River in 1922 and from general characters believes this to be the common species in the Peace River region.

Buffle-head (*Charitonetta albeola* (Linnæus)). A pair were observed near the Alberta boundary on Peace River, May 12th, 1922. Five eggs were found in a hollow tree about 20 feet from the ground, on the Blueberry River, May 21st, 1922.

Canada Goose (*Branta canadensis*). A pair were seen near the Alberta boundary on Peace River, May 12th, 1922. Mr. J. B. Bocock reports geese breeding on the larger streams within the Block, and Alexander Mackenzie noted these geese breeding on the flat tops of the islands in the Peace River Canyon. A flock of twenty was seen at Taylor Flats, September 21st, 1929, and small flocks were seen on the Pine River near Table Mountain and East Pine P.O. respectively on August 13th and 19th, 1930. As no specimens were taken the subspecies represented is not known.

Marsh Birds.

Sora Rail (*Porzana carolina* (Linnæus)). A bird believed to be of this species was seen along Pine River near the mouth of Commotion Creek, August 9th, 1930. These little, skulking birds may be quite common in the marshes of the Block.

American Coot (*Fulica americana americana* Gmelin). This bird was accurately described by David Dopp, of Cache Creek, who reported it from the ponds near the bluffs near by.

Shore Birds.

Wilson's Snipe (*Capella delicata* (Ord.)). Common and in "song" at Fort St. John, May 13th, 1922.

Lesser Yellowlegs (*Totanus flavipes* Gmelin). Six were seen just outside the Block at Swan Lake on August 19th, 1929. These birds probably occur at Moberly Lake and elsewhere during the fall migration.

Solitary Sandpiper (*Tringa solitaria* prob. *cinnamomea* (Brewster)). One seen at Fort St. John, May 16th, 1922; two 10 miles south of Hudson Hope, July 25th, 1929, and one at White Man's Crossing of the South Pine on July 29th, 1930.

Spotted Sandpiper (*Actitis macularia* (Linnæus)). This is the commonest wader, and is seen along all lakes, ponds, and watercourses in the Block throughout the summer. It breeds late in June.

Hudsonian Curlew (*Phæopus hudsonicus* (Latham)). A curlew was described by David Dopp as occurring at Bear Flats. It is probably this species.

Kildeer Plover (*Oxyechus vociferus vociferus* (Linnæus)). Several seen south of Coal Creek, August 20th, 1929. Evidently rare.

Gallinaceous or Scratching Birds.

Richardson's Grouse (*Dendrogapus obscurus richardsoni* (Douglas)). A male, female, and three half-grown young seen in Pine Valley near Commotion Creek. Reported as fairly common in vicinity.

Hudsonian Spruce Grouse (*Canachites canadensis canadensis* (Linnæus)). Several seen near Blueberry River, May 22nd and 23rd, 1922. A male sent to Mr. Taverner shows "a suggestion of intergradation towards Franklin's Grouse that is usually regarded as a totally distinct species."

Birds seen at Hudson Hope, July 15th, and in the Peace River Canyon, August 28th, 1929. A male was collected on the Murray River at the base-line, August 19th, and several were seen at Sunset Prairie, August 28th, 1930. The crop of the specimen collected contained a willow-gall, a willow-leaf, fungi and saxifrage seed. The gizzard contained 20 per cent. leaves and three kinds of seeds.

Ruffed Grouse (*Bonasa umbellus umbelloides* (Douglas)). Common at Fort St. John, May 13th; two seen at Blueberry River, May 20th and 21st, 1922. A specimen taken north of the Blueberry River on May 24th was pronounced by Mr. Taverner to be the grey Ruffed Grouse. Females with young were fairly common near Hudson Hope, Centurian Creek, and elsewhere in 1929. Fairly common in small family groups about Moberly Lake, the Pine Valley, Table Mountain, and Sunset Prairie from July 16th to August 30th, 1930.

Rock Ptarmigan (*Lagopus rupestris rupestris* (Gmelin)). One quite surely of this species seen on Mount Selwyn, July 12th, 1929. This species may occur on Table Mountain and on some of the other higher plateaus.

Sharp-tailed Grouse (*Pediœcetes phasianellus campestris* Ridgway). Common at Fort St. John, Taylor Flats, and Blueberry River from May 13th to 20th, 1922. Of one taken south of the Blueberry on the 19th, Taverner says, "cannot see that this specimen differs from the Prairie Sharp-tail *P.p. campestris* of the prairies and southern Alberta." Quite common during summers of 1929–30 in the Plains country, including Rolla Landing, Taylor Flats, Fort St. John, Hudson Hope, East Pine, Sunset Prairie, Arras, and Dawson Creek.

Raptores or Birds of Prey.

Marsh Hawk (*Circus hudsonius* (Linnæus)). Ten, including two grey males, seen between Fort St. John and Blueberry River, May 13th to 20th, 1922. Four brown birds recorded from the Cutbank, Swan Lake, Taylor Flats, and Hudson Hope in August, 1929. One seen at Jackfish Lake, July 29th; common at East Pine, August 12th to 19th; one at Stewart Flats, August 22nd; common at Sunset Prairie, including one grey male, August 28th, 1930. A specimen taken at East Pine had a stomach contents of two voles and one young siskin ?. This fine harrier prefers cultivated regions, where it is a systematic mouser. The small number of birds taken is insignificant and there is practically no record of this species interfering seriously with game or poultry.

Sharp-shinned Hawk (*Accipiter velox velox* (Wilson)). One recorded on Blueberry River, May 21st, 1922. Occasional in Pine Valley from August 11th, 1930, on, and common at Sunset Prairie at the end of the month. These destructive little accipiters take toll of the migrating small birds. Two had a spectacular but inconclusive aerial fight with a sparrow hawk near Bissett Flats, and one swooped repeatedly at the writer at Stewart Flats.

Cooper's Hawk (*Accipiter cooperi* (Bonaparte)). One doubtful record at Fort St. John, May 16th, 1922.

Eastern Goshawk (*Astur atricapillus atricapillus* (Wilson)). A dead bird seen at Fort St. John, May 13th, 1922. An adult in vermiculated plumage and an immature bird seen near a nest of sticks in a cottonwood about 35 feet above the ground at Little Prairie, August 11th, 1930. An immature bird chased a squirrel near our camp at Stewart Flats on August 24th, 1930. This is the greatest game and poultry destroyer of all the hawks of the region.

Red-tailed Hawk (*Buteo borealis calurus* Cassin). In 1922 three were seen at Fort St. John on May 17th, three 30 miles north on May 19th, and a nest with three partly incubated eggs was found north of the Block at Barker Creek on May 27th. Dark-brown birds were seen at Centurian Creek on July 30th, 1929, and single birds were seen during July and August of 1930 at Cache Creek, East Pine, Stewart Flats, Sunset Creek, and Sunset Prairie. These large buteos are typical birds of the woods, but they prefer the river and larger creek valleys. Just what their food consists of in the almost complete absence of rabbits is somewhat uncertain, but no charge seems to be laid against them as game or poultry destroyers. Which subspecies is represented has not been determined with certainty.

Ferruginous Rough-leg Hawk (*Buteo regalis* (Gray)). Birds were seen, probably of this species, at Fort St. John on May 13th and 15th, 1922.

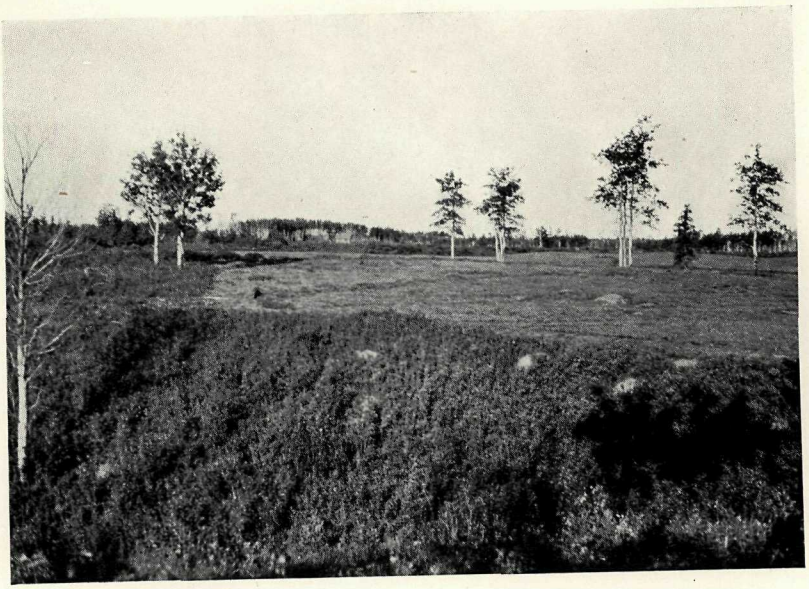
Northern Bald Eagle (*Haliœetus leucocephalus alascanus* Townsend). A fine large female taken on island about 9 miles above Fort St. John on August 3rd, 1930. Another bird, probably its mate, was seen there on August 8th. These probably nested on the cliffs at Cache Creek. Eagles are fairly common about Moberly Lake. These fine birds, which add so much to the beauty of any landscape, seem to do little harm to game, poultry, or stock, but are accused of taking foxes and other fur-bearers from traps.

Duck Hawk (*Falco peregrinus anatum* Bonaparte). A pair was noted at the Gates on Peace River on July 1st and on the river near the Alberta boundary on July 5th, 1930. These birds love cliffs along rivers.

Western Pigeon Hawk (*Falco columbarius bendirei* Swann). One at old Fort St. John, July 7th, 1930.

Sparrow Hawk (*Falco sparverius sparverius* (Linnæus)). The commonest bird of prey in the Block and very evenly distributed. Stomachs examined at Stewart Flats on August 22nd were full of large green cabbage-worms, mouse-fur, and grasshoppers.

"PEAVINE FLATS," A BEAUTIFUL FRONTIER FARM FAR UP THE SOUTH PINE RIVER VALLEY.



TYPICAL PARK LAND 20 MILES WEST OF DAWSON CREEK, B.C.

Short-eared Owl (*Asio flammeus flammeus* (Pontoppidan)). One seen at Fort St. John, May 15th, 1922. This bird should be common, but was not seen elsewhere.

Dusky Horned Owl (*Bubo virginianus saturatus* Ridgway). Recorded Fort St. John, May 13th, 1922; two near Taylor Landing, July 6th; two at old Fort St. John, July 7th; one at East Pine, August 1st, and one at Arras, September 2nd, all 1930. Specimens sent to Taverner from Fort Nelson were classed as light *saturatus*, and those of the Block may also be of that subspecies. The Great Horned Owl is doubtless much commoner than appears and its reputation as a destroyer of fur, game, and poultry is well known.

Snowy Owl (*Nyctea nyctea* (Linnæus)). A wing seen at Fort St. John in May, 1922, proves the occurrence of this species within the Block, where it is doubtless plentiful during winter.

Cuckoos and Kingfishers.

Eastern Belted Kingfisher (*Megaceryle alcyon alcyon* (Linnæus)). Reported five times during 1930, near Halfway River, at Moberly Lake, and three times in the Pine Valley.

Woodpeckers.

Northern Hairy Woodpecker (*Dryobates villosus septentrionalis* (Nuttall)). Seen at Halfway River, July 9th, at Bissett Flats on Pine River, August 4th, and common at Jim Stewart's Flats on August 22nd to 24th, 1930. A male taken at the Flats had tip of tail and face stained brown, probably from poplar-bark.

American Three-toed Woodpecker (*Picoides tridactylus bacatus* Bangs). One seen on Blueberry River, May 20th, 1922.

Yellow-bellied Sapsucker (*Sphyrapicus varius varius* (Linnæus)). Observed from Fort St. John to Blueberry River in 1922. Common at Rolla Landing and scattered over the Block in small numbers, according to observations of 1929 and 1930.

Northern Flicker (*Colaptes auratus luteus* Bangs). Scattered sparingly over the Block according to observations of 1922, 1929–30.

Goatsuckers, etc.

Nighthawk (Eastern) (*Chordeiles minor minor* (Forster)). Observed on North Pine (Beaton) River, May 27th and 28th, 1922. Observed practically throughout the Block during July and August of 1929 and 1930.

Passeres or Perching Birds.

Kingbird (*Tyrannus tyrannus* (Linnæus)). Observed at Hudson Hope, the East Pine, and Dawson Creek to Taylor Flats in 1929, and at the Gates, Rolla Landing, and the East Pine in 1930. Found mainly in the cultivated farming areas.

Eastern Phœbe (*Sayornis phœbe* (Latham)). Observed at Hudson Hope, Halfway River, Fort St. John, Rolla Landing, and on the West Moberly Lake Trail. Found mostly in farming areas.

Say's Phœbe (*Sayornis saya saya* (Bonaparte)). Observed at Fort St. John, May 13th, and 3 miles north on May 19th, 1922. In 1929 seen in August at East Pine and Hudson Hope.

In 1930, one seen at Moberly Lake, July 25th; one taken at Sunset Creek, August 27th; and two seen at Sunset Prairie, August 30th. Although living about the settlements, this bird is slightly more given to a wooded habitat than the former species.

Olive-sided Flycatcher (*Nuttallornis mesoleucus* (Lichtenstein)). This large and widely distributed bird occurs sparingly in the semi-open or park country and is best recognized by its monosyllabic whistled notes, the second in a lower key but carrying the accent.

Western Peewee (*Myiochanes richardsoni richardsoni* (Swainson)). Common about Little Prairie, August 3rd to 10th, one being taken on the last-named date. Much like the Eastern Wood Peewee in appearance, this little flycatcher is different in note and habits. It selects as its perch the top of a conspicuous poplar in park country and repeats its notes *Chrée, chrée*, two together, with considerable pauses between pairs.

Least Flycatcher (*Empidonax minimus* (Baird and Baird)). This little flycatcher, as recognized by its repeated notes *Ché-bec*, was recorded from north of Nig Creek, May 27th, 1922, and was common about Moberly Lake in July, 1930.

Horned Lark (*Otocoris alpestris*). Horned larks, subspecies undetermined, were seen north of Fort St. John and on the Blueberry River on May 17th and 20th, 1922. They should be common in the Block during spring and fall migration, but have not been otherwise recorded.

Canada Jay (*Perisoreus canadensis canadensis* (Linnæus)). Common throughout the wooded and park areas. From the stomach of one taken at Stewart Flats on August 23rd, 1930, saskatoon-berries, choke-cherries, seeds, and a fly were taken.

Northern Raven (*Corvus corax principalis* Ridgway). One seen at Fort St. John, May 13th, 1922.

Western Crow (*Corvus brachyrhynchos hesperis* Ridgway). Occasional to rare in the wilder parts. Five recorded from Sunset Prairie in August and a flock of 100 or more at Dawson Creek in September, 1930. Several recorded at Fort St. John in May, 1922. The crow is likely to increase with settlement and has good as well as bad points. One taken at Dawson Creek had many weed-seeds as well as some wheat in its crop. The crow is also a great destroyer of cutworms and grasshoppers.

Nevada Cowbird (*Molothrus ater artemisiæ* Grinnell). Common in the larger cultivated areas; apparently absent in the park lands and woods. Males were in song from Fort St. John to Blueberry River, May 12th to 18th, 1922.

Giant Red-wing (*Agelaius phœniceus arctolegus* Oberholser). Occasional in marshy areas throughout the Block. One taken on Fort Nelson River on June 13th, 1922, is identified by Taverner as *A.p. arctolegus* Oberholser. Those of the Block are probably of this subspecies.

Rusty Blackbird (*Euphagus carolinus* (Müller)). The common white-eyed blackbird of the Block appears to be of this species. It is possible, however, that Brewer's Blackbird (*E. cyanocephalus*) also occurs.

Pine Grosbeak (*Pinicola enucleator* subsp. ?). A male in song seen on July 26th, 1929. Immature birds thought to be of this species were seen on Moberly Lake, July 18th, 1930. This species probably breeds in the south-western corner of the Block.

Purple Finch (*Carpodacus purpureus purpureus* Gmelin). Common and in song at Rolla Landing and Fort St. John, May 12th and 13th, 1922.

English Sparrow (*Passer domesticus domesticus* (Linnæus)). Observed at East Pine, Dawson Creek, and Fort St. John in 1929, and Taylor Flats and Moberly Lake in 1930.

White-winged Crossbill (*Loxia leucoptera* Gmelin). A flock seen on Moberly River above the lake, July 26th, and another flock in the Pine River Valley on July 27th, 1929.

Goldfinch (*Spinus tristis* prob. *tristis* (Linnæus)). A male in song seen at Nig Creek, May 27th, 1922.

Northern Pine Siskin (*Spinus pinus pinus* (Wilson)). Common at Moberly Lake and several seen at Jackfish, July 16th to 29th, 1930.

Lapland Longspurs (*Calcarius lapponicus lapponicus* (Linnæus)). A flock of longspurs was seen at Fort St. John, May 16th, 1922. Several seen east of Moberly Lake, July 25th, and flocks of from 100 to 200 common in the grain-fields about Arras after the first week of September, 1930. One taken at Arras is an immature female of this species, but the subspecies is doubtful.

Western Vesper Sparrow (*Proœcetes gramineus confinis* Baird). Common in prairie and pasture land.

White-crowned Sparrow (*Zonotrichia leucophrys*, prob. *gambeli* (Nuttall)). One seen near mouth of Sukunka, July 30th, 1929, and one at Halfway River, July 2nd, 1930. Doubtless common during migration.

White-throated Sparrow (*Zonotrichia albicollis* (Gmelin)). This sparrow, the "Canada Bird," is the commonest songster in the Block until the middle of July, when the main song ceases. Common summer resident in Block.

Tree Sparrow (*Spizella arborea arborea* (Wilson)). One male taken at Dawson Creek, September 13th, 1930.

Chipping Sparrow (*Spizella passerina arizonæ* Coues). Common along Peace River; apparently rare in interior of Block.

Slate-coloured Junco (*Junco hyemalis hyemalis* (Linnæus)). Common throughout park lands and woods of Block. Specimens indicate the typical Eastern form.

Song Sparrow (*Melospiza melodia* subsp. ?). Apparently not common in wilder part of Block; common in cultivated areas.

Western Tanager (*Piranga ludoviciana* (Wilson)). This beautiful bird and melodious songster, while common in the Parsnip River Valley and about Finlay Forks, was observed but once within the Block, and that was on Moberly River above the lake in July, 1929.

Northern Cliff Swallow (*Petrochelidon albifrons albifrons* (Rafinesque)). Group of nests were observed on the faces of the cliffs on the Blueberry River in 1922, at Cache Creek, Rolla Landing, and the Gates in 1930. The birds are common in the above localities and are fairly well distributed.

Tree Swallow (*Iridoprocne bicolor* (Vieillot)). Several seen at Hudson Hope, June 29th, 1930. Probably reasonably common elsewhere.

Violet Green Swallow (*Tachycineta thallassina lepida* Mearns). Seen along Peace River at Hudson Hope on West Moberly Trail, July 12th and 13th, 1930.

Bank Swallow (*Riparia riparia riparia* (Linnæus)). Nesting in silt-banks of Blueberry River (1922); near the Gates, above old Fort St. John, at Commotion Creek, and on the Cutbank River at Arras (1930). Birds common through stream-valley areas.

Bohemian Waxwing (*Bombycilla garrula pallidiceps* Reichenow). Birds believed to be of this species, judging by chocolate under tail-coverts, are common at Hudson Hope and south of the Peace River during July, August, and early September. July 27th, 1930, a grass nest was found near Jackfish Lake. It was 5 feet up in a young poplar and contained two large fledgelings and two fresh eggs. The parents had dark under tail-coverts. Some of the waxwings observed may have been *B. cedrorum*.

Black and White Warbler (*Mniotilta varia* (Linnæus)). One seen at Moberly Lake, July 27th, 1930.

Eastern Yellow Warbler (*Dendroica æstiva æstiva* (Gmelin)). Common along all watercourses and willow thickets. Adult seen feeding full-sized young at Moberly Lake, July 25th, 1930.

Myrtle Warbler (*Dendroica coronata* (Linnæus)). At Nig Creek, north of Block, May 23rd and 24th, 1922.

Blackburnian Warbler (*Dendroica fusca* (Müller)). One seen at Thorson's Landing, July 9th, 1930.

Grinnell's Water Thrush (*Seiurus noveboracensis notabilis* Ridgway). One seen on Blueberry River, May 20th, 1922.

American Redstart (*Setophaga ruticilla* (Linnæus)). Common about Moberly Lake, July, 1930.

American Pipit (*Anthus spinoletta rubescens* (Turnstall)). Common at Sunset Prairie and Arras, August 28th to September 2nd, 1930.

Red-breasted Nuthatch (*Sitta*, prob. *canadensis* Linnæus). A Nuthatch was heard at Little Prairie, August 3rd, 1930. From its weak cry it was probably the Red-breasted.

Long-tailed Chickadee (*Penthestes atricapillus septentrionalis* (Harris)). Common in wooded parts of Block. One taken at Little Prairie was of this subspecies of the Black-capped Chickadee.

Townsend Solitaire (*Myadestes townsendi* (Audubon)). This rather solitary bird was seen at Hudson Hope, June 29th; at Bissett Flats, August 4th; and at East Pine, August 16th, 1930.

Grey-cheeked (*Hylocichla minima aliciæ* Baird) or Olive-backed (*Hylocichla ustulata swainsoni* (Tschudi)) Thrushes were the commonest wood songsters during June and early July. They are so much alike that only from specimens can one reach definite determinations. A young bird examined at the South Pine, July 27th, 1929, appeared to be *ustulata*.

Eastern Hermit Thrush (*Hylocichla guttata faxoni* Bangs and Penard). This beautiful songster is common throughout the woodlands, and is in song until the middle of July.

Mountain Bluebird (*Sialia currucoides* (Bechstein)). Sparingly represented about farm buildings and pastures throughout the Block.

Eastern Robin (*Turdus migratorius migratorius* Linnæus). Common about farms and pastures and sparingly present elsewhere in Block. A spotted, immature bird, seen at Halfway River, July 2nd, 1930.

Amphibians.

Northern spotted frogs are fairly common along all stream-courses. Large Warty Toads are very common along the sandy banks of streams, where they sometimes burrow in the sand.

Reptiles.

Garter-snakes up to 3 feet in length are fairly common and are evenly distributed. Some have a bright-red line along the sides. Small, light-brown snakes with obscure stripes are common along streams and take readily to the water.

LIST OF INSECTS.

Collected by M. Y. Williams and Roy Graham in 1930. These were identified by Professor G. J. Spencer, of the University of British Columbia, with the assistance of Hugh Leech and Kenneth Graham, two students in Entomology, whose identifications and notes follow.

	Specimens.	Species.
Order Orthoptera	13	3

All of common and wide distribution in British Columbia. One species only of those collected (*Melanoplus confusus*) is of economic importance in peak years of abundance.

	Specimens.	Species.
Order Neuroptera.		
Family *Hæmerobiidæ*	1	....
Chrysopidæ	3	2
Order Ephemerida	1	....
Order Odonata	1	....
Order Plecoptera	2	1
Order Hemiptera.		
Family *Cydnidæ*	2	1
Pentatomidæ	4	1
Coreidæ	3	1
Aradidæ	3	1
Lygæidæ	9	5
Miridæ	13	4

All are common species; none are of common economic importance except the ubiquitous *Lygus pratensis*. 7 specimens (Fam. *Miridæ*).

	Specimens.	Species.
Order Homoptera.		
Family *Cicadellidæ*	5	5
Order Coleoptera.		
Family *Cicindelidæ*	1	1
Carabidæ	37	21
Hydrophilidæ	2	1
Silphidæ	1	1
Staphylinidæ	6	5
Histeridæ	1	1
Lampyridæ	1	1
Cantharidæ	3	2
Cleridæ	3	1
Cephaloidæ	1	1*
Mordellidæ	2	1
Pythidæ	1	1
Anthicidæ	1	1
Elateridæ	6	5
Throscidæ	1	1
Buprestidæ	8	4
Byrrhidæ	2	1
Ostomidæ	3	1
Nitidulidæ	2	1
Coccinellidæ	9	3

* Only 8 sp. in N.A.

Order COLEOPTERA.	Specimens.	Species.
Family *Tenebrionidæ*	2	1
Scarabæidæ	5	4
Cerambycidæ	14	8
Chrysomelidæ	51	10
Curculionidæ	5	2
Scolytidæ	1	1

Of these beetles, two are of systematic interest; the one specimen of Fam. *Lampyridæ*, genus *Lucidota*, is a fireless firefly, and three specimens of Fam. *Chrysomelidæ*, genus *Calligrapha*, are not represented in the southern part of the Province. It is not unlikely that the *Calligrapha* may be a new species.

Two species only are of economic importance:—

Entomoscelis adonidis, attacking turnips. This species attacks turnips in the Bulkley Valley also, and occurs in the Midday Valley.

Haltica bimarginata, a flea-beetle which sometimes does damage to alders, poplars, and willows.

The collection of beetles is characterized by the relatively large number of leaf-eating forms of the Fam. *Chrysomelidæ*.

	Specimens.	Species.
Order TRICHOPTERA	1	....
Order LEPIDOPTERA.		
Family *Papilionidæ*.		
Papilio bairdi Oregonia Edw.	1	....
Papilio rutulus Luc.	1	....
Family *Pieridæ*.		
Eurymus christina Edw.	1	....
Family *Nymphalidæ*.		
Argynnis atlantis Edw.	1	....
Euvanessa antiopa L.	1	....
Family *Geometridæ*	2	2
Family *Noctuidæ*	1	....
Family *Pericopidæ*.		
Genus *Gnophæla*	20	1

All are common and inconsequential species except the specimens of Fam. *Pericopidæ*, a Western moth which was hovering commonly over wild parsnip. There are only four recorded species of this family in North America.

Order DIPTERA.	Specimens.	Species.
Family *Tipulidæ*	4	3
Dixidæ	2	1
Culicidæ	1	....
Mycetophilidæ	1	....
Bibionidæ	9	2
Tabanidæ	5	3
Rhagionidæ	1	....
Dolichopodidæ	1	....
Phoridæ	1	....
Syrphidæ	6	5
Sapromyzidæ	1	....
Agromyzidæ	1	....
Chloropidæ	6	2
Anthomyidæ	23	....
Calliphoridæ	3	1
Tachinidæ	5	4
Muscidæ	2	2
Sarcophagidæ	1	....
Hippoboscidæ	1	....

These flies are of common occurrence, except six specimens of Fam. *Bibionidæ* genus *Dilophus*, which are not common. Some members of Fam. *Chloropidæ* are serious pests of cereals; I do not know whether the forms represented here are of economic importance. The Fam. *Anthomyidæ* also contains some bad pests; some of the specimens collected may be potential pests. One of the specimens of the Fam. *Muscidæ* is the common house-fly.

Order HYMENOPTERA.	Specimens.	Species.
Family *Ichneumonidæ*	1	....
Chalcididæ	1	....
Eumenidæ	1	....
Andrenidæ	17	....
Megachilidæ	3	....
Bombidæ	36	....

The collection is characterized by the number of long-tongued bees of Fam. *Bombidæ*, which are of economic importance for the fertilization of clover.

The large number of specimens represented may be due to the large size of these insects and the facility with which they may be captured, rather than to their relative abundance in the district. In all, over 400 specimens of insects were collected, including about 200 species, which fall into 71 families and 12 orders.

I am much indebted to Mr. Kenneth Graham for having relaxed and mounted most of the insects, and to Mr. Hugh Leech for assistance with the Order Coleoptera. Both these men are students in Entomology at the University.

G. J. SPENCER.

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1933.

1,825-333-2609