

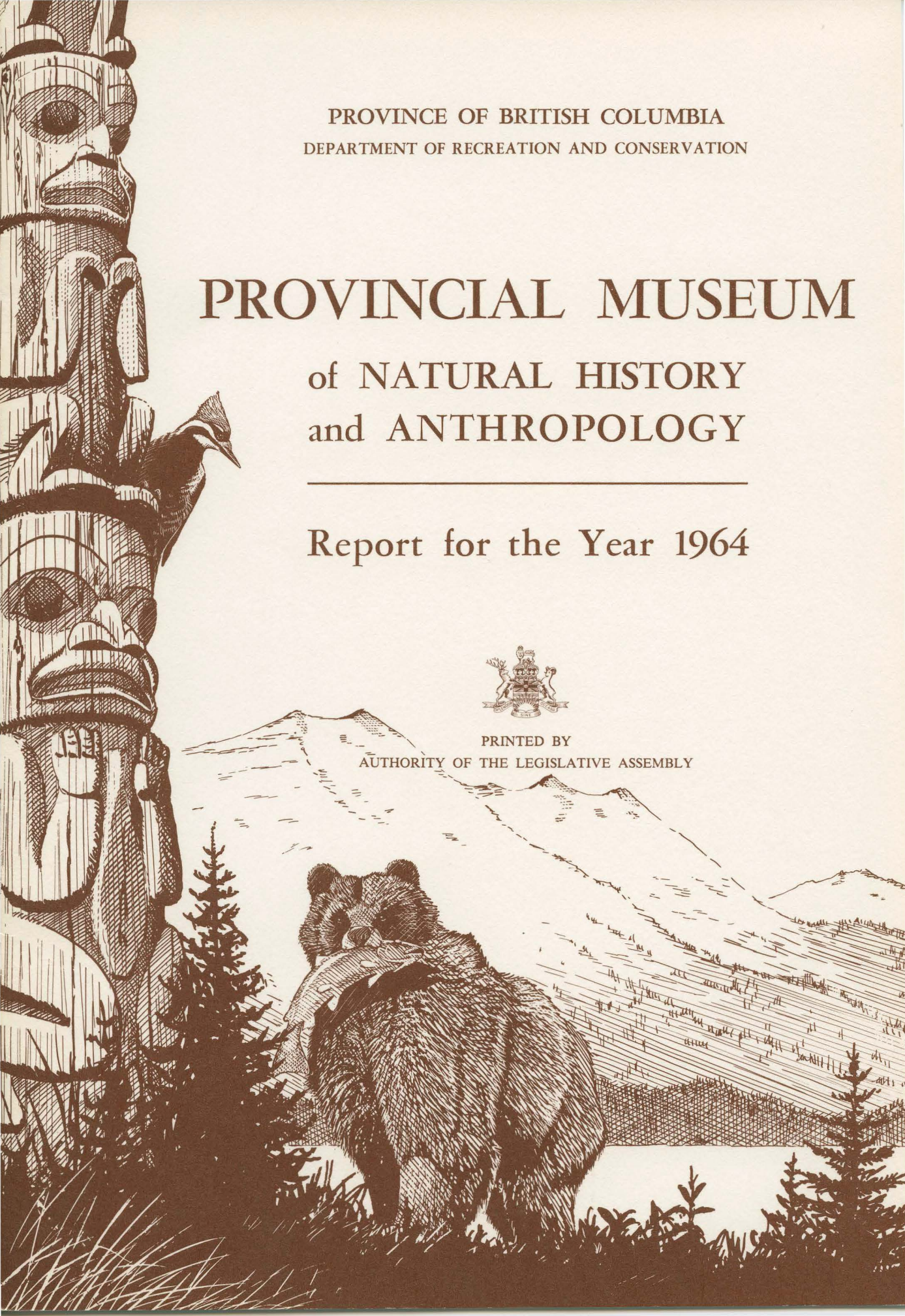
PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF RECREATION AND CONSERVATION

PROVINCIAL MUSEUM
of NATURAL HISTORY
and ANTHROPOLOGY

Report for the Year 1964



PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY



PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF RECREATION AND CONSERVATION

PROVINCIAL MUSEUM
of NATURAL HISTORY
and ANTHROPOLOGY

REPORT FOR THE YEAR 1964



Printed by A. Sutton, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia
1965

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*To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C.,
Lieutenant-Governor of the Province of British Columbia.*

MAY IT PLEASE YOUR HONOUR:

The undersigned respectfully submits herewith the Annual Report of the Provincial Museum of Natural History and Anthropology for the year 1964.

W. K. KIERNAN,
Minister of Recreation and Conservation.

*Office of the Minister of Recreation and Conservation,
January, 1965.*

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY,
VICTORIA, B.C., January 25, 1965.

The Honourable W. K. Kiernan,
Minister of Recreation and Conservation, Victoria, B.C.

SIR,—The undersigned respectfully submits herewith a report covering the activities of the Provincial Museum of Natural History and Anthropology for the calendar year 1964.

I have the honour to be,

Sir,

Your obedient servant,

G. CLIFFORD CARL,
Director.

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DEPARTMENT OF RECREATION AND CONSERVATION

The Honourable WILLIAM KENNETH KIERNAN, *Minister.*

D. B. TURNER, PH.D., *Deputy Minister.*

PROVINCIAL MUSEUM OF NATURAL HISTORY
AND ANTHROPOLOGY

STAFF

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

CHARLES J. GUIGUET, M.A., *Curator of Birds and Mammals.*

WILSON DUFF, M.A., *Curator of Anthropology.*

ADAM F. SZCZAWINSKI, PH.D., *Curator of Botany.*

DONALD N. ABBOTT, B.A., *Assistant in Anthropology.*

FRANK L. BEEBE, *Illustrator and Museum Technician.*

MARGARET CRUMMY, B.A., *Clerk-Stenographer.*

BETTY C. NEWTON, *Assistant in Museum Technique.*

SHEILA Y. NEWNHAM, *Assistant in Museum Technique.*

HELEN M. BURKHOLDER, *Clerk.*

CLAUDE G. BRIGGS, *Attendant.*

GORDON KING, *Relief Attendant.*

TOTEM-POLE RESTORATION PROGRAMME

HENRY HUNT, *Chief Carver.*

E. C. (TONY) HUNT, *Assistant Carver.*

DEPARTMENT OF RECREATION AND CONSERVATION

The Honorable William Kennedy Klassen, Minister

D. B. Turner, P.L.D., Deputy Minister

PROVINCIAL MUSEUM OF NATURAL HISTORY

PROVINCIAL MUSEUM OF NATURAL HISTORY
AND ANTHROPOLOGY

D. G. Crawford, P.L.D., 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 to increase and diffuse knowledge regarding the same.

(Section 4, *Provincial Museum Act*, chapter 311, R.S.B.C. 1960.)

ADMISSION

The Provincial Museum is open to the public, free, on week-days, 8.30 a.m. to 5 p.m., and on Sunday afternoons, 1 to 5 p.m.

TOTEM POLE RESTORATION PROGRAMME

Henry Hunt, Chief Curator

E. C. (Tony) Hunt, Assistant Curator

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REPORT OF THE PROVINCIAL MUSEUM

For the Year 1964

REPORT OF THE DIRECTOR

The major event in the museum field in 1964 was the Premier's public announcement that a new museum-archives building was to be constructed as British Columbia's centennial project. This decision was followed by a series of activities involving technical staff members in varying degrees, as noted elsewhere in this report.

Apart from this noteworthy event, the Museum enjoyed an average year in so far as general activities were concerned. Attendance, however, was almost doubled. A brief summary of the year's operation follows.

FIELD WORK

In the biological division, staff members made several collecting trips to various parts of the Province for various purposes. Botanical field trips were made to the Okanagan Valley, to the Rogers Pass area, and to the west coast of Vancouver Island in the vicinity of Gold River. Mammal work was carried on in Barkley Sound and in the Big Bend region of the Columbia Valley. The latter field work was in collaboration with biologists of the Fish and Game Branch who made a big-game survey in that area.

Investigations of archaeological sites were again undertaken in co-operation with the Archaeological Sites Advisory Board of the Department of the Provincial Secretary and the Parks Branch of the Department of Recreation and Conservation. The programme consisted of excavations at Montague Harbour and Dionisio Point on Galiano Island (June 15th to July 28th) and a survey of the Peace River and Bella Coola River valleys and parts of the Chilcotin Plateau (July 30th to August 30th). Of particular interest is an important site at Ash Point, Pedder Bay, which is being studied intensively by Mr. D. N. Abbott.

We wish to acknowledge our indebtedness to all those persons who have assisted in field work in some way, especially Mr. Stan Sharcott, Federal Fisheries Officer at Gold River; officials of the Department of Transport at Bamfield; and Mr. James C. DeWilde, Mr. William Duncan, Mr. Geoffrey Mitchell, and the various volunteers who assisted at the Pedder Bay "dig."

PUBLICATIONS

The following publications have appeared in 1964:—

Donald N. Abbott—

“Care of Museum Objects.” *Museum Round-up*, No. 16, pp. 15–18.

Frank L. Beebe—

“Alpine Rockslide.” *Wildlife Review*, Vol. 3, No. 3, pp. 16–17.

G. Clifford Carl—

“Care of Biological Specimens.” *Museum Round-up*, No. 16, pp. 19–21.

“Some Common Marine Fishes of British Columbia.” *British Columbia Provincial Museum Handbook* No. 23, pp. 1–86.

“Diving Rhythm in the Hair Seal.” *Victoria Naturalist*, Vol. 21, No. 4, pp. 35–37.

“Vanishing Treasures.” *Wildlife Review*, Vol. 3, No. 3, pp. 4–7.

Wilson Duff—

“Contributions of Marius Barbeau to West Coast Ethnology.” *Anthropologica*, N.S., Vol. VI, No. 1, 1964, pp. 63–96.

“President’s Report.” *Museum Round-up*, No. 16, pp. 7–8.

C. J. Guiguet—

“The Birds of British Columbia: (8) Chickadees, Thrushes, Kinglets, Pipits, Waxwings, and Shrikes.” *British Columbia Provincial Museum Handbook* No. 22.

“White Bears Are Really Black.” *Wildlife Review*, Vol. 3, No. 4, p. 21.

(With G. C. Pike)—

“First Specimen Record of the Gray Grampus or Risso Dolphin, *Grampus griseus* (Cuvier) from British Columbia.” *Murrelet*, Vol. 46, No. 1.

Adam F. Szczawinski—

“The Case of the Disappearing Poison Oak.” *Victoria Naturalist*, Vol. 20, No. 5, pp. 53–55.

“True Morel versus False Morel.” *Victoria Naturalist*, Vol. 20, No. 9, pp. 105–108.

(With R. J. Bandoni)—

“Guide to Common Mushrooms of British Columbia.” *British Columbia Provincial Museum Handbook* No. 24, pp. 1–179.

Anthony J. Erskine and Robert C. Stein—

“A Re-evaluation of the Avifauna of the Cariboo Parklands.” *Report of the Provincial Museum for 1963*, pp. 18–35.

Josephine F. L. Hart—

“Shrimps of the Genus *Betaeus* on the Pacific Coast of North America with Descriptions of Three New Species.” *Proceedings, United States National Museum*, Vol. 115, No. 3490, pp. 431–466.

In press is Wilson Duff’s “The Indian History of British Columbia,” which will appear as No. 5 in *Anthropology in British Columbia Memoir* series. A companion number on Indian pre-history is in preparation.

Several other publications are completed and ready for printing or are in final stages of preparation. These include a revised edition of “The Mammals of British Columbia,” by Cowan and Guiguet; “The Lily Family (Liliaceæ) of British Columbia,” by T. M. C. Taylor; and “The Intertidal Univalves of British Columbia,” by Lela Griffith.

“The Amphibians of British Columbia,” “The Barnacles of British Columbia,” “Guide to Marine Life of British Columbia,” several of the bird handbooks, and others are now out of print and have been added to the list of publications to be reissued.

CURATORIAL ACTIVITIES

Routine inspection of all stored and displayed material revealed that all specimens are in satisfactory condition. No sign of insect damage has been noted since the building was fumigated last year.

The remounting and labelling of the Newcombe plant collection, a major job, was completed. These plus the specimens collected in the field and those obtained on exchange now bring the total number of sheets in the herbarium to 43,640.

Several lots of Indian materials obtained by gift and by purchase during the year have been accessioned and added to the permanent collection.

DISPLAYS

No major changes in current displays were undertaken this year, but considerable time was spent in planning layouts for displays in the new building to be erected. In the natural history division, some preliminary work on over-all design was done and scale models of two habitat groups were constructed. In this connection, several fresh mammals were obtained and turned over to Mr. John Herman for mounting and additional work space was acquired through the kindness of the Department of Public Works.

RESEARCH

In the long-term small-mammal study being made of coastal populations, several islands in Barkley Sound were trapped, and the specimens so obtained have been added to the collection for future reference.

A further contribution to the study of plumage changes in the glaucous-winged gull was made in the form of several series of birds collected locally at definite dates. The work is being sponsored by the University of Washington at Seattle.

In the archæological field, an intensive study is being made of the Pedder Bay site, as already reported.

The results of a research project carried on by volunteer assistant Dr. J. F. L. Hart were published during the year (*see* Publications), and a second paper has been submitted for publication. This research programme was supported by a special grant from the National Research Council administered by the Provincial Museum. The contract was concluded on December 31st.

THUNDERBIRD PARK

Totem-pole carvers Henry Hunt and Eugene (Tony) Hunt worked throughout the year on two large poles and a number of smaller projects. They completed a copy of the 50-foot Nass River pole obtained from the City of Prince Rupert last year and made considerable progress on a copy of a 55-foot pole acquired by the curator from Kitwancool in 1962. Arrangements are being made to place these two large and excellent Tsimshian carvings on permanent exhibit on the new campus of the University of Victoria. The carvers also made several model totems as official gifts and for the Museum collection. In September, at the Peace Arch ceremony, an original sculpture by Henry Hunt was given to Prime Minister Pearson and one by Tony Hunt was given to President Johnson.

In June, thanks once more to the Royal Canadian Navy, three more old Haida poles, donated by the City of Prince Rupert, were brought to Victoria. These were stored, with others obtained last year, in the Indian house in Thunderbird Park.

A long-held ambition was realized in October when the carving programme was temporarily expanded to include canoe-making. David Frank, a well-known craftsman from Ahousat, was brought to Victoria for two months to demonstrate the construction of an authentic Nootka canoe. He was assisted by Paul Sam, of the same village. The type constructed was a two-man sea otter hunting canoe (the log provided being unsuitable for a larger type). The project proved to be a very popular public attraction. A photographic record of its progress was obtained by the Photographic Branch.

STAFF ACTIVITIES

As Chairman of the Archæological Sites Advisory Board, Mr. Wilson Duff organized and directed exploratory work undertaken by two field parties at "digs" in several parts of the Province, and as a member of the Indian Advisory Committee he attended meetings in Victoria and New Westminster.

Several staff members contributed to instruction programmes given at Green Timbers for Conservation Officers and at Nelson in connection with the annual seminar of the British Columbia Museums Association.

In June the Director attended the annual meeting of the Canadian Museums Association in Hamilton and made use of the opportunity to consult with various museum people in Toronto and Ottawa.

Mr. Donald Abbott, Assistant in Anthropology, rejoined the staff after eight months' leave of absence to attend Washington State University.

In June Dr. Adam F. Szczawinski was elected member-at-large to the Canadian Botanical Organization, and in September Mr. Wilson Duff was elected president of the British Columbia Museums Association during the annual meeting at Nelson.

EXTENSION

Extension work, usually in the form of illustrated talks, was carried on by various members of the staff and at various times.

In February the Director gave a series of wildlife lectures, mostly in the Eastern States, under the combined auspices of the Canadian Audubon Society, the National Audubon Society, and local conservation groups. In June the Curator of Botany spoke to natural history groups in the Okanagan Valley, a visit arranged by the Central Okanagan Naturalists' Club.

The Director has continued to take part in the weekly radio panel "Outdoors with the Experts," sponsored by radio station CJVI, a programme which was started in 1955.

PLANNING PROGRAMME

Soon after the new building project was announced, a Steering Committee and a Planning Committee were set up, the first to set policy and to act as a guide, the second to develop plans. In July five members of the Planning Committee, representing both the architectural division of the Department of Public Works and the Museum, made a tour of museums, art galleries, and other public buildings. A sixth member, Mr. W. E. Ireland, representing the Provincial Archives, joined us in Ottawa. Altogether the group visited 17 different institutions in San Francisco, Berkeley, Denver, Toronto, Ottawa, Milwaukee, Helena, and Spokane.

A great deal of valuable information was gained by the tour. We are greatly indebted to officials, staff members, and others connected with each establishment we visited; without reservation they gave us answers to all our questions and placed services and sources of information at our disposal. The material gathered has already proved invaluable.

Both the Steering Committee and the Planning Committee have met many times, and by the end of the year a set of preliminary plans was produced by the architectural division of the Department of Public Works. These were approved by officials of the Provincial Government and also by the joint Federal-Provincial Centennial Committee, and the first detailed drawings were under way before the year's end.

ATTENDANCE

The following attendance figures for 1964 are estimates based upon sample counts at irregular intervals:—

January	2,550	August	53,500
February	2,990	September	15,000
March	7,770	October	2,500
April	6,690	November	2,800
May	7,400	December	2,000
June	11,500		
July	47,000	Total	161,700

Compared with the total estimated attendance of 82,000 for the previous year, the number of visitors this year has shown a 100-per-cent increase.

As in the previous year, an extra service was provided visitors by extending the Museum open hours to 9 p.m. each evening, except Sunday, during the summer season. Many persons availed themselves of this added opportunity, particularly on evenings when the flag-lowering ceremonies were conducted in front of the Legislative Buildings.

A significant number of Museum visitors come as a group, and usually these are given a guided tour by one or more members of the technical staff. In all, 158 such groups were served in 1964, with a total attendance of 6,887 persons. Average attendance was 43.6 per group. Visiting groups in 1964 were as follows:—

Kindergartens	14
Elementary and secondary schools	63
Play groups (summer)	5
Guide and Scout groups	36
Others	40
Total	158

MISCELLANEOUS

In midsummer the Hudson's Bay Company arranged an exhibit called "The Graphic Art of Mungo Martin," making use of paintings which Mungo Martin made for the Museum some years ago. At the opening of the exhibit on June 29th, the Canada Council Medal, which had been granted posthumously to Mr. Martin, was presented to the Museum for permanent safekeeping. At the same time a fund-raising drive was started by a local committee to provide a lasting memorial to Mungo Martin.

OBITUARIES

With regret we record here the passing of four persons who, over the years, have rendered many services to the Museum or to the Province as a whole.

Mr. G. Van Wilby, an authority on local marine fishes and co-author with Dr. W. A. Clemens of "Fishes of the Pacific Coast of Canada." (January 27th.)

Mr. P. Walker, former Deputy Provincial Secretary, in which Department the Museum operated for many years. (February 9th.)

Mr. John Moffat, formerly part-time attendant on the Museum staff and locally known amateur artist. (March 29th.)

Dr. Wilbert A. Clemens, formerly Director of the Biological Station, Nanaimo; Head of the Department of Zoology, University of British Columbia; and an eminent fisheries biologist. (June 21st.)

DONATIONS AND ACCESSIONS

BOTANICAL

Major plant collections were received from T. R. Ashlee, Victoria (Saltspring Island); L. Roche (Forest Research), Victoria (Northern British Columbia); Mrs. D. Calverley, Dawson Creek; Stockholm Museum, Sweden; John W. Thieret, University of Southwestern Louisiana (Northwest Territories); Dr. and Mrs. T. Ahti, Finland (Wells Gray Park); F. L. Beebe and R. Fyfe (Northwest Territories); and from a number of other miscellaneous sources.

Herbarium exchange was continued with the following institutions: National Museum of Canada, Ottawa; Science Service, Department of Agriculture, Ottawa; Smithsonian Institute, Washington, D.C.; University of British Columbia, Vancouver; University of Washington, Seattle, Wash.; University of Victoria, Victoria; Stockholm Museum, Stockholm, Sweden; University of Helsinki, Finland; University of Krakow, Poland; and others.

With the addition of 3,351 sheets of specimens during 1964, the total now stands at 43,640.

Also, we wish to acknowledge in general the voluntary co-operation and help of those who contribute to botanical collections and knowledge. Unfortunately space does not permit us to list each one individually, but we include all of them in a grateful vote of thanks.

ZOOLOGICAL

MAMMALS

By gift—

- Jack Beltgens, Chemainus, one big-eared bat.
- W. T. Dean, Summerland, one bear skull.
- R. A. Delgatty, Lake Cowichan, vertebral disk of whale.
- Mrs. R. E. Gingell, Big Bay, negative of Risso dolphin.
- Mrs. C. S. Hanson, Victoria, one bat.
- Mrs. George C. Hendry, Victoria, one marten.
- H. E. Hobson, Cowichan Lake, one brown bat.
- R. B. Howland, Victoria, one rat.
- C. Hronek, Victoria, two sets of antlers, and bones from caves.
- Heather Huber, Victoria, part of lower jaw and foot of blacktail deer.
- June McAlees and Dianne Hamilton, Victoria, bone of bull elk.
- John McDonald, Greater Victoria Water Board, one blacktail deer, complete, five blacktail deer skulls.
- Ian Montgomery, Victoria, lower jaw of domestic cow.
- Gary O'Neil, Victoria, lower jaw of blacktail deer.
- A. Potts, Duncan, blacktail deer bones.
- Mr. Saul, Victoria, vertebral disk of whale.
- James Smart, Victoria, bone of domestic cow.
- Fred Smith, Victoria, part of whale skull.
- Debra L. Crozier Smith, Victoria, bone of blacktail deer.
- Mark Smith, Victoria, tooth of domestic cow.
- David Winter, Victoria, lower jaw and part of skull, northern sea lion.

By staff—63.

By purchase—1.

BIRDS

The Hamilton M. Laing Collection. — (Purchase.) A collection of more than 2,000 study skins of British Columbia birds made by Mr. Hamilton M. Laing, of Comox, B.C., from various parts of the Province and extending over many years.

The Walter B. Johnstone Collection. — (Purchase.) A collection of 300 bird skins from the East Kootenay area of British Columbia.

By gift—

- Mrs. J. W. Anderson, Victoria, double clutch of eggs, violet-green swallow.
 S. Baker, Crofton, one hummingbird and nest.
 Mrs. S. Beswick, Victoria, one evening grosbeak.
 Harrison Brown, Hornby Island, one sharp-shinned hawk.
 H. Caldwell, Ganges, one song sparrow's nest with cowbird's egg in it.
 Janice Carter, Victoria, one western tanager.
 Mrs. E. L. Clark, Victoria, one sharp-shinned hawk.
 Barbara Clowes, Milnes Landing, one raven.
 Allan Colqhoun, Duncan, one hummingbird.
 Mrs. J. W. Cox, Victoria, one Cooper hawk.
 J. Daniel, Victoria, one varied thrush.
 William J. Davey, Sooke, section of tree showing work of sapsucker.
 A. R. Davidson, Victoria, one Virginia rail.
 F. De Beck, Victoria, one quail's nest and three eggs.
 Harry B. Dickens, Fulford Harbour, one lesser yellowlegs.
 W. K. Dobson, Saanichton, one hummingbird.
 E. Doehnel, Victoria, one Cooper hawk.
 Miss Frances Druce, Victoria, one quail.
 Donna Lee Duncan, Victoria, one skull of common loon.
 E. G. Flesher, Phillips Arm, one skull of eagle.
 Bryan R. Gates, Fish and Game Branch, one gyrfalcon.
 Michael Glover, Ron Bierman, and Mark Andrews, Victoria, one large nest.
 Mrs. Doris A. Gooch, Victoria, mounted owl and eagle.
 J. C. Haggarty, Victoria, one warbler.
 James Hitchen, Victoria, one brain case of surf scoter.
 Canon M. W. Holdom, Crescent Beach, one purple finch, one nest of bushtit.
 C. D. Holmes, Victoria, one house finch's nest with eggs and one cowbird's egg in it.
 David Jenson, Victoria, one song sparrow's nest.
 Trond Johansen, Victoria, one female yellow warbler.
 J. P. Klaverwyden, Victoria, three varied thrush and one junco.
 Derek Lundell, Victoria, one rufous hummingbird.
 Craig Margerison, Victoria, one hummingbird.
 Mrs. D. L. Moor, Victoria, one quail.
 Miss Page, Victoria, one warbler.
 Mrs. Jack Paine, Victoria, one hummingbird's nest and egg.
 Adrian Paul, Kleena Kleene, one sora rail.
 Dr. D. G. Revell, Victoria, one fox sparrow, one orange-crowned warbler, and one quail.
 Claudia Sharpe, Lund, one rufous hummingbird.
 J. Morris Smith, Duncan, one cedar waxwing.
 Richard Smith, Victoria, one hummingbird's nest.
 South Park School, Division 8, Victoria, one flicker.

Dr. D. B. Turner, Victoria, one myrtle warbler.
 Mrs. Betty Van Westerborg, Victoria, one western grebe.
 E. M. Webb, Victoria, one starling.
 F. Webb, Victoria, one screech owl.
 Michael Winstone, Victoria, one varied thrush, one junco.

By staff—30.

AMPHIBIANS AND REPTILES

By gift—

Dr. David M. Boyd, Victoria, one melanistic garter snake.
 S. F. Condrashoff, Victoria, one blue racer and one painted turtle.
 Paul Langdon and John Porter, Victoria, one garter snake.
 Fred Norman, Sooke, one garter snake.
 J. R. J. Rangel, Victoria, two tiger salamanders and one spotted frog.
 Mike Wheatley, one lizard.
 Dennis Zackarkiew, Victoria, one snake skin.

FISH

By gift—

Art Brookman, Victoria, one black blenny.
 Ralph Fassman, Victoria, spawn of cod.
 Dale Hansen and Morris Sutton, Victoria, one ratfish.
 Mrs. H. G. Howard, Victoria, one pipe fish.
 John Pringle, Victoria, egg cases of ratfish.

INVERTEBRATES

By gift—

Lorne Douglas Ball, Victoria, two purse-web spiders.
 John Britt, Victoria, one hermit crab.
 Kurt Cehak, Race Rocks Light Station, fir block with unusual boring of ship-worm.
 Joyce Chope, Victoria, two shells.
 Mrs. M. F. Connor, Victoria, one shamrock orb weaver.
 Ed Court, Victoria, one jumping spider.
 Bob Dawson, Victoria, one black widow spider.
 J. Denham, Victoria, one jumping spider.
 Ken Earl, Victoria, one black widow spider and nest with young.
 R. W. Edwards, Victoria, one black widow spider.
 Terest Esquihelm, Victoria, three black widow spiders.
 Frank Foulds, Victoria, one banded borer.
 Mrs. V. E. Gilmer, Victoria, eggs of slug.
 Freida Gilstein, Victoria, one spider.
 John Godfrey, Victoria, one cave cricket.
 Daryl Hall, Victoria, one black widow spider.
 Gregory Hepburn, Victoria, one spider.
 J. B. Johnstone, Victoria, one black widow spider.
 K. Jones, Edmonton, one banded borer.
 Miss M. Kirkpatrick, Victoria, one larder beetle.
 Andrea Leonard, Victoria, one banded borer.
 W. Long, Victoria, one hair snake.
 J. McLaren, Victoria, shells of chiton, articulated and varnished.
 Dick Miller, Victoria, one orb weaver.
 E. L. Mitchell, Victoria, one pseudo-scorpion.

Raymond James Moore, Victoria, one sea-slug.
 Karin Newser, Victoria, one banded borer.
 George Norman, Victoria, one wolf spider.
 Jerry Olsen, Victoria, one cockroach.
 Roger Painter, Victoria, one eyed hawk moth.
 Margaret Richlin, Victoria, sea-anemone parasitizing a jellyfish.
 Miss Genevieve Skypanski, Victoria, one striped cockchafer.
 Keven Spencer, Victoria, three black widow spiders.
 A. Stustrom, Victoria, one wolf spider.
 Danny Walters, Victoria, one mud wasp.

PALEONTOLOGY

By gift—

David M. Bacon, Victoria, one ammonite.
 Mrs. T. L. Christie, Victoria, one fossil bivalve.
 R. G. Crowe, Victoria, portions of fossil-bearing rock.
 Mrs. W. M. Milne, Errington P.O., fossil with carving in a shell pattern.
 Alex Murray, Victoria, portion of mammoth tooth found at Albert Head.
 S. Rooker, Victoria, five fossils.
 Kevan Taylor, Victoria, bone fragments of large mammal.
 John Walcot, Victoria, one tooth from mammoth.
 John H. Wormsbecker, Victoria, rock with marine-plant markings.

ANTHROPOLOGICAL

The R. H. Nicholls Collection. — (Purchase.) East Kootenay Indian material.
 R. H. Nicholls, Victoria.
The John Sendey Collection. — (Gift.) Archæological specimens from sites at
 Cadboro Bay. John Sendey, Victoria.
The F. Yeomans Collection. — (Gift.) Grass basketry from the Barkley Sound
 area and two prehistoric chipped projectile points near Bamfield. F. Yeomans, Victoria.

By gift—

Mrs. Leonie C. Anderson, Vancouver, Haida silver brooch.
 Archæological Sites Advisory Board, archæological specimens from excavations carried out at Montague Harbour, Dionisio Point, Ash Point, and from surface collections made while site surveying in the Chilcotin Plateau and in the Portage Mountain dam reservoir on the Peace River.
 A. L. Bagshaw, Victoria, small cedar canoe.
 J. R. Billingsley, Sooke, perforated stone sinker.
 Lorne Bradshaw, Victoria, antler haft.
 Mrs. Alfred Carmichael, Victoria, two miniature coppers.
 F. E. Corneille, Victoria, stone hand-maul.
 Bruce Cottrell and Rich Tahouney, Victoria, antler wedge.
 G. Davis, Tasu, Sandspit, fragments of cedar-bark matting and twine.
 Department of Highways, Sidney, stone hammer fragment.
 J. H. Doughty-Davies, Victoria, ground slate projectile-point fragment.
 Esquimalt Police Department, human-skull fragment.
 Gerald Flowers, Victoria, two stone hand-mauls.
 Mr. and Mrs. C. H. Hartt, Glen Lake, archæological specimens from a site at Rocky Point.
 Miss M. Harvey, Bella Coola, glass trade beads and clay pipe-stem fragments.

Mrs. Ruth Heitman, Sicamous, human skeletal material.
 John V. Hodges, Regina, archæological specimens from Lytton.
 Mr. and Mrs. Fred W. Hodgson, Shawnigan Lake, human mandible.
 Dave Kerridge, Victoria, human skeleton.
 Peter Leggett, Victoria, stone hammer fragment.
 Mrs. N. de W. Lyons, Victoria, six Lower Stalo baskets.
 Bob McQueen, Victoria, archæological specimens probably from a site at
 Cadboro Bay.
 Mrs. E. Morgan, Victoria, two human skeletons.
 E. Murphy, Sooke, ground slate projectile point.
 Arthur Peake, Haney, ancient fish-weir stake from Pitt Meadows.
 Russel Porter, Victoria, antler fish-hook shank.
 Miss Darlene Puckett, Victoria, ground slate projectile-point fragment.
 F. Reid, Sidney, two chipped basalt projectile points.
 Royal Canadian Mounted Police, Penticton, parts of two or more human
 skeletons.
 W. A. Stursberg, Victoria, human skeleton.

By purchase—

Mrs. John Rice, Victoria, spirit dancer's costume.
 H. Smith, Victoria, Haida argillite totem-pole model.

By the staff—

Model totem-pole carved in Thunderbird Park by Henry Hunt.
 Archæological specimens from sites near Victoria and on Galiano Island.

MISCELLANEOUS

Proceeds from the Museum donation box during 1964 include \$581.73 for the Queen Alexandra Solarium for Crippled Children and \$68.84 for the Mungo Martin Scholarship Fund.

We also wish to acknowledge the volunteer assistance provided by student Mark Hinson in maintaining and demonstrating the display of living reptiles and amphibians.

BIRDS SEEN IN ACTIVE PASS, BRITISH COLUMBIA

BY R. Y. EDWARDS, PARKS BRANCH, DEPARTMENT OF
RECREATION AND CONSERVATION

INTRODUCTION

During the winter of 1963/64 I travelled weekly between Victoria and Vancouver, and about 8 a.m. every Friday was on a ferry traversing Active Pass. When storms and the poor light of early winter mornings permitted, I made counts of birds seen in the pass and within roughly a mile of each end. This resulted in 25 counts from September 20, 1963, to May 8, 1964. To complete the picture through one year, I have added data gathered in the pass both before and since the regular counts.

Active Pass is a scenic channel, fairly narrow, separating Mayne and Galiano Islands. These are two of the Gulf Islands lying east of the south end of Vancouver Island, British Columbia. Often the waters in the pass race and boil under the influence of the tides, and in winter these turbulent waters are attractive to water birds. The attractive areas are not confined to the pass, however. Throughout much of the winter, concentrations of feeding birds were noted in the eastern approaches to the pass, and these were included in the counts. Another large winter concentration was frequently observed north of the western approaches, but was usually too far from the ferry lane to be included in the count. Both of these concentrations were variable, on some days even appeared to have temporarily disappeared, and probably were influenced by the tides.

Within the pass and where the approaches could be censused, it was not possible to make completely accurate counts. The ferry churned rapidly on in spite of counting difficulties, so birds too far on either side to be identified had to remain too far away. But there is little doubt that these counts from the ferry reflect generally the abundances of common species as well as the seasonal changes in their abundances. While summer data for this report are supplied by only half a dozen counts, these are probably quite adequate for the purposes of this paper since in summer the pass has relatively few species present in only small numbers.

A GENERAL ACCOUNT

The birds of Active Pass are dominated numerically by seven species. Three of these—Bonaparte gull, Brandt cormorant, and Arctic loon—are especially abundant in season, and may number in thousands. The remaining four species—Western grebe, common murre, glaucous-winged gull, and mew gull—are less abundant and present at most in hundreds.

As is evident from Fig. 1, summer is a time of few birds in the pass. Through June, July, and August, nesting residents are the main species present. In this season it is possible to see only glaucous-winged gulls, a cormorant or two, and perhaps a marbled murrelet. The period of abundant birds begins in September and lasts into May. The month of March offers the most birds. Arctic loons and Western grebes are building up in numbers. Brandt cormorants in thousands are at peak abundance, and common murrees are still numerous.

The greatest number of species in the pass appears to be present in the autumn. In late September, through October, and into November, Heermann gulls and parasitic jaegers are present. Storms can bring in Sabine gulls, sooty shearwaters, or fork-tailed petrels from the open Pacific, but these may be rare situations.

The concentrations of birds that are characteristic of Active Pass are there for one reason. Where food is concentrated, the birds concentrate. Strong currents and local upwellings in the pass and in its vicinity no doubt bring up waters laden with food, and this is at least part of the attraction. When the tides are slack, there is relatively little bird activity; when the tide rips are churning through the pass and the waters are boiling, then the activity of the birds seems to keep pace with the activity of the water.

A more detailed study of Active Pass and its birds through the year would undoubtedly find more species and different numbers from those reported here. But within the limits imposed by the study method, this account probably gives a roughly accurate picture of the birds in the area. At times, Active Pass with its birds must be among the most scenic and spectacular sights available to naturalists in Canada. It is fortunate that it is so accessible, since Active Pass is traversed many times daily by the main ferry route connecting the Southern Mainland of British Columbia with Southern Vancouver Island.

NOTES ON SPECIES

LOONS

Common loons were seen once in small numbers (up to four) in each of January, February, and April. Large numbers of Arctic loons assemble in the pass from early November to late May. Fluctuating numbers were below a hundred in the first half of November, then in hundreds to 400 to late February, then usually over 1,000 and up to 2,500 to May, followed by a few hundred through May. Factors involving tides and food availability seem to influence their numbers from day to day. This loon appears to be absent from early June to late October (see Fig. 1).

GREBES

Western grebes were present reliably from early October to early May (Fig. 1). In the first half of October there were up to 200, then to the end of February there were usually 50, sometimes fewer, once 200. An increase in March, sustained through April, reached as high as 1,000 birds on both March 13th and April 6th. Numbers then dwindled, and all were gone about mid-May. Red-necked grebes were seen once—five on March 20th. Horned grebes were seen once—two on January 11th—although they were seen in nearby sheltered bays on other days.

TUBE-NOSES

Following two days of storms, a sooty shearwater and a fork-tailed petrel were seen on the western approaches to the pass on October 25, 1963.

CORMORANTS

Pelagic cormorants were nearly absent. Four were seen September 20th, then none was identified until spring, when a few (up to four) were seen every trip from mid-March to mid-April. It is possible that small numbers of this species through the winter were "hidden" in the large numbers of Brandt cormorants present all winter. These last were first noted October 1st, when 30 were seen. They were numerous (850) by October 20th. Counts of 2,000, 2,500, and 3,000 were frequent from early November to mid-March. On March 20th there were 4,000, then numbers dwindled, and they were gone by mid-May (Fig. 1). Summer stragglers were noted. This species is not known to breed in British Columbia, but does so on the Washington coast to the south. A few double-crested cormorants were occasionally seen in or near the pass. They nest on the Ballingall Islets, 6 miles to the north.

HERONS

One great blue heron flew over the pass on October 25th, no doubt a fairly common occurrence.

DUCKS

Several species were seen once—harlequin ducks on December 6th, American goldeneyes and red-breasted mergansers on March 13th. Ten buffleheads were in a quiet bay on March 15th, and one was seen January 11th. Surf scoters and white-winged scoters were the only ducks seen regularly through the winter. Ninety surf scoters were counted October 25th, and thereafter to early May the species occurred in half the counts in numbers from 2 to 20. White-winged scoters were first noted November 15th, and were seen in only a third of the counts to late May in numbers from 1 to 30.

HAWKS

Active Pass attracts bald eagles throughout the year, but this may not be evident from a passing ferry. Eagles were seen on a quarter of the counts, with totals up to five. The concentration is known to be larger than this, however. A pigeon hawk was seen April 24th, northbound as if migrating.

SHOREBIRDS

Twice in late November, flocks of dunlin-like shorebirds were seen at the eastern mouth of the pass.

JAEGERS AND GULLS

From late September to late October there were up to eight parasitic jaegers with gull concentrations in the eastern approaches to the pass.

Glaucous-winged gulls were always present (Fig. 1), many of them following the ferries, but others apparently living in and about the pass. Numbers were variable. A count of 1,000, on September 27th, was unusual. Through October and November most counts ranged from 200 to 400. By January and February, numbers had dropped to between 100 and 200. By April and through the summer to September, counts were mostly 50 or less. The only other gull habitually following the ferry in winter was the herring gull. Through January, February, and March, this species constituted roughly 20 per cent of the gulls following the ferries. They were seen on most counts through November and December (from 2 to 30 birds), and then from 10 to 50 were counted until April. From mid-April to the end of September this species seems to be absent, except for occasional stragglers. Mew gulls appeared in August, reached peak numbers in September (to 400) and October (to 500), and then were present to the end of March in variable numbers (4 to 200), depending probably on the feeding attractions elsewhere (Fig. 1). They were absent through the summer from late April. California gulls were present in small numbers (up to 50) from early August to mid-November, then absent until migrants put in a brief appearance in the first half of May. Peak numbers were in late October. In the autumn some of these gulls follow the ferries. Bonaparte gulls appeared in late July, and by September were concentrated in spectacular numbers (5,000 on September 20th) (Fig. 1). Through October there were 1,000 or more, then numbers dwindled to several hundred through the first half of November. A few remained through November into early December. The species was then absent until the last of March. Numbers then built up until several thousand were present in late April and into May. By late May there were stragglers only. None was present through June and part of July. A Sabine gull was seen with a concentration of gulls

and jaegers in eastern approaches to the pass on September 27th. Up to six Heerman gulls were in the same concentration on October 4th, 11th, and 25th.

AUKS

Concentrations of common murrets characterize the sea birds of Active Pass in winter (Fig. 1). Small numbers can probably occur in summer, but there was none present from mid-April to the end of September. A dozen or two were present through October into November. From mid-November to early April, counts ranged from 100 to 1,500 birds. Peak numbers occurred in February and March. Up to 10 marbled murrelets were seen on irregular counts in July and through to the end of October, and then again in April. The ancient murrelet appeared in two counts—25 on November 8th and one on November 22nd. One or two rhinoceros auklets were seen on four counts—one in September, two in October, one in December. All were in the western approaches. The pigeon guillemot nests in the area. It was seen on about half of the counts in numbers up to 12, but only one or two were usually noted.

PIGEONS

Like the Passerines below, it is a matter of luck to see from the ferry birds such as pigeons, which may be quite common on shore. Band-tailed pigeons were seen occasionally in trees near the pass, or flying over it.

PASSERINES

Kingfishers were seen twice, water pipits once, and Northwestern crows could be seen along the shores whenever they were sought out.

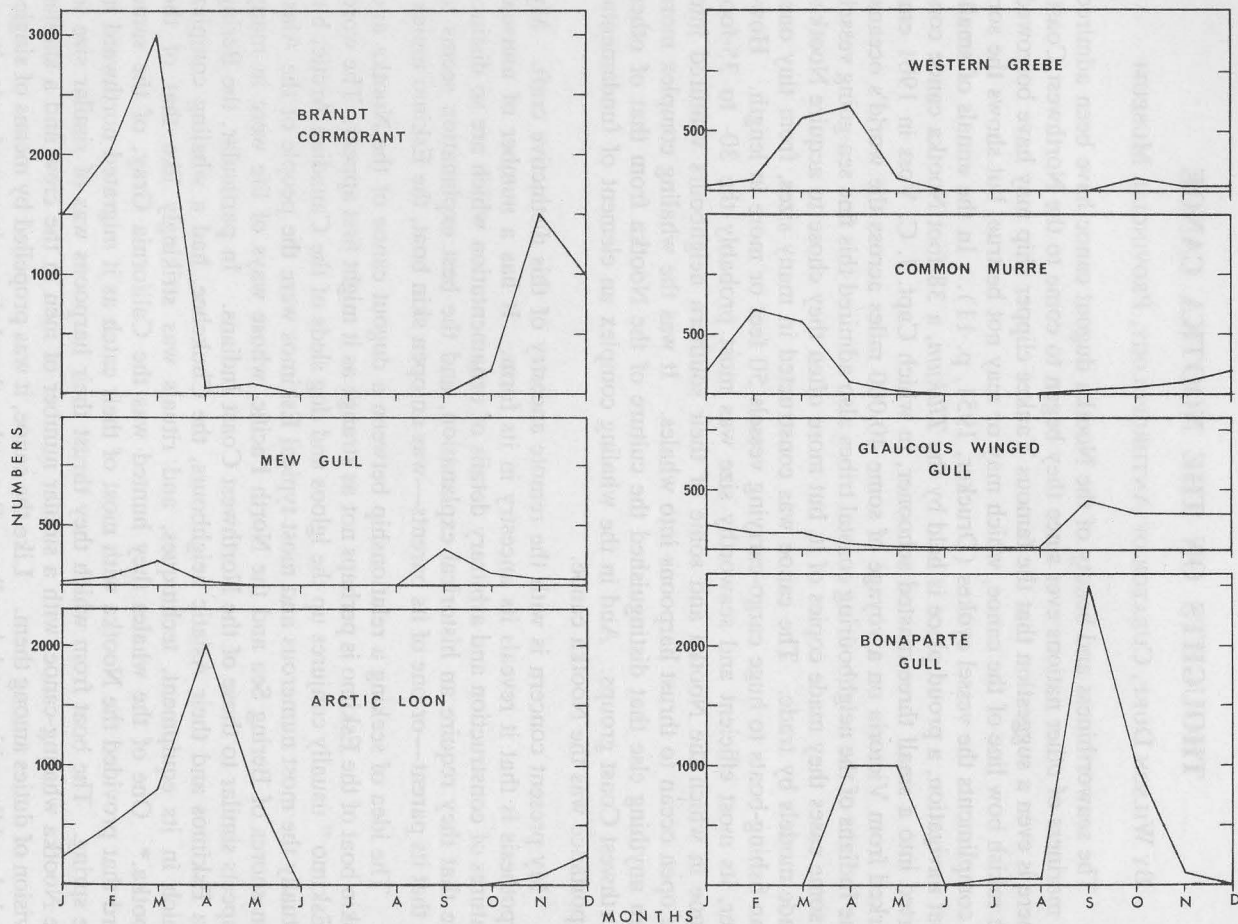


Fig. 1. Graphs showing the seasonal abundance of some birds in and near Active Pass. Only the seven most common species are shown. Numbers in all cases are rough averages of daily counts with a few especially high counts omitted because they are misleading. The aim was to use a total typical for the month.

THOUGHTS ON THE NOOTKA CANOE

BY WILSON DUFF, CURATOR OF ANTHROPOLOGY, PROVINCIAL MUSEUM

The seaworthiness and beauty of the Nootka dugout canoe have been admired by mariners of other nations ever since they began to come to the Northwest Coast. There is even a suggestion that the famous Yankee clipper ship may have borrowed the rakish bow line of the canoe, which may or may not be true, but shows the sort of compliments the vessel evokes (Drucker, 1951, p. 11). In the annals of small-boat navigation, a proud place is held by the *Tilikum*, a 38-foot Nootka canoe converted into a small three-masted schooner, in which Capt. J. C. Voss in 1901 embarked from Victoria on a voyage of some 40,000 miles across the world's oceans. The Indians of the neighbouring coastal tribes also admired this fine sea-going vessel; in some cases they made copies of it, but more often they chose to acquire Nootka-made models by trade. The canoe was constructed in many sizes, from tiny one-man fishing-boats to huge cargo-carrying vessels 50 feet or more in length. However, its most efficient and seaworthy size was most probably the 30- to 35-foot canoe in which the Nootka and some of their southern neighbours ventured into the open ocean to thrust harpoons into whales. It was the whaling complex more than anything else that distinguished the culture of the Nootka from that of other Northwest Coast groups. And in the whaling complex an element of fundamental importance was the Nootka canoe.

My present concern is with the remote ancestry of this distinctive craft. My hypothesis is that it reveals its ancestry in its form. It has a number of unusual features of construction and arbitrary details of ornamentation which are so distinctive that they require an historical explanation, and the best explanation seems to be that its parent—or one of its parents—was an open skin boat, the Eskimo umiak.

The idea of seeking a relationship between a dugout canoe of the Nootka and a skin boat of the Eskimo is perhaps not as strange as it might first appear. The word "Eskimo" usually conjures up the igloos and dog sleds of the Canadian Arctic, but actually the most numerous and most typical Eskimos were the people of the Alaskan shores of Bering Sea and the North Pacific, whose ways of life were in many respects similar to those of the Northwest Coast Indians. In particular, the Bering Sea Eskimos and their Asiatic neighbours, the Chukchee, had a whaling complex which in its equipment, techniques, and rituals was strikingly like that of the Nootka.* One of the whales they hunted was the California Gray, of the same herd that provided the Nootka with most of their catch as it migrated northward in the spring. The boat from which they thrust their harpoons was of similar size to the Nootka whaling-canoe, with a similar number of men in the crew and a similar division of duties among them. Like the canoe, it was propelled by means of single-bladed paddles with crutch handles. But rather than being a dugout of cedar it was an open boat made of a fitted wooden frame covered with skin, usually walrus hide. Of course, one would hardly expect to find a cedar dugout in use along the treeless shores of Bering Sea, just as one would not expect a walrus-hide boat on the west coast of Vancouver Island. However, if we assume that the whaling complexes of the two areas are related, it is reasonable to inquire whether the boats themselves are also in some way related. And it appears to me that the Nootka canoe is

* The similarities and their implications have been treated at length by Lantis, 1938; Heizer, 1943; Borden, 1951; Drucker, 1951 and 1955; Swanson, 1956; and others.

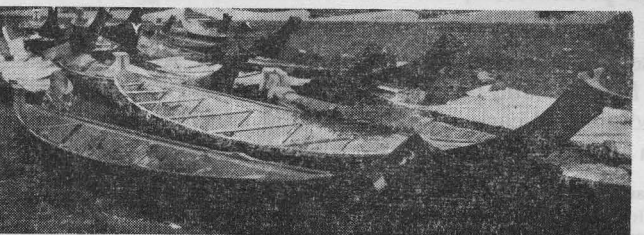
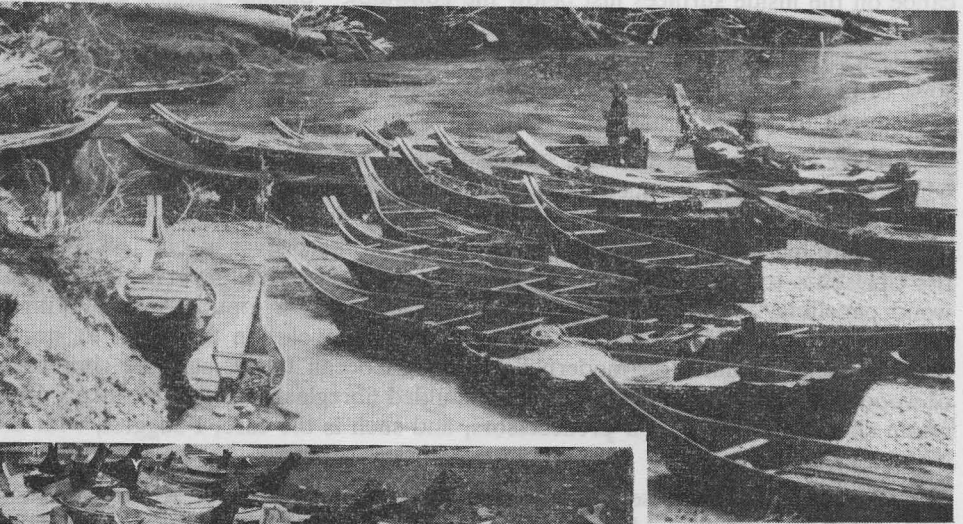
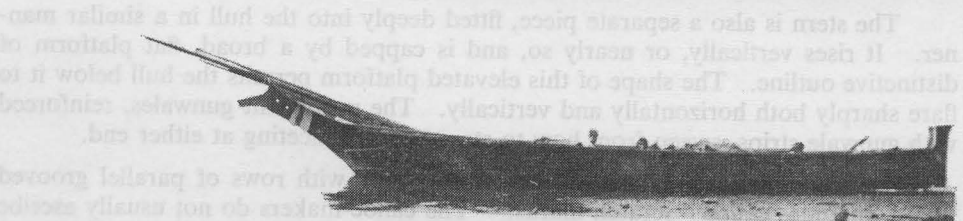
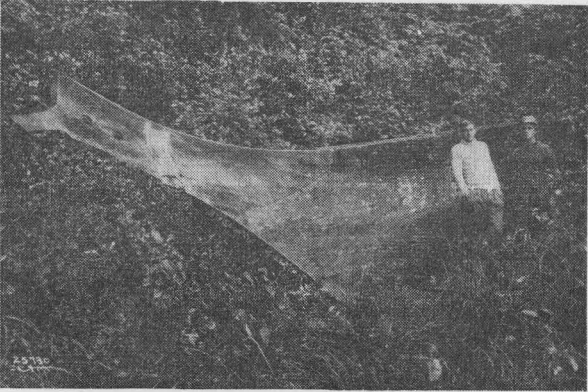
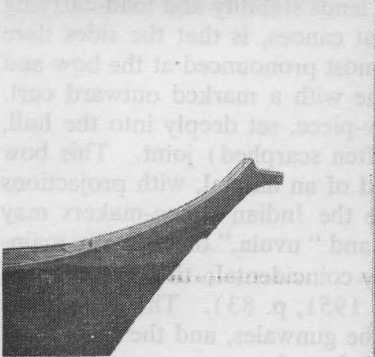


Fig. 1. Photographs showing Nootka canoes.

indebted to the umiak for many of its distinguishing characteristics; it is in effect a dugout made on the pattern of the umiak, or perhaps more accurately an umiak made entirely of wood, further evolved and refined in the new medium.

The characteristic features of the Nootka canoe include first of all its flat bottom (flat both fore-and-aft and transversely), which lends stability and load-carrying capacity.* Another feature, also unusual in dugout canoes, is that the sides flare outward as they rise to the gunwales. This flare is most pronounced at the bow and stern, also it culminates just below the gunwale line with a marked outward curl. The high projecting bow consists of a separate bow-piece, set deeply into the hull, to which it is joined with a carefully fitted (most often scarphed) joint. This bow has a poised and alert shape reminiscent of the head of an animal, with projections resembling ears, snout, and Adam's apple. While the Indian canoe-makers may call these projections "ears," "tongue protruding," and "uvula," they usually maintain that the resemblance to an animal head is purely coincidental; this just happens to be the proper form (Waterman, p. 22; Drucker, 1951, p. 83). The flat surface on top of the "ears" is stepped above the line of the gunwales, and the half-round groove between them is terminated by a peculiar V-shaped tongue extending down the centre line of the canoe.

The stern is also a separate piece, fitted deeply into the hull in a similar manner. It rises vertically, or nearly so, and is capped by a broad, flat platform of distinctive outline. The shape of this elevated platform permits the hull below it to flare sharply both horizontally and vertically. The prominent gunwales, reinforced with gunwale strips, sweep from bow to stern without meeting at either end.

The canoe is decorated in a number of places with rows of parallel grooved lines sometimes called "scratch marks." The canoe-makers do not usually ascribe any function to these, but feel that all good canoes should have them (Waterman, pp. 15-18). Such lines, usually three in number, are found along the length of the canoe on the inside surfaces just below the gunwales. Similar parallel grooves are found sloping down the outside of the throat of the bow, and down the outside of the stern. The flat surface on top of the "ears" of the bow is also decorated with rows of parallel grooves. In some cases these grooves are emphasized with paint, or replaced by painted lines.

In considering such features of construction and decoration, especially those which seem arbitrary or functionless, we should be aware of what might be called "the conservatism of culture." This is the sort of resistance to change which in our own culture has left us with functionless buttons on the sleeves of our jackets, electric Christmas-tree lights in the shape of candles, and vinyl wallpaper which imitates wood panelling. Mariners are perhaps as conservative a group as any: witness the slow and grudging change in hull form in the revolution from sail to steam, and the useless funnels on modern diesel-driven ocean liners, and the simulation of wooden planking on many of our new moulded fibreglass hulls. New forms often retain characteristics of their predecessors, and such is the case, I suggest, with the Nootka canoe.

The umiak was a vessel admirably suited to conditions in the Arctic, and most probably it evolved there, from Asiatic predecessors.† Light and roomy, it combined good speed, outstanding load-carrying capacity, and exceptional seaworthiness. It was easy to beach and easy to transport over land by sled. The framework

* The best description of this canoe is given by Waterman (1920), who calls it the "Chinook" canoe.

† My main sources of information on the umiak are: Nelson, 1899; Adney and Chapelle, 1964; a model in the Provincial Museum; and models observed in the Lowie Museum, Berkeley.

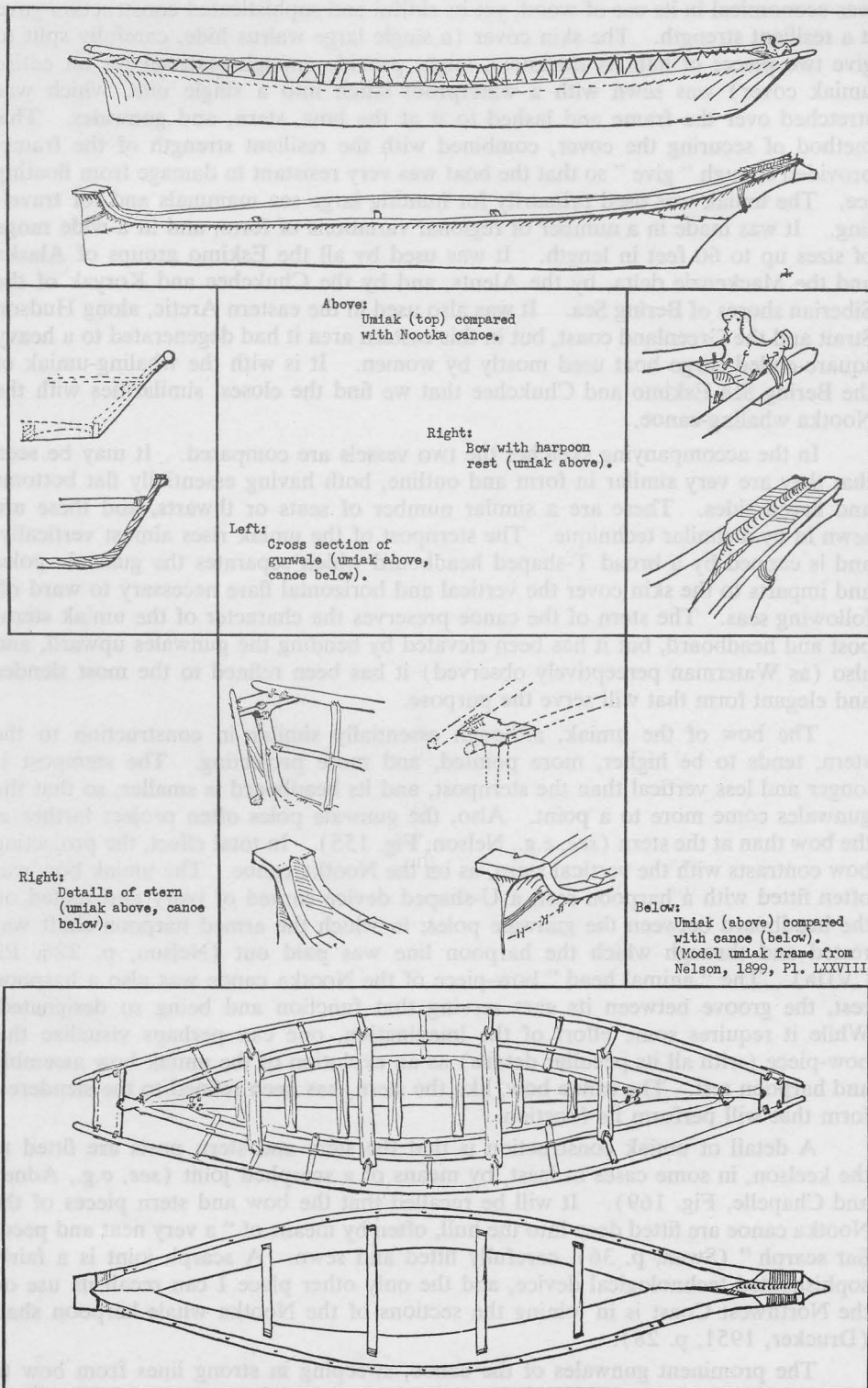


Fig. 2. Sketches comparing features of the Nootka canoe and the Eskimo umiak. See text for discussion. Drawings by D'Oyly Rochfort.

was economical in its use of wood, yet its skilful and sophisticated construction gave it a resilient strength. The skin cover (a single large walrus hide, carefully split to give two pieces of half its thickness, might provide enough material for an entire umiak cover) was sewn with a waterproof stitch into a single unit, which was stretched over the frame and lashed to it at the bow, stern, and gunwales. This method of securing the cover, combined with the resilient strength of the frame, provided enough "give" so that the boat was very resistant to damage from floating ice. The umiak was used primarily for hunting large sea mammals and for traveling. It was made in a number of regional variations of form, and in a wide range of sizes up to 60 feet in length. It was used by all the Eskimo groups of Alaska and the Mackenzie delta, by the Aleuts, and by the Chukchee and Koryak of the Siberian shores of Bering Sea. It was also used in the eastern Arctic, along Hudson Strait and the Greenland coast, but in this eastern area it had degenerated to a heavy square-ended cargo boat used mostly by women. It is with the whaling-umiak of the Bering Sea Eskimo and Chukchee that we find the closest similarities with the Nootka whaling-canoe.

In the accompanying sketches the two vessels are compared. It may be seen that they are very similar in form and outline, both having essentially flat bottoms and flared sides. There are a similar number of seats or thwarts, and these are sewn in by a similar technique. The sternpost of the umiak rises almost vertically, and is capped by a broad T-shaped headboard which separates the gunwale poles and imparts to the skin cover the vertical and horizontal flare necessary to ward off following seas. The stern of the canoe preserves the character of the umiak sternpost and headboard, but it has been elevated by bending the gunwales upward, and also (as Waterman perceptively observed) it has been refined to the most slender and elegant form that will serve the purpose.

The bow of the umiak, although essentially similar in construction to the stern, tends to be higher, more pointed, and more projecting. The stempost is longer and less vertical than the sternpost, and its headboard is smaller, so that the gunwales come more to a point. Also, the gunwale poles often project farther at the bow than at the stern (*see, e.g., Nelson, Fig. 155*). In total effect, the projecting bow contrasts with the vertical stern, as on the Nootka canoe. The umiak bow was often fitted with a harpoon rest, a U-shaped device carved of ivory and seated on the headboard between the gunwale poles, in which the armed harpoon shaft was rested and through which the harpoon line was paid out (*Nelson, p. 226, Pl. CVIIa*). The "animal head" bow-piece of the Nootka canoe was also a harpoon rest, the groove between its ears serving that function and being so designated. While it requires some effort of the imagination, one can perhaps visualize this bow-piece (with all its peculiar details) as an evolution of the umiak bow assembly and harpoon rest. The canoe bow, like the stern, has been refined to the slenderest form that will perform its function.

A detail of umiak construction is that the stem and stern posts are fitted to the keelson, in some cases at least, by means of a scarphed joint (*see, e.g., Adney and Chapelle, Fig. 169*). It will be recalled that the bow and stern pieces of the Nootka canoe are fitted deep into the hull, often by means of "a very neat and peculiar scarph" (*Swan, p. 36*), carefully fitted and sewn. A scarph joint is a fairly sophisticated technological device, and the only other place I can recall its use on the Northwest Coast is in joining the sections of the Nootka whale-harpoon shaft (*Drucker, 1951, p. 28*).

The prominent gunwales of the canoe, sweeping in strong lines from bow to stern but not touching at either end, preserve the effect of the strong umiak gunwale

poles. In cross-section, the side of the umiak shows a marked out-turn just below the gunwale, caused by the tendency of the skin to cling to the round pole. This feature, which performs the useful function of throwing off waves, is reproduced faithfully on the Nootka canoe.

The "scratch marks" inside the gunwales and down the bow and stern of the canoe are found at places which would mark the margins and lashings of the skin cover of the umiak. Perhaps they originally symbolized lashing or lacing, and when their significance was forgotten were preserved by custom, like the useless buttons on our jacket sleeves.

One further similarity between the two vessels may be added: both frequently bore painted designs on their sides depicting a supernatural creature which combined attributes of the serpent and the wolf (Nelson, p. 445; Drucker, 1951, p. 83).

To this point, my consideration of the Nootka canoe has been based on information already available in published sources. During the summer of 1964 the temporary addition to the Museum staff of Nootka canoe-makers David Frank and Paul Sam, of Ahousat, gave an opportunity to obtain further information. The following details were learned from Paul Sam, who, as "speaker" for the Ahousat chief, is a sort of tribal historian. They concern magical beliefs and practices which were normally retained as well-guarded family secrets.

Much of the magic was focused upon the "scratch marks." Those down the throat of the bow, he said, were painted with a special mixture to quiet the whale. Those down the stern were similarly painted, to calm the sea. Those along the inside of the gunwales were rubbed with a special preparation which prevented the canoe from cracking, and also served as ownership marks to identify the chief who owned the canoe. The mixtures painted on the lines down the throat of the bow were made from secret formulas owned by the families of chiefs, and they varied with different tribes and different types of canoes. The head chief of Ahousat, for example, used three painted lines (red, black, and white); the second chief used two (red and black). One mixture known to the informant was made of a fine "clay" found under rocks on the beach, a red powdery fungus which grows on the bark of the cedar-tree, and sap squeezed from the wood of a small evergreen tree which grows in swampy places. The "clay" and the red powder (which was said to be the monthly flow of the cedar-tree) had to be obtained from places which were hit by the first rays of the rising sun, as they derived power from the sun. Pigments were added to give the mixture the desired colour. Its effect was to obliterate the human smell of the crew, so that the whale would not be aware of their approach. The mixture painted on the lines down the stern was the same, except that instead of sap it used juice squeezed from the leaves of a special shrub. Its effect was to produce fine weather. Calm seas and success in the hunt were also ensured by charms kept by the "captain" in a box under his seat in the stern. Different families owned different charms; for example, the informant's grandfather had used certain mussel shells, berries, grasses, and a smooth round stone from a beach at Cape Beale. The lines along the inside of the gunwales were also sometimes painted with secret mixtures; in addition, their widths and patterns were varied according to the identity and rank of the chief. In the event that the canoe was smashed by the whale, the wreckage could be identified from this pattern.

The informant had forgotten the name of the small projection on the throat which the Makah call the "uvula." He did, however, say that a hole was bored into it and a certain millipede inserted as a charm to quiet the whale. This small creature, when squeezed or broken open, is said to exude a sharp perfume-like

odour, and it was also used by seal-hunters, who rubbed it on their necks and faces to mask their human scent.

When I commented on the animal-like appearance of the canoe bow, the informant (I think inadvertently) likened it to the head of the timber wolf. He then explained that the Ahousat identified it as a wolf's head, and believed that "the killer whale when it steps ashore turns into a timber wolf." He had once questioned his grandfather on the matter, and had been told that the bow did represent the wolf, but that it should be kept secret. Such secrets lose their power when they become known to others. Perhaps for that reason the projection in front was not called a snout but a "handle," referring to its use in lifting the bow of the canoe. It is perhaps significant to note that the dual identity of the killer whale and wolf is an old belief shared by the Indians of this part of the Northwest Coast and the Eskimo.

The informant also confirmed that the sides of the canoe were often painted with designs representing Haitlik, the "lightning snake" which accompanies and derives its power from the Thunderbird. This was done to "give the canoe more power in travelling." On the whaling-canoe, the design was applied *and then painted over in black*, so that the whale wouldn't see it. The gray whale has very sharp eyesight, and it is wise to paint the canoe and paddles black to avoid detection. It is perhaps significant, again, to recall that the Eskimo often painted a somewhat similar creature on the sides of their umiaks.

These new details on the secret and magical aspects of the Nootka canoe can be interpreted to support the hypothesis of its umiak ancestry. The painting of the "scratch marks" with magical mixtures does not explain how they came to be there in the first place. Waterman was told that they were added only for finish, by custom. It now appears that they are endowed with magical significance, which certainly provides a better explanation for their persistence than the blind following of custom. But the question of their ultimate origin still remains, and the answer which I have suggested is that they are vestiges of the ancestral umiak. The killer whale-wolf concept associated with the canoe bow and the painted serpent-like design on the sides are also strong hints of an ancient Eskimo relationship.

If, indeed, the umiak is the direct ancestor of the Nootka canoe, both being an element of the same ancestral whaling complex, then the implications for Northwest Coast pre-history are interesting and important. That the direction of transmission of the complex was from the Eskimo to the Nootka can hardly any longer be questioned, and that it was a result of an umiak-borne migration of proto-Eskimo people down the coast seems more and more likely. Perhaps other complexes of Northwest Coast culture have the same ancestry. Perhaps, to a greater degree than is presently recognized, the maritime culture of the Northwest Coast is built upon a proto-Eskimo base.

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