PROVINCE OF BRITISH COLUMBIA

REPORT

OF THE

PROVINCIAL MUSEUM

OF

NATURAL HISTORY

FOR THE YEAR 1936

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1937.

To His Honour E. W. HAMBER,
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 1936.

G. M. WEIR,
Provincial Secretary.

Provincial Secretary's Office,
Victoria, B.C.

PROVINCIAL MUSEUM OF NATURAL HISTORY,
VICTORIA, B.C., January 27th, 1937.

The Honourable Dr. G. M. Weir,
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, 1936, covering the activities of the Museum.

I have the honour to be,
Sir,
Your obedient servant,
F. KERMODE,
Director.

DEPARTMENT *of the* PROVINCIAL SECRETARY.

The Honourable Dr. G. M. WEIR, *Minister.*

P. WALKER, *Deputy Minister.*

PROVINCIAL MUSEUM OF NATURAL HISTORY.

Staff:

FRANCIS KERMODE, *Director.*

I. MCTAGGART COWAN, Ph.D., *Assistant Biologist.*

MARGARET CRUMMY, *Recorder.*

WINIFRED V. HARDY, *Stenographer.*

LILLIAN C. SWEENEY, *Assistant Preparator.*

J. ANDREW, *Attendant.*

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REPORT *of the*
PROVINCIAL MUSEUM OF NATURAL HISTORY
FOR THE YEAR 1936.

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, week-days, 9 a.m. to 5 p.m.; May 1st to October 31st, Sunday afternoons, 1 p.m. to 5 p.m.

The Museum is closed on all statutory holidays, except on notification through the press.

VISITORS.

The following figures show the difference between those who registered and those who were checked by the staff. While only 31,333 registered, the total of the check was 63,354.

	Registered.	Checked.
January	811	2,986
February	623	2,882
March	743	3,238
April	1,309	2,788
May	1,481	3,254
June	3,329	5,602
July	8,529	15,080
August	8,419	15,582
September	3,473	6,322
October	1,290	2,619
November	670	1,520
December	656	1,481
Totals	31,333	63,354

ACTIVITIES.

During the year 1936 the Provincial Museum was in a better position to carry on scientific work than it has been since 1916, the staff having been brought up to the strength it was prior to that date.

The Honourable the Minister of the Department having approved of the grants requested by the Director, these were embodied in the Estimates for the year 1936 and voted by the Legislature. This enabled the Director to have the staff carry on the scientific research and field work which is absolutely necessary if the Museum is to be kept up to its standard, and assist, in the many branches of natural history, the scientists, students, school-children, and numerous other visitors who pass through the building in the course of a year.

A steady increase each year has been noted in the number of visitors, approximately 14,000 more in the year 1936 than in 1935 having been recorded, as a glance at the tabulation table will show.

The collections of the Museum have been greatly augmented as will be noticed in the accession list.

Dr. H. C. Wrinch, of Hazelton, B.C., member of the Provincial Legislature for many years, upon leaving British Columbia presented his valuable anthropological collection, which he had

taken by himself in and around Hazelton. This includes many fine specimens which were not in the Museum collection representing that district.

At the request of the late Dr. J. J. Taylor, of Maple Bay, V.I., Mrs. Taylor donated a large collection of Lepidoptera (Butterflies and Moths), numbering thirty-eight boxes and containing 5,227 specimens. The Director made a special trip to obtain these, and personally conveyed them to Victoria. We are very grateful to Mrs. Taylor for the splendid donation.

Another bequest was a collection of 215 water-colour paintings of the wild flowers of Vancouver Island, drawn and painted by the late Mrs. Susan Stoker, of Duncan, V.I. These will make splendid illustrations should the Department be in a position in the future to publish a book on the wild flowers of British Columbia. When on exhibition during the summer on the main floor of the Museum they were greatly admired by every one. It is our intention to exhibit them again during the coming summer, as they give an excellent idea of the native wild flowers of Vancouver Island.

We were very fortunate in receiving from Mr. R. M. Stewart, the Provincial Constable of Atlin, his splendid collection of bird-skins, 336 specimens, which he had taken during his ten years in office in that locality. Several of these were rare species new to our catalogues. They were added to the series from Southern British Columbia previously collected and donated by Mr. Stewart, bringing the number in this collection to approximately 1,000 specimens.

The Director has been offered a large collection of mammal-skins and other scientific material, on condition that proper storage-cases for the housing of these valuable specimens is guaranteed. As the Museum at present has not sufficient space to accommodate this extra material, the offer has been left in abeyance.

Application has been made to the Public Works Department for alterations in our present building which would give adequate room for some time to come. We would then be in a position to secure this collection, as well as other valuable material, which would help to complete the study and reference collections.

Good fortune was again experienced when the Museum received from the Provincial Game Commission the long-desired specimen of a skin of a Sea-otter, taken on Grassy Island, Kyuoquot Sound, west coast of Vancouver Island, in the year 1929.

This animal, now nearly extinct along our coast-line, brought the early explorers to the North Pacific Coast of America. It was taken by them in enormous numbers in trade from the Indian tribes, and this may be regarded as the forerunner of the development of civilization on the North Pacific Coast. Our specimen will be on exhibition when the Museum has a suitable case, as it is too valuable to be handled or kept where it would be subject to deterioration.

We are very grateful to the Commissioner of British Columbia Police, Colonel J. H. McMullin, Mr. Thomas Parsons, his valued Assistant, and the many officers of the British Columbia Police, the Game Commission and Game Wardens, who keep in touch with us and gather valuable material for the Museum.

From time to time requests are made for the loan of specimens for exhibition purposes. This year the Rev. G. H. Raley, D.D., of Vancouver, who was Chairman of the Indian Affairs Committee for the Vancouver Jubilee, made application for a loan of a large number of Indian artifacts and other material relating to the aboriginal races of British Columbia. The application was favourably considered by the Deputy Provincial Secretary, and the Director was authorized to loan the material.

This exhibition of the work of the early aboriginal races of the Province was held on the fifth floor in the store of David Spencer, Ltd., Vancouver, during the summer, in honour of the Golden Jubilee of that city. It was visited by thousands of people and created a great deal of interest.

Specimens were also loaned to the Department of Agriculture for their exhibit in the Canadian Pacific Exhibition in Vancouver City in August. Mr. W. H. Currie, Assistant Director, Bureau of Information, had charge of these specimens, which have all been returned and replaced in the Museum.

The Carnegie series of lectures for school-children was reported in the Museum Report for the year 1935, the last lecture being on April 4th, 1936. For this the Museum purchased a 16-mm. projector for motion-picture films, which has become increasingly useful, both for

the Director and the Assistant Biologist in their lectures during the year, the Director giving several and the Assistant a number of others in Victoria, Nanaimo, and Alberni, all of which appear to have been greatly appreciated. A list of Dr. Cowan's lectures is given in his report.

Mr. William Gray, Inspector of Schools, North Vancouver, wrote to the Director with regard to obtaining Dr. Cowan's services for lectures in Zoology to schools in North Vancouver. Permission was readily granted, and Dr. Cowan was in Vancouver from May 25th to 29th, sometimes giving two or three lectures a day.

The Museum was fortunate this year in being able to purchase a Light Delivery Dodge truck for collecting-trips. This has made it possible to collect specimens in outlying parts of British Columbia, which otherwise would have necessitated hiring pack-horses, boats, etc. The Assistant Biologist made a trip of 2,700 miles in a short space of time to a hitherto biologically unexplored portion of British Columbia in the Ootsa Lake District. Many specimens of great value were taken by Dr. Cowan, some new records, and many first records for the Museum.

One of the outstanding exhibits of fish this year was the gift of a Moonfish, *Lampris luna*, taken at Kyuquot, Quatsino Sound, B.C., by the Kyuquot Trollers, and presented to the Museum.

This, as far as is known, has always been a very rare species on the Pacific Coast, although several have been taken this last summer. Mrs. Lillian Sweeney, of the Museum staff, made a life-size hand-coloured drawing of this specimen, which is on exhibition on the second floor, the original being preserved in a tank kept for that purpose.

Another rather rare fish from our coastal waters was the Long-finned Albacore, *Germo alalunga*, also presented by the Kyuquot Trollers.

An interesting specimen was that of an albino Loon, *Gavia immer elasson*, presented by Mr. H. E. Hilliers. This is the second albino of this species to be secured by this Department, and, strange to say, the other specimen we have was taken in the same locality at Ucluelet, thirty-seven years ago, by Mr. W. J. Sutton in 1899.

A number of museums and universities in North America from time to time request the loan of zoological and botanical specimens for study, and these requests are granted whenever possible. We are also asked for the loan of bird-skins by lecturers and others wishing to describe specimens.

Numerous letters are received from all portions of British Columbia requesting information on natural-history subjects, and large numbers of specimens are sent in to the Museum for identification. We are always willing to assist those who desire education in natural-history subjects.

To all who have donated material, and to others who have kindly assisted in the identification of specimens, the Director wishes to extend most grateful thanks.

The Director also wishes to thank the Bureau of Information for the use of several of their motion-picture films.

During the year various changes have taken place on the staff. Miss N. Stark, who had been nine years as Recorder and Botanist, resigned in May. The botanical work was carried on by Mrs. G. A. Hardy, who held this position a number of years ago.

Miss M. Hartree, stenographer, having resigned in April, the position was filled by Miss M. Crummy.

Mr. J. Andrew was given permanent employment as Attendant.

The reports of the Assistant Biologist and the Botanist of the work which has been carried out and the accessions during the year 1936 have been presented to the Director for approval.

A comprehensive report was also received from Miss M. Hartree, who was appointed by the Director the official delegate to attend the Forty-seventh Annual Conference of the Museums Association at Leeds, Yorkshire, England, July 6th to 10th, 1936.

I. McT. Cowan, Assistant Biologist, reports to the Director:—

Apart from office routine, work during the past year centred mainly about the study collections. The card-reference catalogue of the bird collection, begun last year, has been completed and the entire collection has been rearranged in accord with fourth edition of the A.O.U. check-list.

As is so often the case, many of our most valuable bird specimens are the result of the beneficence of persons interested in the Museum but not familiar with methods of taxidermy.

To ensure the permanent preservation of these specimens many of them have been relaxed, cleaned, remade, and enclosed in celophane. In this work I want to acknowledge the valuable assistance rendered by Mr. Kenneth Racey, of Vancouver, B.C.

With the assistance of Mrs. Lillian C. Sweeney, all current skull-cleaning work in connection with the study collection of mammals has been completed and in addition considerable inroads have been made in the arrears. In all, 460 skulls have been cleaned, labelled, and installed in the collection.

The Museum's collection of amphibians and reptiles has been rebottled, identified, and installed in a light-proof storage-cabinet. The display collection of fish has been reshelved to accord with current systematic arrangement.

Reports on the fauna and flora of Long Beach, V.I., Strathcona Park, and Kokanee Park were prepared for the Economic Council.

Several special studies have been carried out and the following scientific papers published:—

Nesting Habits of the Flying Squirrel *Glaucomys sabrinus*. Journal of Mammalogy, *17*, No. 1: 58–60.

Distribution and Variation in Deer (Genus Odocoileus) of the Pacific Coastal Region of North America. California Fish and Game, *22*, No. 3, July, 1936: 155–247.

Notes on Some Mammals in the British Columbia Provincial Museum, with a list of the Type Specimens of North American Recent Mammals in the Museum. Canad. Field Nat. *50*, No. 9, 145–148.

In collaboration with Mr. Kenneth Racey, Mammals of the Alta Lake Region of Southwestern British Columbia, Annual Report, British Columbia Provincial Museum, 1935, May 12th, 1936: 15–29.

A distributional list of the amphibians and reptiles of British Columbia is in manuscript form.

Educational Work.

Apart from those in the Museum series, the following lectures have been delivered:—

The Origin and Evolution of Mammals. Victoria High School Biology class, January 20th, 1936.

The Big Game of British Columbia. St. Michael's School, February 19th, 1936.

The Birds of Prey. St. Michael's School, March 11th, 1936.

Evolution and adaptation as illustrated by our small mammals. Victoria College, March, 1936.

The Art of the West Coast Indians. Garden Clubs Convention, June 4th, 1936.

Game Conservation in British Columbia. Kinsmen Club, Victoria, October 1st, 1936.

The Deer of Western North America. Nanaimo Fish and Game Protective Association, November 5th, 1936.

Fossil Man. Victoria College Science Club, November 11th, 1936.

Fossil Man. Round Table Club, Victoria, November 23rd, 1936.

The Deer of Western North America. Alberni Fish and Game Association, December 14th, 1936.

Between May 25th and 29th, fourteen illustrated lectures were delivered in the schools of North and West Vancouver, eight schools being visited.

Field-work.

Ornithological field-work on Vancouver Island has been conducted throughout the year. In this I have received the enthusiastic co-operation of Game Wardens B. Cash, of Victoria; J. W. Jones, of Saanich; and L. H. Walker, of Pender Island.

Through the valued assistance of Mr. P. W. Martin, of Victoria, several trips were made into the Strait of Juan de Fuca, on which many specimens of sea-birds were secured.

From June 17th to August 22nd field-work was conducted at Ootsa Lake, Quesnel, and in the Okanagan Valley, resulting in the securing for the Museum collections of many species of birds, mammals, and plants not hitherto represented.

Mrs. G. A. Hardy reports: The seasonal exhibition of living wild flowers during the past year was maintained by the staff, with the assistance of the following contributors, to whom

thanks are extended: C. Boyd, J. Bridgman, E. Cooke, W. Downes, Miss E. Dunnell, G. A. Hardy, Miss S. Jones, R. Lett, and A. R. Sherwood.

Identification and mounting of 446 plants for the Herbarium has brought the total number of sheets up to 10,093. Of these, 70 were collected by Mrs. Don Munday in 1928 at Mount Garibaldi; 105 were from Mr. G. N. Jones, Seattle, Washington; and 249 were collected by Dr. and Mrs. I. McT. Cowan at Anarchist Mountain, Quesnel, and Ootsa Lake, B.C. These major accessions included many species new to our Herbarium.

Several collections have been identified for schools and collectors throughout the Province, and many local students have been assisted in their botanical studies, 664 plants being brought in for identification.

ACCESSIONS TO THE MUSEUM.

To December 31st, 1936, the catalogued collections in the Museum number as follows: Anthropological and ethnological, 4,875; botanical, 10,093; ornithological, 5,999; mammalogical, 1,776.

Anthropological and Ethnological Collections.

By gift 83

Salishan (Island).

Miss Denniston, V.I., B.C. Spear-point, fish-hook point.
A. J. Knowlton, V.I., B.C. Adze-head.
Alan Jupp, Saanich, V.I., B.C. Lower jaw.
J. N. Evans, Cowichan Lake, V.I., B.C. Stone hammer, stone chisel, stone knife, 6 stone spear-points.
Capt. J. S. Mattern, French Creek, V.I., B.C. Skull.
F. G. Risser, Saltspring Island, B.C. Stone hammer.
J. R. Ringwood, Saltspring Island, B.C. Fish-spear, slave-killer, slate knife, elk-horn handle, 6 spear-points.
Ray Alf, Wallace Island, Ganges, B.C. Two skulls.
E. B. Reid, Saturna Island, B.C. Stone labret.

Salishan (Coast and Interior).

M. Lamb, Burnaby, B.C. Stone paint-dish.
R. I. McPhee, Lillooet, B.C. Indian hemp.
Constable R. N. Clerke, B.C. Provincial Police, Vernon, B.C. Skull.
T. W. S. Parsons, Assistant Commissioner, B.C. Provincial Police, Victoria, B.C. Slate knife from Neskain, B.C.

Bella Coola.

J. H. Ryan, Dean Channel, B.C. Three stone charms.

Haidan.

Dr. H. C. Wrinch, Hazelton, B.C. Stone mortar from Q.C.I., B.C.

Tsimshian.

E. R. Oatman, Anyox, B.C. Canoe-baler.

Athapascan.

Dr. H. C. Wrinch, Hazelton, B.C. Eighteen stone adze-heads, 2 stone mauls, 4 stone war-club heads, 1 carved sandstone war-club, 2 stone chisels, 4 pestles, 1 hand-hammer, 5 skinning-tools, 2 sinkers, 1 carved stone bird, 3 pot-hole stones, 1 mortar.

Tahltan.

Constable J. V. Boys, per Assistant Commissioner T. W. S. Parsons, B.C. Provincial Police. Stone paint-mortar, obsidian chip.

Botanical Collections.

By gift 268

C. Wilson, Victoria, B.C. *Filix fragilis.*
Miss N. Stark, Victoria, B.C. *Pseudotsuga taxifolia.*
G. A. Hardy, Victoria, B.C. *Viola tricolor* var. *arvensis.*
J. Lohbrunner, Victoria, B.C. *Pentstemon ovatus.*
V. B. Harrison, Nanaimo, B.C. *Fungus.*
Mrs. R. Lett, Victoria, B.C. *Silybum marinum; Allium attenuifolium.*
Mrs. C. Portsmouth, Mission City, B.C. *Monotropa uniflora.*
E. Cooke, Victoria, B.C. *Veratrum viride; Centaurea scabiosa; Heuchera chlorantha; Betula* sp.
R. A. Studhalter, Lubbock, Texas. *Riella americana.*
Miss S. Jones, Victoria, B.C. *Phacelia linearis.*
A. Budd, Swift Current, Sask. *Mentzelia lævicaulis.*
Mrs. W. J. McDonald, Bamfield, B.C. *Empetrum nigrum; Vaccinium uliginosum.*
K. Racey, Vancouver, B.C. *Quercus Garryana; Polypodium vulgare; Cryptogramma acrostichoides; Asplenium Trichomanes; Selaginella* sp.; *Companula uliginosa; Viola adunca.*
R. Lett, Victoria, B.C. *Picea Breweriana.*
Mrs. I. McT. Cowan, 244 specimens.

By the staff—

I. McT. Cowan 5
Miss N. Stark 1

Zoological Collections.

Mammals received and catalogued 216
Birds received and catalogued 751
Amphibians and Reptiles received and catalogued 6
Fish received and accessioned 4
Insects and arachnids received and accessioned 5,254

Mammals.

By gift 64

D. Leavens, Vedder Crossing, B.C. Two Creeping Voles (*Microtus oregoni serpens*); 1 Cascade Squirrel (*Sciurus douglasi cascadensis*); 1 Shrew Mole (*Neurotrichus g. gibbsii*); 1 Townsend's Vole (*Microtus t. townsendi*); 1 Mountain Lion (*Felis concolor oregonensis*); 2 Streator's Weasels (*Mustela cicognani streatori*); 1 Pack Rat (*Neotoma cinerea occidentalis*); all in the flesh.
P. W. Martin, Victoria, B.C. Two Mink (*Mustela vison evagor*); 6 V.I. Shrews (*Sorex vagrans vancouverensis*); 3 V.I. Meadow Mice (*Microtus townsendi tetramerus*); 8 White-footed Mice (*Peromyscus maniculatus angustus*); 1 V.I. Red Squirrel (*Sciurus hudsonicus vancouverensis*).
Mr. Lothian, Victoria, B.C. One Mountain Sheep skull from Tranquille Creek, B.C.
J. Zarelli, Sointula, B.C. One Pacific Racoon skull (*Procyon lotor pacifica*); 27 Mink skulls.
R. I. McPhee, Lillooet, B.C. Three Marten skulls (*Martes c. caurina*); 1 Mule Deer skull; 1 Pack Rat skull; 1 Chipmunk skull.
Game Warden B. Cash, Victoria, B.C. One cub Black Bear.
K. Racey, Vancouver, B.C. One Wandering Shrew (*Sorex v. vagrans*); 1 Dusky Shrew (*Sorex obscurus setosus*); 1 Coast Deer (*Odocoileus hemionus columbianus*).
Duncan Craig, Parksville, B.C. Fœtal cougar.

By the staff—

I. McT. Cowan 126

Birds.

By gift 517

P. W. Martin, Victoria, B.C. One hundred and sixty-seven specimens of birds from Victoria and vicinity, including several rarities.
E. Cooke, Victoria, B.C. One Screech Owl, in the flesh.
Game Warden B. Cash, Victoria, B.C. One Sooty Grouse, in the flesh.
K. Racey, Vancouver, B.C. One Nighthawk (*Chordeiles m. minor*); 1 Savannah Sparrow (*Passerculus sandwichensis* ssp.).
H. E. Hilliers, Ucluelet, B.C. One Albino Loon (*Gavia immer elasson*), in the flesh.
D. Leavens, Vedder Crossing, B.C. Five Pigmy Owls (*Glaucidium gnoma californicum*).
J. Ronayne, Pemberton Meadows, B.C. One Ruddy Duck.
C. P. Mellander, Victoria, B.C. One Pileated Woodpecker, in the flesh.
J. B. Tighe, Sooke Lake, V.I., B.C. Three American Mergansers, in the flesh.
Game Warden J. W. Jones, Saanich, V.I., B.C. Adult Goshawk, in the flesh.
Constable R. M. Stewart, B.C. Provincial Police, Atlin, B.C. Three hundred and thirty-six specimens of birds, including several rare species and several new to our collections.
J. G. French, Sooke, V.I., B.C. One Rhinoceros-billed Auklet.

By the staff—
I. McT. Cowan 234

Amphibians and Reptiles.

By gift 12
C. L. Harrison, Victoria, B.C. Two Garter Snakes (*Thamnophis ordinoides vagrans*).
J. B. Tighe, Sooke Lake, V.I., B.C. One Garter Snake (*Thamnophis sirtalis concinnus*).
I. McT. Cowan, Victoria, B.C. Red Salamander (*Ensatina eschscholtzii*) from Hope, B.C.
K. Racey, Vancouver, B.C. One Long-toed Salamander (*Ambystoma macrodactylum*), 1 *Thamnophis ordinoides*, 1 *Thamnophis sirtalis;* and from California the following: 1 *Crotalus cerastes*, 1 *Sceloperus*, 2 *Callisaurus*, 1 *Cnemidophorus*, 1 *Crotaphytus*.

By the staff—
I. McT. Cowan 2

Fish.

By gift 3
Kyuquot Trollers, Quatsino Sound, V.I., B.C. One Moonfish (*Lampris luna*); 1 Long-finned Albacore (*Germo alalunga*).
W. Downes, Victoria, B.C. Eight Sticklebacks.
R. W. Horsfield, Qualicum, V.I., B.C. One Sculpin (*Oxycottus acuticeps*).

By the staff—
I. McT. Cowan 1

Insects and Arachnids.

By gift 5,253

By the staff—
F. Kermode 1

Spiders.

D. S. Dawes, R. Marriott, K. Moores, W. R. Watson, J. Peterson, Miss E. Lewis, V. Ebbs-Canavan, Miss Woodward.

Orthoptera.

E. J. Taylor, Langford, V.I., B.C.

Neuroptera.

R. Horsfield, Sooke, V.I., B.C.

Coleoptera.

E. Cooke, J. Edgar, G. Marriott, M. Hutchison, M. Moody, D. Leavens, J. P. Peterson, G. Carr.

Lepidoptera.

Dr. J. J. Taylor, Maple Bay, V.I., B.C. A named collection of 5,227 specimens from British Columbia, Europe, and South America.

B. S. Heisterman, A. Walton, E. Young, A. J. H. Wooton, Mrs. Mowatt.

Hymenoptera.

J. McCartney, Rutland, B.C.

Marine Invertebrates.

By gift—

Mrs. A. R. Grant, Berkeley, Calif. Named collection of the Acmæa of the Pacific Coast of North America.

I. McT. Cowan, Victoria, B.C. Named collection of the Acmæa of British Columbia.

PALÆONTOLOGICAL COLLECTIONS.

By gift—

Lawrence Baker, Victoria, B.C. Fossilized wood.

G. E. Bernard, Duncan, B.C. Mesozoic mollusc (*Hamites* sp.).

A. Vowles, Sooke, B.C. Mollusc (? Lytoceras).

THE LIBRARY.

The reorganization and cataloguing of the books and pamphlets which comprise the working library of the Museum is still proceeding. With the different system of cataloguing now being used, it will be some time before the whole library is catalogued under the new system. The following publications were received during the year:—

Publications received during the year (total)	410
By exchange—	
Acadian Entomological Society, Truro, N.S.	2
American Midland Naturalist, Notre Dame, Ind.	1
American Museum of Natural History	1
Art, Historical, and Scientific Association of Vancouver, B.C.	1
Australian Museum, Sidney, Australia	4
Bernice P. Bishop Museum, Honolulu, T.H.	1
Biological Board of Canada, Ottawa	10
Biological Society of Washington	2
Boston Society of Natural History	1
Bristol Museum & Art Gallery, Bristol, England	1
British Columbia Government Publications	3
Brooklyn Botanical Garden, Brooklyn, N.Y.	1
Brooklyn Children's Museum, Brooklyn, N.Y.	7
Buffalo Society of Natural Sciences, Buffalo, N.Y.	1
California Academy of Sciences, San Francisco	1
Cambridge University Library, Cambridge, England	1
Cardiff Naturalists' Society, Cardiff, Wales	2
Charleston Museum, Charleston, South Carolina	1
Chicago Academy of Sciences, Chicago, Ill.	3
Cleveland Museum of Natural History, Cleveland, Ohio	5
Colorado Museum of Natural History, Denver, Colo.	3
Cornell University, Ithaca, N.Y.	22
Division of Fish and Game of California	3
Dominion Government Publications, Ottawa	31
Emergency Conservation Committee, New York	1
Field Museum of Natural History, Chicago, Ill.	9
Goteborgs Museum, Gothenburg, Sweden	23

By exchange—*Continued.*

Illinois Natural History Survey, Urbana, Ill.	1
Indiana University, Bloomington, Ind.	4
Instituto Forestal de Investigaciones Y Experiencias, La Moncloa, Madrid, Spain	2
Kansas Academy of Science, Manhattan, Kansas	6
Laval University, Quebec	4
Leicester Museum, Leicester, England	4
Library of Congress, Washington, D.C.	1
Lloyd Library, Cincinnati, Ohio	1
McGill University, Montreal	1
Manchester Museum, Manchester, England	4
Missouri State Museum, Jefferson City, Mo.	22
Direccion de Paseos Publicos, Montevideo, Paraguay	1
Museum of Fine Arts, Boston, Mass.	3
National Museum of Ireland, Dublin	2
National Museum of Wales, Cardiff	1
Newark City, New Jersey	6
New York Zoological Society, New York	11
Nova Scotian Institute of Science, Halifax, N.S.	2
Ohio Agricultural Experiment Station, Wooster, Ohio	6
Oxford University Press, Oxford, England	8
Pacific Northwest Bird and Mammal Society, Seattle, Wash.	2
Peabody Museum, Yale University	6
Philadelphia Academy of Natural Sciences	1
Queen Victoria Memorial, Salisbury, Rhodesia	1
Royal Geographical Society of Australia, Adelaide	1
San Diego Society of Natural History, California	10
Santa Barbara Museum of Natural History, California	2
Smithsonian Institution, U.S. National Museum, Washington, D.C.	23
State College of Washington, Pullman, Washington	8
Texas Technological College, Lubbock	2
University of California, Berkeley, California	35
University of Colorado, Boulder, Colo.	3
University of Montreal, Montreal, Que.	3
University of Nebraska, Lincoln, Neb.	7
University of Puerto Rico, Rio Piedras, P.R.	5
University of Toronto, Toronto, Ontario	3
University of Utah, Salt Lake City, Utah	1
University of Washington, Seattle, Washington	3
University of Wyoming, Laramie, Wyoming	8
Wagner Free Institute of Science, Philadelphia, Pa.	4
Zoological Society of Philadelphia	1

By subscription and purchase—

American Association of Museums, Washington, D.C.	20
American Ornithologists' Union, Lancaster, Pa.	4
British Museums Association, South Kensington, England	13
Cooper Ornithological Club, Berkeley, California	6
Handbook of Northwest Flowering Plants, Helen M. Gilkey	1
Ferns of the Northwest, Theodore Frye	1
Ecology and Life History of the Porcupine, Walter P. Taylor	1
Essays in Anthropology, University of California Press	1
Our Insect Friends and Foes and Spiders, National Geographic Society	1
Moss Flora of North America, A. J. Grout, Vermont	2

We are indebted to the following for scientific separates received during the year: Dr. Carl L. Hubbs, Mr. L. M. Klauber, Dr. Alden H. Miller, Mr. S. W. Geiser, Dr. W. K. Lamb, and Mr. R. A. Studhalter.

A REVIEW OF THE REPTILES AND AMPHIBIANS OF BRITISH COLUMBIA.

By Ian McTaggart Cowan.

Introduction.

The first attempt to catalogue the reptiles and amphibians occurring within the boundaries of the Province of British Columbia was that of John Keast Lord in the appendix to his "The Naturalist in Vancouver Island and British Columbia," published in 1866. In this he names sixteen species. Unfortunately, Lord was notoriously careless concerning geographic location and his records have to be discounted accordingly.

In 1898 John Fannin, in "A Preliminary Catalogue of the Collections of Natural History and Ethnology in the Provincial Museum," lists eight reptilian species and subspecies and seven amphibian species as included in the fauna of the Province.

No further attempt was made to catalogue our amphibians and reptiles until that of Logier in 1932, in which twenty-eight species and subspecies are listed.

While much of British Columbia is still *terra incognita* in so far as knowledge of our vertebrate fauna is concerned, most of the least-known territory lies north of latitudes favourable for habitation by reptiles and amphibians. Particularly is this true with regard to reptiles. For these the northernmost record is but a few minutes north of the 53rd parallel. Accordingly, while it is realized that future collecting will extend our knowledge of the distribution of many forms, and perhaps add a few new names to the list, it is thought that a summation of our knowledge to date, while making no claims to finality, may serve to stimulate investigation.

The prime basis for the present *Review of the Reptiles and Amphibians of British Columbia* is comprised in the collections of specimens and field-notes in the British Columbia Provincial Museum. In addition, reference has been made to every published account known to me dealing as a whole or in part with the reptiles and amphibians of the Province.

Where genera have been recently revised I have adopted the conclusions of such revisers. In certain cases, however, where the evidence at my disposal has not justified such conclusions, I have expressed my own independent judgment. Thus a few names long in use, upon the examination of further material, and re-examination of the original material upon which the identifications were based, have proved to be untenable and have been relegated to synonomy.

In certain instances it has not been possibble for me to refer to the original description. In all such cases the citation is included in quotation-marks. Little attempt has been made to supplement original designations of type locality.

Under "synonyms" are listed the scientific and vernacular names other than the accepted ones that have been applied to the species and races concerned. Such synonyms apply only to the species and races as occurring in British Columbia. Similarly, where the term "part" is subtended it indicates that the name it follows was also applied to another species or race occurring in British Columbia.

In discussing the distribution of each form I have first given the general boundaries as known; then cited localities from which I have examined specimens. For the most part such specimens are in the Provincial Museum collections. Because the number of localities represented are in most cases few, I have next listed all the localities, other than those already mentioned, from which the form has been recorded, together with the authority for the record.

In the present review twenty-nine species and subspecies of reptiles and amphibians are included; two other forms are listed as being of uncertain occurrence.

Salamanders	9
Frogs	4
Toads	3
Lizards	2
Horned Toads	1
Snakes	7
Turtles	3
Total	29

I wish particularly to acknowledge here the assistance rendered by Mr. Henry S. Fitch, of the Museum of Vertebrate Zoology, Berkeley, California, with whom I have discussed certain

features in the distribution of *Thamnophis ordinoides;* Dr. G. M. Smith, of the Department of Zoology, University of British Columbia, Vancouver, B.C., who has made available specimens of urodeles collected by her; and by Dr. R. M. Anderson and Mr. C. L. Patch, National Museum of Canada, through loan of specimens.

Triturus torosus (Eschscholtz).

PACIFIC COAST NEWT.

Original Description.—"*Triton torosus* Eschscholtz, Zool. Atlas, Pt. 5, 1833: 12, pl. XXI., fig. 15."

Type Locality.—Central California "probably near the coast, either at San Francisco or between San Rafael, Marin County and Fort Ross, Sonoma County" (Slevin, 1928: 22).

Synonyms.—*Taricha torosus,* Lord, 1866, *2:* 308; *Diemyctylus torosus,* Fannin, 1898: 58; *Notophthalmus torosus,* Patch, 1922: 75.

Distribution.—Canadian Zone of the Pacific Coast region throughout the length of the Province, east in the south at least to the watershed divide in the Cascade Mountains, west to include Vancouver Island and certain of the smaller coastal islands. Specimens examined from Cowichan, Goldstream, Victoria, Nanaimo, and Tofino, on Vancouver Island; from Bella Coola, North Vancouver, Hope, and Seton Creek, in the Lillooet District, on the mainland. Further records from Hatzic (Fannin, 1898), Hagensborg and Ocean Falls (Patch, 1922), Newcastle Island (Logier, 1932), and Metlakatla.

Ambystoma macrodactylum Baird.

LONG-TOED SALAMANDER.

Original Description.—"*Ambystoma macrodactyla* Baird, Journ. Acad. Nat. Sci. Phila., Ser. 2, *1,* 1849: 283, 292."

Type Locality.—Astoria, Oregon.

Synonyms.—*Amblystoma macrodactylum,* Fannin, 1898: 58; *Ensatina eschscholtzii,* Hardy, 1926: 23 (part).

Distribution.—From the southern boundary north at least to the Stikine River and from the Rocky Mountains west at least to the mainland coast. Not known from any of the coastal islands. It inhabits life-zones from Transition to Alpine Arctic. Specimens examined from Creston, Agassiz, Huntingdon, Okanagan Landing, Cranbrook, Kamloops, Penticton, Salmon Arm, and Garibaldi. Reported also from East Fork of Moose River (Hollister, 1912); Hatzic (Fannin, 1898); Hagensborg, Watson Lake, and Bella Coola (Patch, 1922); Stikine River at Sawmill Lake, 4 miles north of Telegraph Creek (Slevin, 1928); Midday Valley and Paul Lake, near Kamloops (Logier, 1932); Stanley and Vancouver (G. M. Smith, *in lit.*).

Ambystoma gracile (Baird).

NORTHWESTERN SALAMANDER.

Original Description.—*Siredon gracilis* Baird, Rep. Pac. R.R. Surv., *X.,* 1859: 13, pl. XLIV., fig. 2.

Type Locality.—Cascade Mountains, near latitude 40°.

Synonyms.—*Amblystoma paroticum* Baird, Proc. Acad. Nat. Sci. Phila., 1867 (1868): 200 (Type locality, Chilliwack Lake, British Columbia); *Ambystoma paroticum,* Patch, 1922: 76; Hardy, 1926: C 22; Slevin, 1928: 26.

Distribution.—South-western British Columbia, including Vancouver Island. Occurs from sea-level to timber-line in Canadian and Hudsonian zones. Specimens examined from Bella Coola, Victoria, Nanaimo, and Holyburn Ridge and Black Mountain in North Vancouver. Reported also from Chilliwack Lake (Baird, 1868); Hagensborg (Patch, 1922); Burnaby Lake, Stanley Park, Vancouver (G. M. Smith *in lit.*); Brent's Lake, near Summerland (Logier, 1932).

Ambystoma decorticatum Cope.

BRITISH COLUMBIA SALAMANDER.

Original Description.—"*Amblystoma decorticatum* Cope, Proc. Amer. Philos. Soc., 1886: 522."

Type Locality.—Port Simpson, British Columbia.

Synonyms.—*Chondrotus decorticatus* Cope, Amer. Naturalist, 1887: 88.

Distribution.—Restricted to the coastal wet belt north at least to Port Simpson. Specimens examined from Prince Rupert. Recorded also from Chillinae Valley on Tamitly Mountain, Metlakatla, and Bella Coola (Dunn, 1930).

Ambystoma tigrinum (Green).

TIGER SALAMANDER.

Original Description.—"*Salamandra tigrina* Green, Journ. Acad. Nat. Sci. Phila. *V.*, 1825: 116, pl. 25, fig. 7."

Type Locality.—Near Moorestown, New Jersey.

Distribution.—Known from a single specimen taken June 11th, 1929, at Midway, B.C., by H. M. Laing and now number 1528, Nat. Mus. Canada.

Dicamptodon ensatus (Eschscholtz).

PACIFIC GIANT SALAMANDER.

Original Description.—"*Triton ensatus* Eschscholtz, Zoologischer Atlas, Pt. 5, 1883: 6, pl. XXII."

Type Locality.—Central California.

Distribution.—This species just enters the border of the Province in the extreme south-west corner. It is not known to occur north of the mouth of the Fraser River. Recorded from Chilliwack Lake (Cope, 1889), Sumas Lake, and Sweltzer Creek, near Cultus Lake (Logier, 1932).

Plethodon intermedius Baird.

RED-BACKED SALAMANDER.

Original Description.—*Plethodon intermedius* Baird, Proc. Acad. Nat. Sci. Phila., 1857: 209.

Type Locality.—Fort Tejon, California.

Distribution.—Heavily wooded portions of south coastal British Columbia, including Vancouver Island. Northern and eastern limits unknown. Specimens examined from Sooke, Port Renfrew, Goldstream, Brentwood, and Mackenzie Bay, on Vancouver Island. Reported also from Ucluelet, and Hope (Patch, 1929), Cultus Lake (Logier, 1932), and Burnaby (G. M. Smith *in lit.*).

Ensatina eschscholtzi Gray.

RED SALAMANDER.

Original Description.—*Ensatina Escholtzii* Gray, Cat. Amph. Brit. Mus., Pt. 2, 1850: 48.

Type Locality.—California.

Distribution.—The lower Fraser Valley in the extreme south-western corner of the Province; possibly also on Vancouver Island. The only specimen examined is from Hope, but the species is recorded also from Cultus Lake (Logier, 1932) and Vancouver (G. M. Smith *in lit.*). A record for Agassiz (Hardy, 1926) was later (Hardy, 1927) corrected as referring to *Ambystoma macrodactylum*. There is a record by Hardy (1926: 23) of this species from Victoria, on Vancouver Island; unfortunately this specimen has since been lost.

Aneides ferreus Cope.

CLOUDED SALAMANDER.

Original Description.—*Anaides ferreus* Cope, Proc. Acad. Nat. Sci. Phila., 1869: 109.

Type Locality.—Fort Umpqua, Douglas County, Oregon.

Distribution.—Known to occur only on Vancouver Island and certain of the smaller islands contiguous thereto. Specimens examined from Mount Douglas near Victoria, Sidney, Union, Sooke, and Tofino; reported from Mount Finlayson and Denman Island (Slevin, 1928), Nanaimo (Logier, 1932), and Hornby Island (G. M. Smith *in lit.*).

Scaphiopus hammondi Baird.

WESTERN SPADEFOOT.

Original Description.—*Scaphiopus hammondii* Baird, Rep. Pac. R.R. Surv. *X.*, 1859, pt. IV., No. 4: 12, pl. 28, figs. 2a and 2d.

Type Locality.—Fort Reading, California.

Synonyms.—*Spea hammondii intermontana*, Fannin, 1898: 58.

Distribution.—Extremely arid portions of the Upper Sonoran and Transition zones in the Okanagan and Similkameen valleys. Specimens examined from Penticton. Reported also from Vernon (Fannin, 1898), Summerland (Logier, 1932), Keremeos, and Okanagan Landing (Patch, 1929).

Bufo boreas boreas Baird and Girard.

NORTHWESTERN TOAD.

Original Description.—*Bufo boreas* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 174.

Type Locality.—Columbia River and Puget Sound.

Synonyms.—*Bufo columbiensis*, Fannin, 1898: 58.

Distribution.—Found throughout the Province from Atlin to the International Boundary and from the Rocky Mountains west to include Vancouver Island and Queen Charlotte Islands. In this area it occupies all the life-zones from Upper Sonoran to Alpine Arctic.

Specimens have been examined from Goldstream, Nanaimo, Cowichan Lake, and Alberni Valley, on Vancouver Island, but it is known to occur north to Cape Scott. On the mainland specimens examined from Hanceville, junction of Chilko and Chilcotin rivers, Barkerville, Indianpoint Lake, Quesnel, Bella Coola, Garibaldi, Seton Creek, Okanagan Landing, Okanagan Falls, Cranbrook, Waugh Creek, Creston, Ootsa and Eutsuk lakes. Other selected localities are Moose Lake and vicinity in the Yellowhead Pass region (Hollister, 1912); Gabriola Island, Masset and Clew on Queen Charlotte Islands, Stikine River at Telegraph Creek (Slevin, 1928).

Hyla regilla Baird and Girard.

PACIFIC TREE-TOAD.

Original Description.—*Hyla regilla* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 174.

Type Locality.—" Sacramento River, in Oregon and Puget Sound."

Distribution.—South-central and south-western parts of the Province, including Vancouver Island. On the mainland north at least to Eutsuk Lake. Specimens examined from Tofino, Lost Lake, Mount Douglas near Victoria, Mount Tolmie, and Florence Lake, on Vancouver Island; from North Vancouver, Jervis Inlet, Vernon, and Okanagan Landing, on the mainland. Recorded also from Hatzic (Fannin, 1898); Chilliwack Lake and Sumas Prairie (Lord, 1866); Beak Lake, Kaslo, Comox Lake, Union Bay, Taylor Bay, and Gabriola Island (Slevin, 1928); Christina Lake, Summerland, Penask Lake, Paul Lake, Nanaimo, and Newcastle Island (Logier, 1932). Seen but not taken on Eutsuk Lake (Cowan MSS., 1936).

Rana pipiens Schreber.

LEOPARD FROG.

Original Description.—*Rana pipiens* Schreber. " Naturforscher, XVIII., 1782: 185, pl. IV."

Type Locality.—Pennsylvania.

Distribution.—This frog may be of regular occurrence in south-eastern parts of the Province, but I have examined specimens from one locality only, Loon Lake, 12 miles north of Newgate, B.C. Two specimens from this locality in collection of Nat. Mus. Canada.

Rana aurora aurora Baird and Girard.

RED-LEGGED FROG.

Original Description.—*Rana aurora* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 174.

Type Locality.—Puget Sound.

Synonyms.—*Rana agilis aurora*, Fannin, 1898: 58.

Distribution.—The south coastal region, including Vancouver Island; northern limit unknown. Not known from east of the summit of the coast mountains. Specimens examined from Florence Lake, Renfrew, and Cowichan Lake, on Vancouver Island; Vancouver and

Vedder Crossing, on the mainland. Recorded also from Nanaimo (Logier, 1932); Hatzic (Fannin, 1898).

Rana cantabrigensis Baird.

NORTHERN WOOD FROG.

Original Description.—*Rana cantabrigensis* Baird, Proc. Acad. Nat. Sci. Phila., *VII.*, 1854: 62.
Type Locality.—Cambridge, Mass.
Synonyms.—*Rana cantabrigensis latiremis*, Patch, Copeia, *3*, 1922: 17; Hardy, 1926: C 24.
Distribution.—Found in the wooded northern portion of the Province south in the west to the vicinity of Clinton. Recorded from Atlin, Hazelton, and Kispiox Valley, 23 miles north of Hazelton (Slevin, 1928), and from Meadow Lake, near Clinton (Patch, 1922).

Rana pretiosa Baird and Girard.

WESTERN SPOTTED FROG.

Original Description.—*Rana pretiosa* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1853: 378.
Type Locality.—Puget Sound.
Synonyms.—*Rana temporaria pretiosa*, Fannin, 1898: 58; *Rana pretiosa lutieventris*, Hardy, 1926: C 23.
Distribution.—Widely distributed from Lake Bennett in the north, south to the International Boundary, from the Rocky Mountains west to the summit of the Cascade and coastal mountains. Not yet found on the mainland coast or the coastal islands. Specimens examined from Hanceville, Okanagan Lake, Vernon, Penticton, Daisy Lake, Seton Creek, and Loon Lake, near Newgate. Reported from Sicamous and Field (Fannin, 1898); Stikine River at Sawmill Lake, Flood Glacier, and Dokdaon Creek; Kootenay Lake, Hazelton, and Lake Bennett (Slevin, 1928); and from Moose Lake and North Fork of Moose River (Hollister, 1912).

Phrynosoma douglassi douglassi (Bell).

PIGMY HORNED TOAD.

Original Description.—*Agama Douglassii* Bell, Trans. Linn. Soc. London, *XVI.*, 1828 (1833): 105, pl. X.
Type Locality.—"In ora occidentali Americae Borealis ad ripas fluminis Columbiae."
Synonyms.—*Tapaya Douglassii*, Lord, 1866, *2:* 302.
Distribution.—Upper Sonoran Zone in south-central British Columbia. The only known specimens are two in the Provincial Museum taken at Osoyoos.

Gerrhonotus principis (Baird and Girard).

NORTHERN ALLIGATOR LIZARD.

Original Description.—*Elgaria principis* Baird and Girard, Proc. Acad. Nat. Sci. Phila., 1852: 175.
Type Locality.—Oregon and Puget Sound.
Synonyms.—*Elgaria principis*, Lord, 1866, *2:* 302; *Elgaria grandis*, Lord, 1866, *2:* 307.
Distribution.—Widely distributed over the southern parts of the Province, from the East Kootenay west to include Vancouver Island; north on the coast at least to Stewart Island; but northern limits unknown. Closely confined to the Transition Zone. Specimens examined from Goldstream, Mount Newton near Saanichton, Mount Tolmie, and Errington, on Vancouver Island; from Okanagan Landing, Creston, Hope, Vedder River, Huntingdon, and North Vancouver, on the mainland; Bowen Island, Gambier Island, and Passage Island. Known also from Harrison Lake, and Tulip Creek on Lower Arrow Lake (Logier, 1932).

Eumeces skiltonianus (Baird and Girard).

WESTERN SKINK.

Original Description.—*Plestiodon skiltonianum* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 69.

Type Locality.—Oregon.
Synonyms.—*Plestiodon skiltonianus,* Van Denburgh, 1922: 583.
Distribution.—Arid Transition Zone of south-central British Columbia. Specimens examined from Sirdar, Nelson, and Okanagan Falls; reported by Patch (1934) from Vaseaux Lake and by Kermode (1922) from Edgewood. Reported, doubtless erroneously, from Vancouver Island by Boulenger (1887); quoted by Van Denburgh (1922).

Charina bottæ bottæ (Blainville).

PACIFIC RUBBER SNAKE.

Original Description.—"*Tortrix bottæ* Blainville, Nouv. Ann. Mus. Hist. Nat., *IV.*, 1835: 289, pl. XXVI., figs. 1–1b."
Type Locality.—California.
Synonyms.—*Wenona Isabella,* Lord, 1866: 305; *Wenona plumbea,* Lord, 1866: 305.
Distribution.—Has been taken at widely scattered points throughout the Canadian and Transition zones of Southern British Columbia. Specimens seen from Nelson, Creston, and Harrison Lake; recorded also from Chilliwack region (Lord, 1866), Summerland, Vernon, Okanagan Landing, Princeton, and Keremeos (Logier, 1932). The record for Vancouver Island (Lord, 1866) has never been confirmed and is no doubt an error.

Coluber constrictor mormon Baird and Girard.

WESTERN YELLOW-BELLIED RACER.

BLUE RACER.

Original Description.—*Coluber mormon* Baird and Girard, Stansbury's Expl. Great Salt Lake, Appendix C. Rept., 1852: 351.
Type Locality.—Valley of the Great Salt Lake, Utah.
Synonyms.—*Bascanion vetustus,* Lord, 1866: 3, 304.
Distribution.—Arid Transition Zone in the Okanagan, Similkameen, and Fraser valleys; east at least to Midway, west to Seton Lake, and north at least to Kamloops. Specimens examined from 5 miles north of Kamloops on east side of North Thompson River, Vernon, Okanagan Falls, Vaseaux Lake, Seton Creek, and Seton Lake. Logier (1932) records specimens from Keremeos and Marron Lake. Lord's (1866) mention of the species from Sumas and Chilliwack regions in light of subsequent work is apparently erroneous.

Pituophis catenifer deserticola Stejneger.

DESERT GOPHER SNAKE.

Original Description.—*Pituophis catenifer deserticola* Stejneger, N. Am. Fauna No. 7, 1893: 206.
Type Locality.—Panamint Mountains, Jackass Spring, Calif.
Synonyms.—*Petuophis Wilkesii,* Lord, 1866: 307 (part).
Distribution.—Seemingly confined to the Arid Transition Zone in the Okanagan, Similkameen, and Fraser valleys; north at least to Kamloops and west to the vicinity of Lillooet (Cowan MSS.); eastern limits unknown. Specimens examined from Okanagan Falls, Vaseaux Lake, Okanagan Landing. Recorded from Keremeos, Green Lake, and Kaleden (Logier, 1932), and Vernon (Fannin, 1898).
Remarks.—Van Denburgh and Slevin (1919) and Van Denburgh (1922) do not record *P. catenifer* from British Columbia, but state that Washington specimens seem to approach *heermannii* (Hallowell) rather than *deserticola.* British Columbia specimens at hand seem more properly referable to *deserticola.* Pending further revision of the genus we are accordingly referring our material to this race.

Crotalus viridis oreganus Holbrook.

PACIFIC RATTLESNAKE.

Original Description.—*Crotalus oreganus* Holbrook, N. Amer. Herpet., Ed. 1, *4,* 1840: 115, pl. 29.
Type Locality.—Banks of the Oregon or Columbia River.
Synonyms.—*Crotalus oreganus,* Logier, 1932: 33 (*see* Klauber, 1936: 194).

Distribution.—Arid Transition Zone of Okanagan, Similkameen, and Thompson valleys; east to vicinity of Bridesville, north at least to Tranquille (Cowan MSS.), west down the valley of the Thompson River to the junction of that river with the Fraser at Lytton. Known to occur at a point on the east bank of the Fraser 30 miles north of Lytton. Not known on the west side of the Fraser River. (Information by R. I. McPhee.) Specimens examined from Okanagan Landing, Vaseaux Lake, and Ashcroft; reported by Logier (1932) from Keremeos, Fairview, Marron Lake, Westbank, and Vernon.

Thamnophis ordinoides ordinoides (Baird and Girard).

PUGET GARTER SNAKE.

Original Description.—*Tropidonotus ordinoides* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 176.

Type Locality.—Puget Sound.

Synonyms.—*Eutainia leptocephala,* Lord, 1866: 306; *Thamnophis leptocephala,* Fannin, 1898: 58.

Distribution.—South coastal British Columbia, including Vancouver Island and certain islands in the Gulf of Georgia. Confined to the west slope of the coast mountains; north to the vicinity of Bella Coola. Specimens examined from Thetis Lake, Mill Bay, Esquimalt, Victoria, Sooke, Metchosin, Vancouver, and New Westminster. Known also from Atnarko (Patch, 1922); Lillooet River Valley, Lund, Tahsis Canal and Friendly Cove on Nootka Sound, Golden Eagle Mine near Alberni, Alberni Valley, and Union Bay (Van Denburgh, 1922); Nanaimo and Fraser Valley (Logier, 1932). As regards ecological distribution, this snake inhabits brushy areas and open woods rather than beaches.

Thamnophis ordinoides vagrans (Baird and Girard).

WANDERING GARTER SNAKE.

Original Description.—"*Eutainia vagrans* Baird and Girard. Cat. N. Am. Rept. Pt. 1, Serp., 1853: 35."

Type Locality.—California.

Synonyms.—*Thamnophis leptocephala,* Fannin, 1898: 58 (part); *Thamnophis elegans,* Fannin (*loc. cit.*); *Thamnophis ordinoides elegans,* Logier, 1932: 331; *Thamnophis ordinoides biscutatus,* Logier, 1932: 330.

Distribution.—In the interior of the Province occupying the Transition Zone north to the junction of the Chilko and Chilcotin rivers. Not as yet recorded east of the Okanagan Valley. West in typical form to Seton Lake, in the Lillooet District. Garter snakes referable to this race inhabit the shores and beaches of the south coast, Southern Vancouver Island, and certain islands in the Gulf of Georgia. Specimens examined from Seton Lake, Cayoosh Creek, junction Chilko and Chilcotin rivers, Okanagan Landing, Dog Lake, Penticton, Vancouver, Victoria, Bowen Island, and Gambier Island. Known also from Nicola, Summerland, Marron Lake and Brent's Lake, Nanaimo and Lytton (Logier, 1932).

Remarks.—In the genus *Thamnophis* much confusion has resulted from the placing of too great weight on certain key characters, and from failure to appreciate the extent of individual variation. A certain small proportion of specimens of *T. o. vagrans* from coastal British Columbia show the double preocular; these individuals, however, in other respects differ markedly from *T. o. biscutatus,* which race has been found to have a closely circumscribed range in the vicinity of the type locality, Klamath Lake, Oregon. The record of *T. o. elegans* (Logier, 1932) from Lytton may be similarly based on an abnormal specimen of *T. o. vagrans.* Close check of all available specimens from British Columbia previously recorded as *elegans* has shown this to be the case invariably.

Though *T. o. vagrans* and *T. o. ordinoides* do occur together on the south-west coast of the Province, there appears to be an effective ecological separation, the food habits and preferred environments of the two races being entirely different. It may be mentioned here that there appear to be certain fairly constant differences existing between the coastal and interior populations of *vagrans* that may eventually lead to their systematic separation.

Thamnophis sirtalis concinnus (Hallowell).

NORTHWESTERN GARTER SNAKE.

Original Description.—*Tropidonotus concinnus* Hallowell, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 182.

Type Locality.—Oregon Territory.

Synonyms.—*Eutainia concinna*, Lord, 1866: 306; *Eutainia pickeringii*, Lord, 1866: 306; *Thamnophis parietalis*, Fannin, 1898: 58; Hollister, 1912: 46; *Thamnophis parietalis pickeringii*, Fannin (*loc. cit.*); *Thamnophis sirtalis parietalis*, Logier, 1932: 327.

Distribution.—The whole of Southern British Columbia, north in the east to the vicinity of Mount Robson and in the west to Ootsa Lake. Specimens examined from Creston, Okanagan Landing, Okanagan Falls, Nahun, Seton Lake, Bella Coola, Ootsa Lake, Vancouver, North Vancouver, Ladner's Landing, Hardy Bay, Sooke Lake, Sahtlam, Goldstream, Sidney, Langford Lake, and Victoria; reported from Bowen and Gambier islands (Cowan MSS.); Marron Lake, Richter Pass near Osoyoos (as *T. s. parietalis*), Donald, Kaslo, Princeton, and the Fraser Valley (Logier, 1932); Union Bay, Bayne Island, Alberni Valley (Van Denburgh, 1922); Hatzic, Sicamous, and Nelson (Fannin, 1898); and from Gabriola Island.

Remarks.—Our series of *T. sirtalis* from British Columbia shows no geographic variation warranting the recognition of more than one race in the Province.

Clemmys marmorata (Baird and Girard).

PACIFIC TERRAPIN.

Original Description.—*Emys marmorata* Baird and Girard, Proc. Acad. Nat. Sci. Phila., 1852: 177.

Type Locality.—Puget Sound.

Distribution.—The only authentic record of which I am aware is of a single adult individual taken near Burnaby Lake, Vancouver, by Mr. Kenneth Racey in 1933 and examined by myself. Lord (1866) reports it common on Vancouver Island, but since that time all turtles examined from Vancouver Island have proved to be *Chrysemys*.

Chrysemys marginata belli (Gray).

WESTERN PAINTED TURTLE.

Original Description.—"*Emys Bellii* Gray, Syn. Rept. Griffiths An. Kingdom, 1831: 31."

Type Locality.—America?

Synonyms.—? *Actinemys marmorata*, Lord, 1866: 100, 301; *Clemmys marmorata*, Anderson, 1914: 19; *Chrysemys picta bellii*, Storer, 1932: 9.

Distribution.—Southern British Columbia, including Vancouver Island and Texada Island. Specimens examined from Monte Lake near Kamloops, Westbank, Loon Lake near Newgate, Vaseaux Lake, Patterson Lake near Great Central Lake, V.I., and from Pender Harbour. Encountered also at Osoyoos Lake, and Summit Lake between Vernon and Kamloops. Reported from Texada Island (G. P. Holland *in lit.*) and Elkhorn Lake (Thacker, 1924). It has been ascertained that specimens of this turtle from Vaseaux Lake were liberated in Langford Lake, V.I., about 1915. Since that time specimens of a Japanese turtle have been liberated (on one occasion at least) in the same lake.

Dermochelys schlegeli (Garman).

PACIFIC LEATHER-BACK TURTLE.

Original Description.—*Sphargis coriacea* var. *Schlegeli* Garman, Bull. U.S. Nat. Mus., No. 25, 1884: 303.

Type Locality.—Tropical Pacific and Indian oceans.

Distribution.—Taken only twice in British Columbia waters, first on August 16th, 1931 (specimen in Provincial Museum), and again two weeks later in the same locality, 8 miles south of Bajo Reef, near Nootka Sound, V.I. (Kermode, 1932: 6).

HYPOTHETICAL LIST.

The following reptiles have been from time to time reported as occurring in the Province of British Columbia. Their known ranges include territory directly contiguous; it is there-

fore possible that they may yet be taken. To the best of my knowledge, however, no specimens are now available from within the area dealt with in this paper.

Sceloporus occidentalis occidentalis Baird and Girard.

PACIFIC BLUE-BELLIED RACER.

FENCE LIZARD.

Original Description.—*Sceloporus occidentalis* Baird and Girard, Proc. Acad. Nat. Sci. Phila., *VI.*, 1852: 175.

Type Locality.—California, probably Oregon.

Distribution.—" Has been taken in British Columbia " (Van Denburgh, 1922: 301). The species has been reported from Washington localities north to Cape Flattery and should be looked for in the lower Fraser Valley. I am unable to discover the basis for the above statement by Van Denburgh.

Pituophis catenifer catenifer (Blainville).

COAST GOPHER SNAKE.

Original Description.—" *Coluber catenifer* Blainville, Nouv. Ann. Mus. Hist. Nat., *IV.*, 1835: 290, pl. 26."

Type Locality.—California.

Synonyms.—*Petuophis Wilkesii*, Lord, 1866: 307 (part).

Distribution.—Reported from Sumas by Lord (1866: 307). This species is known to occur in the Puget Sound region (Van Denburgh, 1897) and should be looked for in the lower Fraser Valley.

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NESTING COLONIES OF THE DOUBLE-CRESTED CORMORANT IN BRITISH COLUMBIA.

By J. A. Munro, Chief Federal Migratory Bird Officer, British Columbia.

The nesting in 1927 of one pair of Cormorants, *Phalacrocorax auritus*, subsp., on Bare Island, Haro Strait, representing the first breeding record for British Columbia, has been recorded (Munro, Condor, Vol. 30, pp. 327, 328). Since that time, as the years passed, an increasing number of these birds were attracted to, and nested on, this well-populated sea-bird refuge, so that by 1936 a small colony had become established.

In 1933 Mr. Peter Thornton reported a second colony, apparently of much earlier origin, which he had discovered on a rocky islet in Trincomali Channel about 19 miles north of Bare Island. Subsequently it was visited by Mr. G. D. Sprot (Sprot, Condor, Vol. 38, pp. 247, 248) and other persons, including the present writer. Observations pertaining to these colonies are assembled in the following paper.

Concerning the history of the Bare Island birds between 1927 and 1935, nothing is known except that during that interval one or more pairs were reported to have nested there.

On August 2nd, 1935, when the writer again visited Bare Island, five pairs were nesting, in association with Baird's Cormorant, *Phalacrocorax pelagicus resplendens*, on the nearly perpendicular rock cliff which forms the west shore of the island. Four nests were situated close together on a narrow ledge which held also, at a slightly lower level, four nests of Baird's Cormorants. Two nests contained four eggs each; the remaining two also held eggs, but as it was not possible to see to the bottom of the nest cavity the exact number was not ascertained. A fifth nest some distance away on a wide shelf held two eggs. (Fig. 2.)

The position of the nesting-ledge is shown in the accompanying photograph. (Fig. 1.) When on this occasion the observers approached the ledge by way of a chimney in the rock-face the Baird's Cormorants showed uneasiness first and one by one rose from their sitting position on the eggs, weaved their necks from side to side for a moment or so, and launched into space. The Double-crested Cormorants, less wary, remained longer on the ledge and the last bird did not fly until after several photographs had been taken at a distance of 30 feet.

The following year on July 8th, 1936, nine occupied nests in similar situations were examined. These were in groups of three and in each case Baird's Cormorants were nesting in close proximity. Some nests obviously had been quite recently constructed; others, whitened with excrement, had been in use longer.

In one group the three nests were touching and the sticks which formed the rim of the inner one overlapped the nest on either side. In another the nests were side by side a short distance apart on a narrow ledge, and in the third group two nests were together and the other occupied a wide shelf 5 feet directly below.

All these nests contained eggs, in two cases four, in another five, while in the remainder it was not possible to make exact counts. The three nests used the previous year were partly broken down, but another, which appeared to be the original one first discovered by Mr. Walter Burton in 1927, was in good repair, but so covered with excrement on surface and sides as to blend perfectly with the light-coloured rock on which it rested. None of these were in use, but possibly may have been occupied later in the year as the total population was estimated to be not less than eleven pairs, while only nine occupied nests had been found. The nesting season is a lengthy one because of constant destruction of eggs by crows.

The bulky stick nests of the Double-crested Cormorant could not be confused with the smaller ones of the Baird's Cormorant, of which 164 were occupied on July 8th, 1936. The nesting material most commonly used by the smaller species was Peppergrass, *Lepidium*, which grows plentifully on the island. In some of the most recently built nests where this plant was a constituent the leaves were still fresh and green. Some of these smaller nests, securely lodged on a narrow ledge, were so indurated on their outer surface by yearly deposits of excrement as to appear cemented to the rock.

From a launch anchored below the cliff the cormorant population was viewed as a whole and it could be seen that the Double-crested Cormorants, conspicuous because of their greater size and their yellow gular pouches, were surrounded on all sides by nesting Baird's Cormorants. As noted before, they were less wary than the Baird's Cormorants and seemed loath to leave

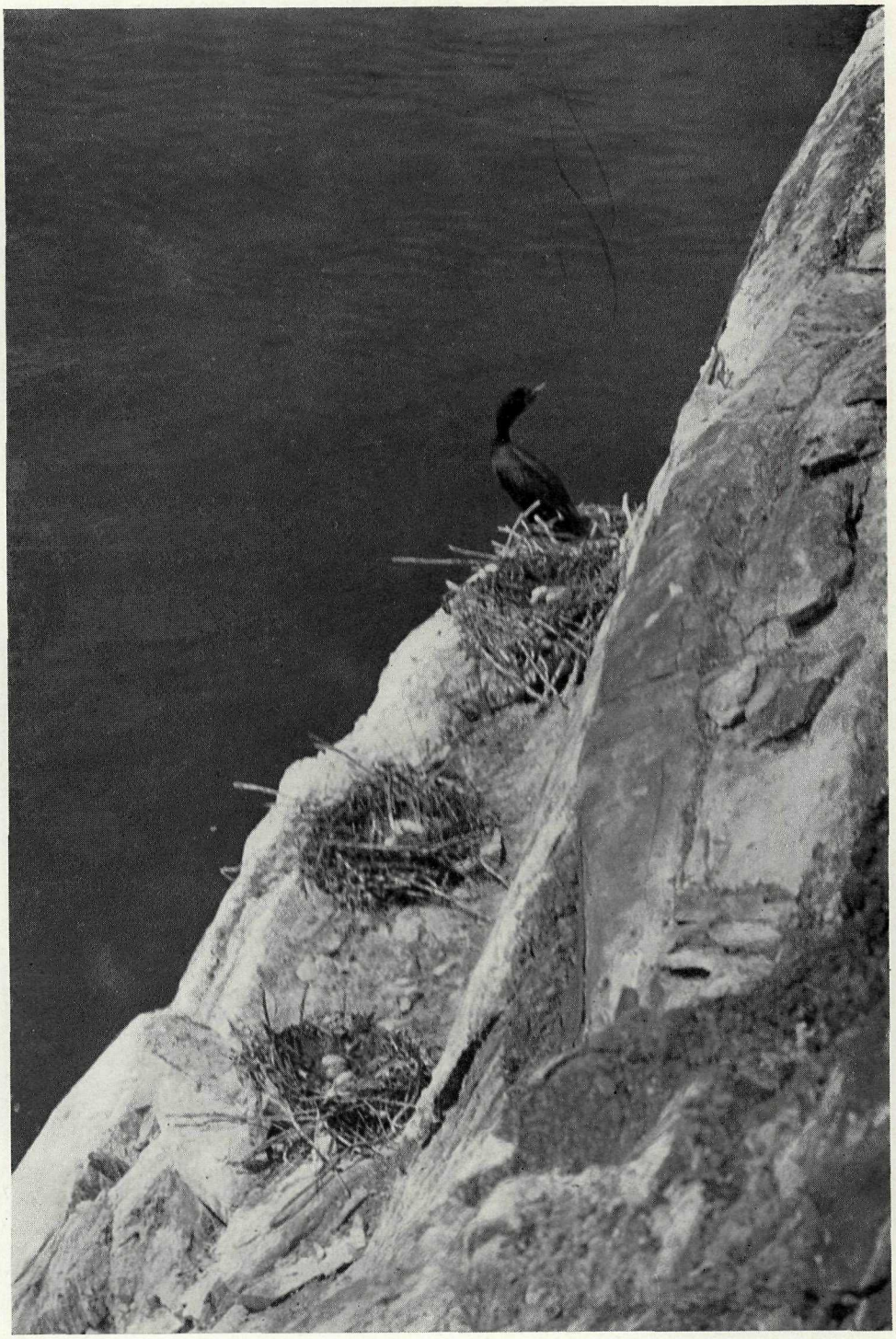

Fig. 1.—Group of four nests and one adult, *Phalacrocorax auritus*, Bare Island, British Columbia.

Photograph by J. A. Munro and loaned by courtesy of National Parks Bureau, Department of Mines and Resources.

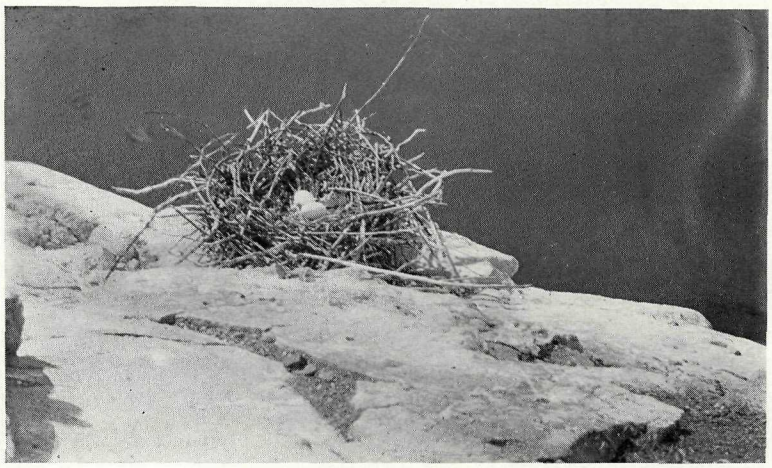

Fig. 2.—Single nest of *Phalacrocorax auritus*, Bare Island, British Columbia.

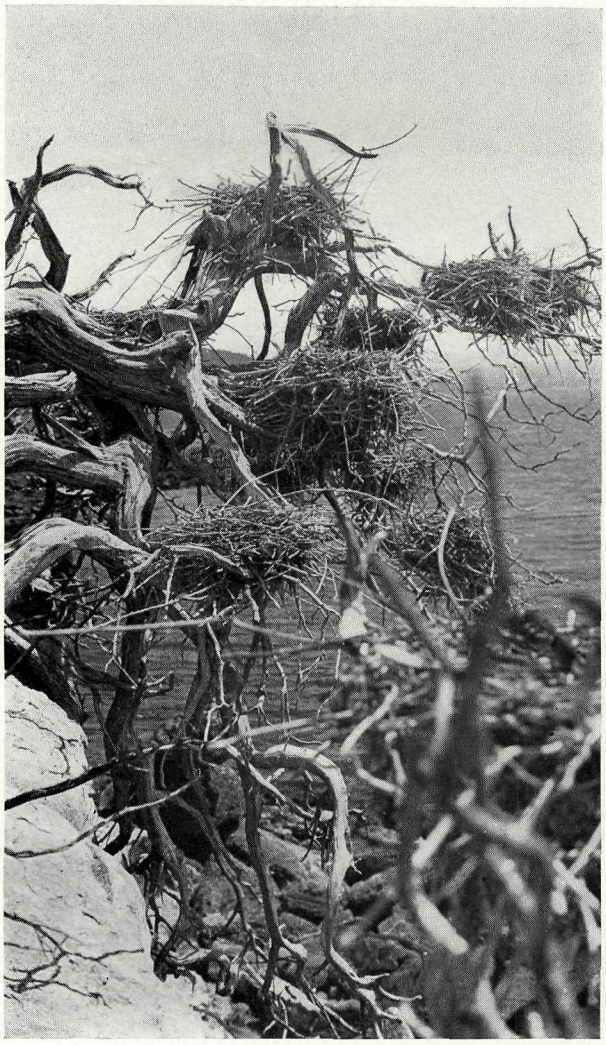

Fig. 3.—Group of eight nests, *Phalacrocorax auritus*, Ballingall Islet, Trincomali Channel, British Columbia.

Photographs by J. A. Munro and loaned by courtesy of National Parks Bureau, Department of Mines and Resources.

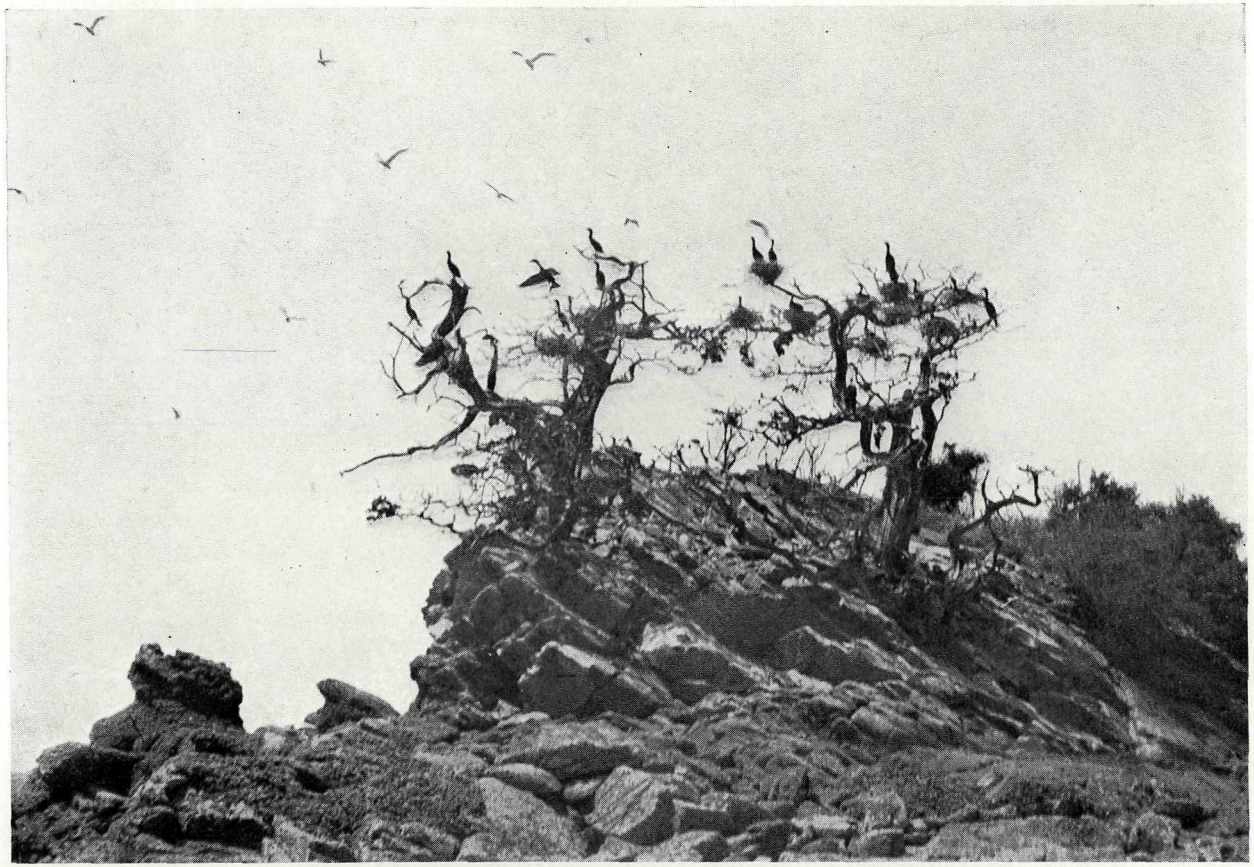

Fig. 4.—Nesting colony of *Phalacrocorax auritus*, Ballingall Islet, Trincomali Channel, British Columbia.

Photograph by J. A. Munro and loaned by courtesy of National Parks Bureau, Department of Mines and Resources.

the cliff. The estimate of eleven pairs was made from this point, and here also it was seen that three young birds in the plumage of the second year were present.

Enemies.

Apparently the chief enemy of the cormorants of both species is the Northwestern Crow, *Corvus caurinus*, which visits the Bare Island colony from the adjacent mainland to obtain food and sometimes to nest. It is common to find cormorant egg-shells scattered here and there in open places and on the ground below the trees in which crows frequently alight. Crows have been observed taking cormorants' eggs not only from unguarded nests, but actually on one occasion from beneath a sitting bird. It should be mentioned, however, that their visits to the cliff-face are not always for the purpose of taking eggs, for crows have been seen walking along the ledges, and flying from place to place on the cliff, very industriously foraging for fragments of fishes disgorged by the cormorants. The destruction of cormorants' eggs by crows is well known and visitors to the island observe this with some alarm for the continued existence of the colony, but it would seem that this predation has little or no effect on the population.

It has been recorded above that the Double-crested Cormorant became established within recent years, evidently raising enough young to ensure the foundation for a vigorous colony; it should be noted also that the Baird's Cormorant in recent years has increased to a very considerable extent. In 1915 it was estimated that only fifty of these birds were present during the nesting season (Anderson, Report Provincial Museum, Victoria, B.C., 1916), while, in 1936, 164 nests were counted. The population apparently has increased more than six times in twenty years.

Bare Island has been afforded special protection as a sea-bird colony since 1915, and this, it would appear, is the chief reason for the increased number of cormorants nesting there. The predation of crows, while alarming to watch, evidently is a perfectly normal condition which has no serious effect over a period of years.

The Glaucous-winged Gull, *Larus glaucescens*, of which some 500 pairs nest on Bare Island, has not been observed taking cormorants' eggs, although on one occasion a gull was seen to alight on the rim of a cormorant's nest containing eggs after its occupant had flown. Whether or not the gull was prevented from attacking the eggs by the presence of human observers of course cannot be said, but at any rate, after remaining on the nest-rim for a few moments, the bird flew off without having touched the eggs.

Ballingall Islet, Trincomali Channel.

The Ballingall Islets are approximately 2 miles east of Montague Harbour and 600 yards east of Wise Island in Trincomali Channel, between Saltspring Island and Galiano Island. They comprise two masses of rock; the larger one, containing the cormorant colony, being approximately 75 by 40 yards, with a maximum elevation of 20 feet above high-water mark. The vegetation consists of grasses, represented by two species, a few rose-bushes, white spirea, pincherry, service-berry, and a number of very old Rocky Mountain cedar, *Juniperus scopulorum*, with gnarled and twisted branches. This islet was visited by the writer on July 7th, 1936.

The cormorant nests are contained in these cedars and the colony has probably been in existence for some years as the trees are either dead or bearing foliage on only a few branches. (Fig. 4.) As is the case in other tree-nesting colonies, the trees have died through the action of the birds' excreta over a period of years. The oldest, or at any rate the largest, cedar was unoccupied. In an upright tree beside it were eleven nests, so close together that some were touching; another held two, and a third, growing horizontally from the summit of the rock, contained eight (Fig. 3). In addition to these were two single nests a short distance away, each on the flattened top of a small cedar rooted on the steep slope below the summit of the island so that it was possible to look down into them.

The total number of nests was twenty-three and all that were examined contained either eggs or eggs together with newly hatched young. Sprot (*loc. cit.*) relates that on June 14th, 1936—that is to say, three weeks earlier—six of the ten nests inspected contained eggs, the others being empty. Sticks were the chief constituent of the nests, and these, as well as the trees, the surrounding rocks, and the soil beneath the trees, were whitewashed with excreta.

The island was visited by motor-launch on a still, clear day. As the boat dropped anchor about 100 feet from the shore it was noticed that some cormorants were on their nests while others stood on the cedars. Two observers paddled ashore and not until their canoe was beached directly below the nests did the birds fly out, a few at a time. After making a wide circle they swung back over the island and again flew out to sea, where they remained until after the return of the party to the launch. Shortly afterwards the cormorants were again in the nesting-trees; as at Bare Island, so also at this colony they showed little concern at the presence of human observers.

Subspecific Status.

Two subspecies of the Double-crested Cormorant are recognized from the Pacific Coast of North America; a southern race, *albociliatus*, usually recorded as nesting north to Oregon, and a northern race, *cincinatus*, nesting in Western Alaska and, according to some authors, on the coast of Washington and British Columbia.

The territory between Southern British Columbia and Western Alaska is apparently not colonized by the species, a fact that previously has been noted (Willett, The Auk, Vol. 40, p. 445). This author (*loc. cit.*) reports "White-crested Cormorants" nesting near Kodiak Island and suggests a probable nesting-ground eastward to Prince William Sound. Between this general region and Southern British Columbia, a distance of approximately 1,000 miles, there is no evidence that any nesting colonies exist. Such a large gap in the distribution of the species is difficult to understand and it may be that further exploration will lead to the discovery of additional colonies in this intermediate region.

Both subspecies are characterized by the presence on the head of white filoplumes, which in other forms are predominantly black. These delicate filoplumes are deciduous, being worn for only a short time during the mating season, and for this reason few specimens showing the adornment in full development are available for comparison. So far as known, there is no constant difference in this character as between the two races under consideration. Apparently *albociliatus* is distinguishable from *cincinatus* solely on the basis of its smaller size.

In order to determine the subspecific status of the British Columbia birds a total of sixty-nine Pacific Coast specimens have been measured. It should be mentioned that four persons in addition to the writer contributed to this total, so that the margin of error is probably larger than would be the case had one person measured the entire series. Nevertheless, the data are considered of sufficient comparative value to be useful. The measurements have been averaged and are presented in the table following.

It will be seen (Table 1) that various localities from British Columbia south are represented by a total of twenty-three breeding birds, while Alaska is represented by eight specimens, of which only two are adult.

Table 1.—Measurements of Phalacrocorax auritus from the Pacific Coast of North America.

Status.	Locality.	No.	Sex.	Culmen.			Wing.		
				Aver.	Max.	Min.	Aver.	Max.	Min.
September ad.	Alaska	2	Male	65.6	68.5	62.8	350	353	348
Breeding ad.	British Columbia	4	Male	59.9	62.6	59.0	341	345	336
Breeding ad.	Central California	8	Male	59.8	63.0	55.3	332	352	320
Breeding ad.	Lower California	4	Male	56.9	59.0	55.2	321	330	317
Breeding ad.	Central California	4	Female	55.9	58.5	54.0	307	312	296
Breeding ad.	Lower California	3	Female	54.0	57.1	50.0	300	306	295

The series from the southern region is large enough so that certain conclusions can be presented with some degree of confidence. In the first place, it seems clear that, with all allowance for individual variation, there is a steady decrease in size from north to south. This is more noticeable in wing-length than in culmen-length. The latter is the more valuable and a greater length of wing and a greater length of bill are not always synchronous. The figures show also that females average smaller than males.

The most important fact brought out is that the range of variation in California birds is sufficient to absorb the range of variation in British Columbia birds. This being so, it is believed that the Double-crested Cormorant breeding from Southern British Columbia to Lower California represents one geographical race and not two as has generally been stated.

In the small series available from Alaska both adults and young average larger than comparable material from British Columbia. This fact, together with the apparent gap in the distribution of the species and the consequent isolation of a northern population, would seem to substantiate the validity of *cincinatus* as a geographical race.

TABLE 2.—WINTER POPULATION OF PHALACROCORAX AURITUS IN SOUTHERN BRITISH COLUMBIA.

No.	Collection.	Locality.	Date.	Culmen.	Wing.
		(Adult males.)			
.....	J. A. Munro	Vancouver Island, B.C.	Mar. 25, 1936	65	351
3,634	G. Willett	Vancouver Island, B.C.	Oct. 12, 1907	60	330
		* (Immature males.)			
23	K. Racey	Ladner, B.C.	Jan. 24, 1931	65	334
22	K. Racey	Burrard Inlet, B.C.	Nov. 16, 1930	62	342
24	K. Racey	Vancouver Island, B.C.	Nov. 15, 1923	61	335
3,397	Nat. Mus. Canada	Vancouver Island, B.C.	April 9, 1907	61	328
3,398	Nat. Mus. Canada	Vancouver Island, B.C.	April 9, 1907	59	322
		* (Juvenal males.)			
46,281	L. B. Bishop	Vancouver Island, B.C.	Nov. 20, 1936	65.7	350
21	K. Racey	Ladner, B.C.	Nov. 10, 1924	59.0	320
3,589	Nat. Mus. Canada	Vancouver Island, B.C.	Sept. 26, 1907	59.0	333
.....	Nat. Mus. Canada	Vancouver Island, B.C.	Jan. 4, 1916	58.0	323
3,552	Nat. Mus. Canada	Vancouver Island, B.C.	April 23, 1907	57.0	333
		(Immature females.)			
38,640	L. B. Bishop	Vancouver Island, B.C.	Dec. 10, 1933	59.0	325
45,312	L. B. Bishop	Vancouver Island, B.C.	Jan. 24, 1926	56.5	328
3,402	Nat. Mus. Canada	Vancouver Island, B.C.	April 11, 1907	54.0	309
		(Juvenal females.)			
8,902	Nat. Mus. Canada	Vancouver Island, B.C.	Dec. 31, 1915	62	327
38,641	L. B. Bishop	Vancouver Island, B.C.	Nov. 29, 1924	60	328

* Juvenal is used to identify birds in their first year and the term immature to denote older birds which have not assumed the plumage of the adult.

However, there is another point to be considered. The winter population on the British Columbia Coast is much larger than the summer population; the additional birds must originate in the north or the south, or both. Specimens of all ages show considerable variation in size (Table 2), including those of maximum dimensions which have been identified as *cincinatus*. It has been assumed that only these large birds originated in Alaska, but many of the smaller birds may also have come from the north for all that is known to the contrary. Otherwise, in order to account for the excess birds of small dimensions, it is necessary to postulate a post-breeding northern migration to the British Columbia Coast. Such a migration of course is not improbable. On these grounds it is felt that until an adequate amount of northern material has been examined there is some uncertainty as to the value of recognizing two races.

The above is summarized as follows: The Double-crested Cormorant breeding from Southern British Columbia to Lower California is represented by one geographical race, *albociliatus*. The existence of a northern race, *cincinatus*, restricted in summer to Northwestern Alaska, is accepted with some reservations pending the examination of an adequate series of breeding birds.

Localities represented.—Craig, Alaska, 5 (coll. G. Willett); Kodiak Island, Alaska, 3 (Mus. Vert. Zool.); Trincomali Channel, B.C., 4 (2 coll. J. A. Munro, 2 coll. Mus. Vert. Zool.); Ladner, B.C., 2; Burrard Inlet, B.C., 1 (coll. Kenneth Racey); Vancouver Island, B.C., 14 (2 coll. J. A. Munro, 8 Nat. Mus. Canada, 4 coll. L. B. Bishop); Tacoma, Wash., 1 (coll. L. B. Bishop); Netarts Bay, Ore., 1 (coll. J. H. Fleming); Lakeport, Calif., 5 (coll. J. H. Fleming);

Alameda, Calif., 13 (6 Mus. Vert. Zool., 7 Calif. Acad. Sci.); Farallone Islands, Calif., 1 (Mus. Vert. Zool.); San Diego, Calif., 4 (2 Los Angeles Mus., 2 Calif. Acad. Sci.); Long Beach, Calif., 1 (Los Angeles Mus.); San Martin Islands, Lower Calif., Mexico, 7 (Mus. Vert. Zool.), 2 (Calif. Acad. Sci.); Coronado Island, Mexico, 5 (Calif. Acad. Sci.).

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