PROVINCE OF BRITISH COLUMBIA

REPORT

OF THE

PROVINCIAL MUSEUM

OF

NATURAL HISTORY

FOR THE YEAR 1934

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1935.

To His Honour J. W. FORDHAM JOHNSON,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The undersigned respectfully submits herewith the Annual Report of the Provincial Museum of Natural History for the year 1934.

G. M. WEIR,
Provincial Secretary.

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

PROVINCIAL MUSEUM OF NATURAL HISTORY,
VICTORIA, B.C., December 31st, 1934.

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, 1934, covering the activities of the Museum.

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

FRANCIS KERMODE,
Director.

DEPARTMENT *of the* PROVINCIAL SECRETARY.

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

P. DE NOE WALKER, *Deputy Minister.*

PROVINCIAL MUSEUM OF NATURAL HISTORY.

Staff:

FRANCIS KERMODE, *Director.*

NANCY STARK, *Recorder.* MAUD P. HARTREE, *Stenographer.*

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REPORT *of the*
PROVINCIAL MUSEUM OF NATURAL HISTORY
FOR THE YEAR 1934.

By Francis Kermode, *Director.*

OBJECTS.

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

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

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

ADMISSION.

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

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

VISITORS.

The following figures show the difference between those who registered and those who were checked by the staff. While only 23,766 registered, the total of the check was 44,697.

	Registered.	Checked.
January	606	1,500
February	644	1,669
March	700	1,660
April	1,331	2,780
May	1,423	3,034
June	2,460	4,337
July	5,887	11,600
August	5,844	9,159
September	2,400	3,984
October	1,107	1,805
November	608	1,294
December	756	1,875
Totals	23,766	44,697

ACTIVITIES.

During the year a number of specimens have been presented to the Museum, of which an annotated list is given under the heading " Accessions."

A very large collection of Archæological material from many localities throughout the Province was presented by Mr. W. B. Anderson, of Victoria, who for many years was Inspector of Indian Orchards for the Dominion Government. This collection is worthy of special mention and is a very valuable acquisition to our Archæological collection. A number of very fine Indian baskets, principally of the Salish tribe, were purchased during the year. We were very fortunate in securing these, as baskets of this type are not easily secured. Miss M. Wooldridge presented us with two very fine specimens of Indian basketry. Mr. S. J. Darcus, who is a very keen Ornithologist, is responsible for three very valuable additions to our Oological collection.

During the early spring Mr. A. Nicholls and Mr. E. H. Lohbrunner signified their intention of making a trip into the Alice Arm District in search of botanical specimens. As very little, if any, botanical work had been done in that region, they offered to secure specimens for the Provincial Museum Herbarium. On their return they presented us with a large number of

specimens, all new locality records for our Herbarium and some new to the Museum Herbarium. I take this opportunity of thanking them for their kindness and generosity in donating these plants. On pages 15–23 is an article by Mr. A. Nicholls given on their trip and botanical observations. There is also a report on pages 14 and 15 giving a list of additions and corrections to the "List of Hepatics of Pacific Coast and Adjoining Territory," by A. H. Brinkman, published in the Museum Report for 1933.

In May Mr. Kermode, the Director of the Museum, left for Ottawa to attend a meeting of the Canadian Advisory Museums Committee to the Carnegie Corporation of New York, whose duties are to advise and assist in building up Museum work in Canada for the Carnegie Corporation. At the meeting the Director of the Provincial Museum made application to the committee to recommend that a grant be made to carry on educational Museum work for adults and children. A grant was secured for this purpose and the Department undertook to carry out a series of lectures, which were held in the Provincial Museum, and proved to be a great success. The lectures were as follows:—

SATURDAY MORNING CHILDREN'S LECTURES.

Date.	Title.	Lecturer.	Attendance.
1934.			
Dec. 8	Feathered Friends	Mr. K. Racey	288
,, 15	Fossil-hunting	Mr. Marrion	190
1935.			
Jan. 12	Seashore Animals	Mr. G. A. Hardy	295
,, 19	Crabs and Their Cousins	Mr. G. Van Wilby	89
,, 26	Insects	Mr. G. A. Hardy	324
Feb. 2	Our Winter Birds	Mr. F. Kermode	450
,, 9	Beetles and Butterflies	Mr. G. A. Hardy	326
,, 16	Arts and Crafts of B.C. Indians	Miss A. Ravenhill	266
,, 23	Soft Animals in Hard Shells	Mr. G. Van Wilby	230
March 2	Animals of the Forest	Mr. F. Kermode	385
,, 9	Birds of Prey	Mr. F. Kermode	325
,, 16	Strange Fish of the North-east Pacific	Mr. G. Van Wilby	413
,, 23	Arts and Crafts of B.C. Indians	Miss A. Ravenhill	312
,, 30	Fur-bearing Animals	Mr. Theo. Scheffer	315
April 6	Reptiles and Amphibians	Mr. G. A. Hardy	205
,, 13	Museums of the World	Mr. F. Kermode	263

FRIDAY EVENING ADULT LECTURES.

Date.	Title.	Lecturer.	Attendance.
1934.			
Dec. 7	Cannibal Dancers and Grotesque Art	Mrs. Viola E. Garfield	60
,, 14	Entomology	Professor G. J. Spencer	49
1935.			
Jan. 18	Palæontology	Dr. M. Y. Williams	37
,, 25	Migration of Birds	Dr. R. C. Miller	102
Feb. 1	Game Animals of North America	Mr. F. Kermode	110
,, 15	British Columbia as a Feld for Zoology	Dr. C. McLean Fraser	90
,, 22	Our Winter Bird Friends	Mr. F. Kermode	125
March 1	Strange Fish of the North-east Pacific	Dr. W. A. Clemens	116
,, 8	British Columbia Indian Handicrafts	Miss A. Ravenhill	82
,, 15	Plankton in its Relation to the Life of the High Seas	Professor T. Kincaid	61
,, 29	Mammals of the Pacific North-west	Mr. Theo. H. Scheffer	65
April 12	Some Early Botanists of the Pacific North-west	Dr. A. H. Hutchinson	74

To accommodate the large attendance of school-children on Saturday mornings it was necessary to have two sessions, and to admit them by ticket only. The children apparently enjoyed the lectures a great deal, for when closing day was announced it was a great disappointment to them. However, it is to be hoped that we can carry on these lectures again during the coming winter. We also hope that funds will enable us to make small travelling exhibits of natural-history subjects, which could be sent to schools in the outlying districts.

PLATE I.

SCHOOL-CHILDREN ATTENDING LECTURES IN PROVINCIAL MUSEUM, VICTORIA, BRITISH COLUMBIA.

The lectures for both adults and children were illustrated by stereopticon pictures, and at the close of each lecture a moving-picture film was shown illustrating the subject which had already been discussed. For each adult lecture the Director chose a chairman who was interested in the subject to be given by the lecturer.

At the closing children's lecture the Honourable Prime Minister, T. D. Pattullo, very kindly graced the meeting with his presence and spoke to the children during a short intermission.

The Department has received letters and thanks verbally for the work that has been carried out. A number of our evening lectures were broadcast, which were appreciated by those in outlying districts.

The twenty-ninth annual meeting of the American Museums Association of America was held in Toronto this year at the Royal Ontario Museum from May 30th until June 1st, inclusive. This is the first time that it has ever been held on the Canadian side. As your Director was East attending the meeting of the Carnegie Museums Corporation, he took advantage of attending these meetings, which was the first he had been able to attend since the year 1912. The Royal Ontario Museum is one of the most up-to-date and modern Museum buildings we have in Canada. The meeting was called to order by Mr. Paul J. Sachs, President of the American Museum Association, and was presided over by Dr. F. P. Keppel, President of the Carnegie Corporation of New York. There were three sessions each day and many interesting topics were discussed. Approximately 300 attended, representing many of the Museums throughout Canada and the United States. Since this was the first meeting to be held in Canada, the British Museums Association sent over five representatives—namely: Mr. S. F. Markham, Empire Secretary, British Museum Association, London, England; Mr. E. W. Wignall, Secretary, Museums Association, London; Mr. W. A. Smallcombe, of the Museum and Art Gallery, Reading, England; Mr. H. W. Maxwell, Museum and Art Gallery, Bristol; Miss Marion Frost, Museum and Art Gallery, Worthington, England.

ACCESSIONS.

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

Anthropology and Archæology.

Déné (Chilcotin).

4663. Basket, for cutlery, split weave. Fort Norman (purchased).
4685. Basket and lid. Fort Norman (purchased).

Déné (Carrier).

4660. Hat. Northern B.C. (purchased).
4669. Bottle, covered with basketry. Northern B.C. (purchased).
4694. Adze. Fraser Lake (W. B. Anderson).
4746. Arrow-points (5). Fraser Lake (W. B. Anderson).
4748. Spear-point. Stuart Lake (W. B. Anderson).

Salish (Coast).

4658. Pestle, stone. Oak Bay, V.I. (Mr. De Wolf).
4668. Basket. Chilliwack, B.C. (purchased).
4690. Pestle, stone. Sooke, V.I. (W. B. Anderson).
4691. Hammer. Sooke, V.I. (W. B. Anderson).
4724–27. Chisels. Sooke, V.I. (W. B. Anderson).
4749. Spear-point. Sooke, V.I. (W. B. Anderson).
4751. Spear-point. Sooke, V.I. (W. B. Anderson).
4760. Bone point. Sooke, V.I. (W. B. Anderson).
4761. Bone points (2). Comox (W. B. Anderson).
4770. Skull. Willows Beach (James Miller).
4771. Arrow-points. Victoria, B.C. (S. Pocklington).
4772. Spear-point, bone. Ideal Island, near Saltspring Island (A. W. Boydon).
4773. Fish-knife, slate. Ideal Island, near Saltspring Island (A. W. Boydon).

Salish (Mainland).

4661. Moccasins, 1 pair. Penticton, B.C. (purchased).
4662. Basket (fishing). Thompson-Fraser Rivers (purchased).
4667. Basket and lid. Thompson-Fraser Rivers (purchased).
4674. Basket and lid. Yale-Lytton (purchased).
4675–84. Baskets. Thompson-Fraser Rivers (purchased).
4687–89. Hammers. Bridge River (W. B. Anderson).
4692. Pestle or club, in making. Kamloops (W. B. Anderson).
4693. Pestle or club, in making. Seton Lake (W. B. Anderson).
4695. Rubbing-stone. Lytton (W. B. Anderson).
4696. Boulder, partly chipped. Lillooet (W. B. Anderson).
4697–98. Jade boulders. Lytton (W. B. Anderson).
4699. Nephrite or jade boulder. Lytton (W. B. Anderson).
4700. Fish knife or scraper. Lillooet (W. B. Anderson).
4703. Jade stone. Lillooet (W. B. Anderson).
4704–10. Spear-points (26). Lytton (W. B. Anderson).
4711–12. Arrow-points (26). Lytton (W. B. Anderson).
4714. Spear-point. Lytton (W. B. Anderson).
4715. Arrow-point. Lytton (W. B. Anderson).
4716–17. Spear-points. Lytton (W. B. Anderson).
4718. Pipe, soapstone, in making. Lytton (W. B. Anderson).
4719. Spear-point. Lytton (W. B. Anderson).
4720–23. Cutting-stones (4). Lytton (W. B. Anderson).
4728. Spear-point. Lytton (W. B. Anderson).
4729. Chisel. Shalalth (W. B. Anderson).
4730. Labret. Lytton (W. B. Anderson).
4731–32. Whetstones. Lytton (W. B. Anderson).
4733. Knife. Lytton (W. B. Anderson).
4734. Spear-point. Lillooet (W. B. Anderson).
4735. Knife. Lytton (W. B. Anderson).
4736–37. Spear-points (10). Adams Lake (W. B. Anderson).
4738. Arrow-points (11). Adams Lake (W. B. Anderson).
4739. Carved bone tubes. Adams Lake (W. B. Anderson).
4740. Whetstone. Adams Lake (W. B. Anderson).
4741–42. Spear-points (3). Adams Lake (W. B. Anderson).
4743. Knives (2). Adams Lake (W. B. Anderson).
4744. Spear-point. Kamloops (W. B. Anderson).
4745. Arrow-points (2). Windermere (W. B. Anderson).
4750. Spear-points (5). Lillooet (W. B. Anderson).
4752. Chisel. Adams Lake (W. B. Anderson).
4753. Chisel. Shalalth (W. B. Anderson).
4755–56. Whetstones. Lytton (W. B. Anderson).
4757. Spear-point. Lytton (W. B. Anderson).
4758. Bone barbs or awls (4). Lytton (W. B. Anderson).
4759. Bone point. Lillooet (W. B. Anderson).
4764. Wedge. Lytton (W. B. Anderson).
4765. Blue paint stone. Red paint, prepared. Lytton (W. B. Anderson).

Kootenaian.

4745. Arrow-points (2). Windermere (W. B. Anderson).
4762. Flint. Windermere (W. B. Anderson).
4763. Pipe-bowl. Windermere (W. B. Anderson).

Tlingit.

4656. Basket. Juneau, Alaska (Miss M. Wooldridge).
4665. Basket. Aleutian Islands (purchased).

Nootkan.

4655. Mask, representing fish; face opens, disclosing human face. Found in an old Indian village, Gold River, Muchalat Arm (E. C. F. Allen).
4657. Basket. Nootka (Miss M. Wooldridge).
4659. Hat. Vancouver Island (purchased).
4664. Basket. West Coast, V.I. (purchased).
4666. Basket and lid. West Coast, V.I. (purchased).
4671–73. Baskets. West Coast (purchased).
4686. Bottle, covered with basketry. West Coast (purchased).
4701. Berry-crusher, wooden. Clayoquot (W. B. Anderson).
4702. Fish-lure, cedar. Kyuquot (W. B. Anderson).
4747. Spear-point, slate. Ucluelet (W. B. Anderson).
4754. Chisel. Ucluelet (W. B. Anderson).

Eskimo.

4774. Kumluks, 1 pair. Made in one piece, of walrus-hide. Alaska (Miss M. Wooldridge).

Kwakiutl.

4766. Stone club, part of. Quatsino, V.I. (Constable Boyt; presented by T. W. S. Parsons).
4767. Stone disk. Quatsino, V.I. (Constable Boyt; presented by T. W. S. Parsons).
4768. Pestle, part of. Quatsino, V.I. (Constable Boyt; presented by T. W. S. Parsons).
4769. Stone implement, in making. Quatsino, V.I. (Constable Boyt; presented by T. W. S. Parsons).

Miscellaneous Anthropology.

4670. Basket. ? Interior, B.C. (purchased).

Botany.

During 1934, 143 specimens have been recorded; of these, fourteen are new to the Herbarium; a list is given below. I might add that, with the exception of two of these, Mr. Nicholls and Mr. Lohbrunner are responsible for the very valuable additions. Altogether they donated seventy-three different varieties, all taken from the Alice Arm District, which we were most grateful to receive as it is an added locality to our records. On pages 15–23 you will find an article by Mr. Nicholls on their travels and botanical findings in the Alice Arm District.

The following contributors are cordially thanked for their interest in helping to build up the Herbarium (the numbers in parentheses refer to the specimens donated): Miss M. Hill (1); Mr. H. Toms (1); Mr. E. Cooke (12); Mr. D. M. Campbell (1); Mrs. Beckwith (1); Mr. Kemp (1); Miss M. Hartree (2); Mr. G. Millson (1); Mrs. Maude-Roxby (1); Hon. Mr. Justice Martin (1); Mr. G. Francis (1); Mr. G. Fraser (1); Mr. Terry (1); Mr. F. Wiper (1); Mr. C. French (1); Dr. Gunn (1); Miss N. Stark (42).

I also take this opportunity of publicly thanking Mrs. Agnes Chase, Mr. G. N. Jones, and Dr. C. R. Ball, who so kindly assisted in identifying material for us.

Another note of interest is that of the original record of the White Pentstemon (*Pentstemon Menziesii*). Plate IV. shows the mountain at the head of Cottonwood Creek, Cowichan Lake, where it was found on August 9th, 1933. Plate IV. also shows a very fine specimen of the plant itself. Pictures were taken by H. G. Rapael and G. C. Boyd.

Plants New to Herbarium.

Bartsia (*Bartsia Viscosa*). Mr. G. Fraser, Ucluelet.
Violet (*Viola Flettii*). Mr. A. Francis, Olympics.
Anemone (*Anemone narcissiflora*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Habenaria (*Habenaria stricta*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Shooting Star (*Dodecatheon tetrandrum*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Willow (*Salix reticulata*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Willow (*Salix arctica*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Willow (*Salix stolonifera*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.

Shield Fern (*Dryopteris cristata*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Twisted Stalk (*Streptopus streptopoides*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Monkey Flower (*Mimulus guttatus*?). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Monkshood (*Aconitum delphinifolium*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Carex (*Carex atrata* var. *nigra*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.
Barley (*Hordeum nodosum* var. *boreale*). Mr. Lohbrunner and Mr. Nicholls, Alice Arm.

ENTOMOLOGY.

Arachnida.

Dictynid Spider (*Amaurobius severus* Simon). Victoria (Dr. Price).
Crab Spider (*Coriarachne utahensis* (Gertsch)). Victoria (Dr. Price).
Angulate Aranea (*Araneus angulatus* Clerck). Hope (J. Giolma).
Angulate Aranea (*Araneus gemmus* (McCook)). Victoria (R. T. Taylor), (Mr. Marshall), (E. W. Hatch).
Round-shouldered Aranea (*Araneus trifolium* (Hentz)). Oak Bay (Sir Charles Delme-Radcliffe); Victoria (W. Lundley), (2) (Mr. Sloan).
Funnel-web Spider (*Cybæus signifer* Simon). Victoria (I. Hancock).
Jumping Spider (*Phidippus* sp.), immature. Victoria (I. Hancock).
Burrowing Spider (*Brachybothrium pacificum* Simon). Victoria (R. Askey).
Black Widows (*Latrodectus mactans* (Koch)). Oliver (Max Ruhman), (W. W. Shorrock); Vernon (2) (Max Ruhman); Trail (presented by Dr. H. E. Young).
Round-shouldered Aranea (*Araneus* sp.). Victoria (Dr. Price).
Angulate Aranea (2) (*Araneus* sp.). Victoria (E. Liddell).
Spiders? species. Victoria (Miss Marshall), (Mr. Pooley), (E. Cooke); Mount Tolmie (W. H. Gardner).

Coleoptera.

Rove Beetle (*Sphærites glabratus* (Fab.)). Victoria (C. R. D. Ferris).
Fimbriate June Beetle (*Odonteus obesus* Lec.). Powell River (H. F. Rowe).
California Laurel Borer (*Rosalia funebris* Mots.). Saanich (F. W. Hearle); Victoria (Mrs. M. Watson).
Pine Sawyer (*Ergates speculatus* Leconte). Victoria (B. Simmonds).
Predaceous Diving Beetle (*Dytiscus* sp.). Victoria (2) (Miss Dunnell).

Diptera.

American Syrphid (*Syrphus americanus* Weidemann). Victoria (E. Cooke).

Hymenoptera.

Western Horntails (*Urocerus albicornis* (Fabricius)). Victoria (E. Cooke); Lower Highland District, V.I. (A. Winkel).
California Horntail (*Urocerus californicus* (Norton)). Victoria (E. Cooke).

Lepidoptera.

Moth (*Bellura obliqua* Wlk.). Maple Bay (Dr. J. J. Taylor).
White-lined Hawk Moth (*Sphinx lineata* Fabricius). Bamfield (J. Ostrum); Lillooet (R. McPhee).

Neuroptera.

California Green Lacewing (*Chrysopa californica* Coquillett). Victoria (Mr. Losee.)

Orthoptera.

Fork-tailed Bush Katydid (*Phaneroptera furcata* Brunner). Hope (J. Giolma).

PALÆONTOLOGY.

Fossil shells (*Mya truncata* Linn.). Near Lost Lake, Victoria (G. A. Hardy).

MAMMALOGY.

Silver Fox (Stole). Presented by the British Columbia Branch of the Canadian National Silver Fox Breeders' Association.

Bat. Victoria (M. Lumley and D. Anderson).

Deer. Doe with horns. Shot by William Logan, Cumberland; presented to the Provincial Museum through Constable Harvey.

Muskrat. Saltspring Island (C. R. Weatherell).

Hoary Marmot (Melanistic). Nelson, B.C. (C. F. Kearns).

MARINE.

Japanese Oyster. Herriot Bay (W. B. Anderson).

Octopus (Young) (2). Victoria (E. Cooke).

Decorator Crab (*Oregonia gracilis* Dana). Victoria Harbour (Mr. Sowerby).

Rock Scallop (*Hinnites giganteus* Gray). Mudge Island (S. T. Crossley).

Melibe leonina (Gould). Clover Point, Victoria (H. Knight); Brentwood, V.I. (P. Newton).

Skeleton Shrimp (*Caprella kennerlyi* Stimpson). Dallas Road, Victoria (B. G. Howland).

Sea Slug (*Dendronotus giganteus* O'Donoghue). Breakwater, Victoria (H. Whitehouse).

OOLOGY.

Sierra Hermit Thrush (*Hylocichla guttata sequoiensis* (Belding)), nest and eggs (4). Ashnola Mountains (S. J. Darcus).

Long-tailed Chat (*Icteria virens longicauda* (Lawrence)), nest and eggs (4). Vaseaux Lake (S. J. Darcus).

Belted Kingfisher eggs (7) (*Megaceryle alcyon caurina* (Grinnell)). South Okanagan Valley (S. J. Darcus).

Ring-billed Gull eggs (3) (*Larus delawarensis* Ord). Limestone Island, Lake Huron (Rev. C. J. Young).

Great Black-backed Gull eggs (2) (*Larus marinus* Linnæus). New Brunswick (Rev. C. J. Young).

Oregon Towhee egg (*Pipilo maculatus oregonus* Bell). Victoria (Rev. C. J. Young).

ORNITHOLOGY.

Rufous Hummingbird (2) (*Selasphorus rufus* (Gmelin)). Barkerville (J. Wendel).

Peale's Falcon (*Falco peregrinus pealei* Ridgway). Metchosin (T. Wherry).

Leach's Petrel (*Oceanodroma leucorhoa* (Vieillot)). Seattle–Victoria boat (Mr. Hawkins).

Red Phalarope (4) (*Phalaropus fulicarius* (Linnæus)). Qualicum Beach (Captain J. N. M. Hodgins).

Whistling Swans (2) (immature) (*Cygnus columbianus* (Ord)). Comox (T. Pearse); Lost Lake, Victoria, sent in by Game Warden.

Great Northern Diver (*Gavia immer* (Brunnich)). Victoria (Senator Barnard).

PUBLICATIONS RECEIVED FROM OTHER INSTITUTIONS.

Abbey Folk Park and Museum, New Barnett, England	1
American Association for Adult Education	1
American Association of Museums, Washington, D.C.	19
American Ornithologists' Union, Lancaster, Pa.	4
Art, Historical and Scientific Association of Vancouver	5
Australian Museum, Sydney, Australia	3
Bernice P. Bishop Museum, Honolulu, T.H.	1
Biological Board of Canada, Ottawa	13
Boston Society of Natural History, Boston	4
Bristol Museum and Art Gallery, England	1
British Museums Association, London, England	18
Carried forward	70

PUBLICATIONS RECEIVED FROM OTHER INSTITUTIONS—*Continued.*

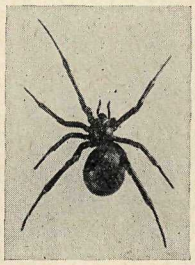
Brought forward	70
British Museum (Natural History), South Kensington	1
Brooklyn Children's Museum, Brooklyn, N.Y.	6
Buffalo Society of Natural Sciences, Buffalo	2
California Academy of Sciences, San Francisco	9
Cambridge University Library, Cambridge, England	1
Carnegie Museum, Pittsburgh, Pa.	3
Catholic University of America, Washington, D.C.	1
Charleston Museum, Charleston, S.C.	3
Chicago Academy of Sciences, Chicago	2
Colorado Museum of Natural History, Denver	2
Condor, Cooper Ornithological Club	6
Cornell University, Ithaca, N.Y.	50
Division of Fish and Game of California	2
Dominion Government Publications, Ottawa	18
Field Museum of Natural History, Chicago, Ill.	8
Indiana University, Bloomington, Indiana	1
Insular Experiment Station, Rio Piedras, P.R.	3
Kansas Academy of Science, Manhattan, Kansas	1
Leicester Museum, Leicester, England	6
Library of Congress, Washington, D.C.	1
Lloyd Library, Cincinnati, Ohio	1
Manchester Museum, Manchester, England	2
Missouri State Museum, Jefferson City, Mo.	2
Musee D'Ethnographie du Trocardero, Paris	2
National Museum, Melbourne, Australia	1
National Museum of Wales, Cardiff, Wales	1
New York Zoological Society, New York	8
Nova Scotian Institute of Science, Halifax, N.S.	2
Northern Naturalists' Union	1
Ohio Agricultural Experiment Station, Wooster, Ohio	6
Ottawa Field-Naturalist, Ottawa	9
Oxford University Press, Oxford, England	12
Pacific Northwest Bird and Mammal Society	2
Peabody Museum, Yale University	7
Provincial Museum of Natural History, Regina, Sask.	1
Public Museum, Milwaukee, Wisconsin	5
Royal Geographical Society of Australia, Adelaide, Australia	2
San Diego Society of Natural History	22
Santa Barbara Museum of Natural History	2
Scripps Institution of Oceanography, La Jolla, California	5
Smithsonian Institution, U.S. National Museum	6
Staten Island Institute of Arts and Sciences	8
Sun Yatsen University, College of Science, Canton, China	1
U.S. Department of Agriculture	1
University of California, Berkeley, California	7
University of Colorado, Boulder, Colorado	6
University of Montreal, Montreal, Quebec	1
University of Nebraska, Lincoln, Nebraska	11
University of Oklahoma, Norman, Oklahoma	1
University of Puerto Rico, Rio Piedras, P.R.	2
University of Toronto, Toronto, Ontario	2
Vancouver Art Gallery, Vancouver, B.C.	10
Wagner Free Institute of Science, Philadelphia	5
Ward's Natural Science Establishment, Rochester	1
Zoological Society of Philadelphia	1
Total	352

We are indebted to the following for pamphlets received during the year: Mr. A. H. Brinkman, Mr. J. F. Gates Clarke, Mr. Jos. F. Honecker, Mr. Alden H. Miller, Dr. H. C. Oberholser, Dr. A. C. Oudemans, Dr. T. H. Scheffer, Mr. M. P. Skinner, Dr. A. Svihla, and Dr. G. R. Weiland.

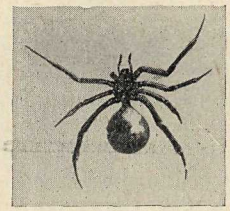
"THE BLACK WIDOW SPIDER."*

(Latrodectus mactans.)

BY K. RAHT, PUBLIC HEALTH LABORATORY, TRAIL, B.C.



(Obverse side.)



(Reverse side.)

During the past summer, interior British Columbia, and particularly Trail and vicinity, has been visited by large numbers of Black Widow spiders (*Latrodectus mactans*). It is reasonably certain that the Widows have been in this vicinity for at least two years, but during the past summer they have been particularly numerous.

The Black Widow is probably the most venomous spider in the United States and is, so far as we know, the only really venomous spider in Canada. According to H. E. Ewing, Entomologist, U.S. Department of Agriculture, "*Latrodectus mactans* is rather common in the South; the species is rare in the North. In this species the poison-sacs, of which each individual has two, extend far back in the jaws. The bite of the female is followed by sharp pain, followed by the appearance of a small white spot surrounding each puncture-point. Aching pains arise in other parts of the body, frequently followed by cramped breathing. After a bitten patient is put to bed, some fever may develop, pains become intense, and delirium may ensue. Recovery is nearly always within two weeks. Fatal cases affecting man are rare; yet numerous fatal cases of *Latrodectus* bite affecting domestic animals have been recorded recently in foreign countries."

The adult female measures almost ½ inch in length; the body is bulbous, jet shiny black, and carries a bright orange-red hour-glass marking on the abdomen. The hour-glass marking is very distinctive of the species and a spider of this description should be given a wide berth. The male of the species is about one-half the size of the female and is marked with a brownish stripe down the back, and is further marked with yellowish or brown stripes down the sides; the leg segments are alternately black and brown. The daughter of the species resembles the male parent until mature.

Locally, in the hot months of July and August, the spiders have been found chiefly in hot, moist, shady spots, such as behind climbing vines, under and between stacked lumber, in burlap packing, sawdust and sand-piles, and even in a baby's crib. Since the weather has cooled off a bit we find the spider looking to a winter home in the basement. The Widow spider was definitely identified here early this summer, and school-children and others promptly began capturing them until at this time it is safe to assume that almost every one in Trail is qualified to walk up to *Latrodectus mactans* and greet her familiarly with, "Hi, Latro!"

Adding further data to the above information, I would like to mention that Mr. E. R. Buckell collected the Black Widow spider from Oliver, B.C., in 1927. Many specimens have also been reported from Princeton South, and it is reported to have been taken from Coldstream near Vernon. We received this report from Mr. Max H. Ruhman, Assistant Entomologist, Vernon, B.C.

* Published by permission of Dr. H. E. Young, Secretary, Board of Health, Health Department, Victoria, B.C.

NOTES ON PACIFIC COAST HEPATICS.

By A. H. Brinkman.

On pages 24 to 33 of 1933 report was given a list of Hepatics, covering a large area of Western America. Since then some additions and amendments have become necessary.

The January-February, 1934, issue of Bryologist has a list of additions to the Northwestern States, by Lois Clarke and T. C. Frye, most of which are additions to the list shown, though all known from other areas before, and from their situation, to be expected, being found in near-by States.

From Oregon come records of *Jungermannia riparia, Lophozia heterocolpa, Bazzania tricrenata, Scapania subalpina,* and *Riccia sorocarpa,* while *Scapania mucronata* Buch. is an addition to Western America. As this has not been listed otherwhere to my knowledge, the data are given, Pigeon Point, Coos County, Oregon, September, 1931, E. Sanborn, Det. A. W. Evans. *Chiloscyphus fragilis* is an addition to Idaho. For Montana are the following additions: *Riccia crystallina, Clevea hyalina,* and *Calypogeia trichomanis.* For Wyoming, *Nardia scalaris* is to be added. Some changes are necessary in British Columbia. Among Mrs. MacFadden's valuable lists are some not included. *Lophozia alpestris* var. *gelida* (Tayl.) Macv. was overlooked, shown on page 11 of 1926 Report. It is hoped to examine later the specimen of *Diplophyllum apiculata,* shown on page 16 of 1925 Report; *Scapania curta* var. *geniculata* is a much misunderstood plant, and so was not included; the same also is true of *Scapania cordifolia.* But a specimen collected by W. A. Newcombe on Mount Arrowsmith Trail, July, 1934, seems good as *Scapania cordifolia. Scapania Evansii,* after examination and careful comparison with type material, is deleted; it is a form of *Scapania intermedia,* mixed with a *Diplophyllum.* An addition to the Western Hepatic Flora is *Scapania kaurinii,* Ryan, forma, collected by A. H. Brinkman, Glacier, 1908. Not quite identical with type material, but too close to place otherwheres. This makes three additions to list—*Scapania mucronata* Buch., *Scapania kaurinii* Ryan, and *Lophozia alpestris* var. *gelida* (Tayl.) Macv. *Scapania paludicola* has been found in Alberta, and in the Yukon (misnamed *Scapania undulata*).

From California come records of *Cephalozia Lammersiana* (treated as a var. of *bicuspidata*) and *Jungermannia Schiffneri,* a form with larger cells than usual, and rather longer perianths. Other additional records are expected, as so much of the area is but scantily worked over, but the expected records are not yet available. An interesting point arose over *Anthoceros punctatus* and *Anthoceros fusiformis* and its var. *stomatifer.* Dr. M. A. Howe in Torr. Bot. Club, January, 1898, pages 1 to 24, treats of this group, and one can but notice the narrow differences between the two species referred to. Dr. Howe points out the fact of its near intergrading in fruiting characters, while Clarke and Frye, in "Liverworts of Northwest," also show in key how difficult it may be to separate by fruiting characters. Examination of some material of both showed that Eastern American *A. punctatus* had well-defined roughly quadrate thickenings on inner capsule wall, while no material of *A. fusiformis* yet examined has shown this structure. The question then arises whether this easily recognized character may not prove of sufficient value to differentiate between doubtful specimens, and also raises the further question, how far Western material of *A. punctatus* has been gathered. If time permits, it is hoped to further study this point of capsule wall thickenings.

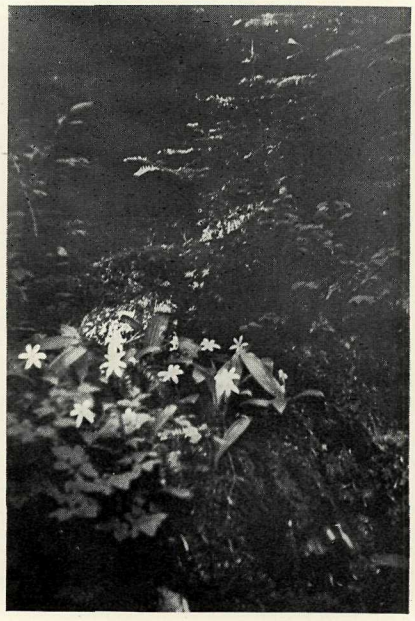
Some Notes on Grimmia.

Recently Part 1 of Volume 2 of "Moss Flora of North America" was published, and is now available (price, I believe, is $2.50) from G. N. Jones, University of Washington, Seattle, Washington. In this book Mr. Jones has gathered together nearly all the available records of Grimmia for North America, and any one who has tried to wade through the material published on Grimmia will appreciate having in condensed form a full treatment of this difficult and interesting group. Reductions to synonymy are frequent, and many of the difficult problems left by Kindberg have reached some kind of solution.

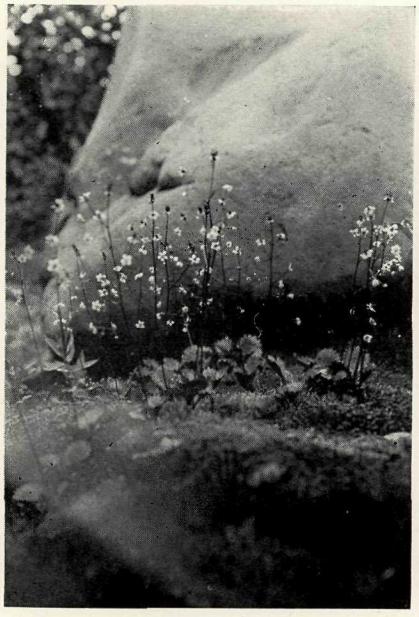
The book has a full key and a good index, so that in the case where former records have been reduced to synonymy it is not difficult to find where to look for the descriptions under another name, thus many of the Grimmias listed on page 12 of 1926 Report have been reduced to synonymy under other names. The same general remarks are true of Rhacomitrium.

PLATE II.

Anemone narcissiflora. Alice Arm, Northern B.C.



Clintonia uniflora. Alice Arm, Northern B.C.



Mountain Saxifrage. Alice Arm, Northern B.C.

The key, though a bit difficult at first, will, I think, with practice, be found a valuable aid to placing fruiting specimens, and luckily this group is quite frequently found fruiting, but only practice can help with the difficult plants that do not clearly come under any one sub-group. The plates are a great help, even though by some oversight a few species have been left without illustrations. British Columbia is particularly rich in this group; over two-thirds of the species and varieties included in the book have been found in British Columbia and additions are being made. Thus *Grimmia elongata*, noted by Jones as not yet known to occur in North America, has been found at Glacier, while another species, *Grimmia subgraceillinervis* Kindb., is quite sufficiently distinct from any of the group to which it belongs (Group Litoneurum) to suggest it as an addition to North America, while other material has not yet been finally reported on, thus showing that rich as is the known flora of this Province in this particular group, there seems good reasons to expect further additions as further and fuller collections are made. Unfortunately at present very few persons are available to whom material can be sent, and those few are crowded with work, with the inevitable result that either namings are long delayed, or that, in the wish to have the naming quickly done, mistakes may possibly creep in, where, if given sufficient time, mistakes may be avoided. This is a group that might easily be taken hold of by some of our keen Canadian Bryologists, and made their own, in an endeavour to have in Canada some one to whom material of the Grimmiaceæ may be sent, and thus relieving to a certain extent hands that are already overworked, and that will almost certainly be further loaded, with the publication of handbooks that make the study of such groups less difficult than was the case hitherto. One noticeable feature is the reductions to varietal rank of a number of former species, more noticeable because in North America there has been an hesitancy in admitting varieties.

THE HANGING GARDENS OF BRITISH COLUMBIA.

By A. Nicholls.

During the summer of 1934 we planned and carried out an expedition in a small way to the Cassiar District of British Columbia, which is the northernmost district of the Province. The primary object of the trip was to obtain first-hand acquaintance with the more northern plants, and done mostly in the irresponsible spirit of holiday, though with an eye to plants of horticultural value. The following account of the trip is compiled partly from notes made in the field and partly from impressions retained and set down later.

The personnel consisted of E. H. Lohbrunner and the writer, A Nicholls, both of Victoria, B.C. We have in common a love of the mountains and all wild things, and have made many short expeditions to the mountains of Vancouver Island; but on this occasion we were more ambitious and desired to go farther afield.

We boarded the night boat out of Victoria and arrived at the mainland city of Vancouver in the early morning.

At 9 p.m. of the same day, June 22nd, we embarked on the S.S. "Catala," Union Steamship Lines, for the north. We enjoyed the cruise along the picturesque coast of British Columbia, where snow-capped mountains rise sheer from the salt water and hundreds of streams cascade in milky spume. We steamed past the green islands of the Queen Charlotte Group and thrilled to the sight of a spouting Whale as we crossed Queen Charlotte Sound.

On the third day we disembarked at Alice Arm, approximately 700 miles from Vancouver, a little settlement inhabited mostly by prospectors and a few trappers, and situated at the head of one of the deep fiords that indent the coast to a depth of 20 miles or more.

First impressions of the country we had come to conquer was of abruptly soaring mountains with gleaming white crowns and intensely green valleys, densely clothed with vegetation where mountain-fed streams foamed down in furious spate.

It is a country of heavy precipitation, 10 feet of snow being usual in winter, with a corresponding amount of rainfall in summer. The district is rich in mineral, particularly silver and copper, with some gold, and Alice Arm was formerly of some importance in this respect; vacant cabins of erstwhile prospectors are dotted about the mountains all through the district, providing welcome shelter during the frequent rainfalls.

We arranged for the use of a log cabin in the village as headquarters and base camp, from which to make raids on the surrounding country. Having disposed of our impedimenta, we

sallied forth eager to make the acquaintance of the local flora, and proceeded to examine the extensive gravel and sand bars contiguous to the mouth of the Kitsault River.

Here a blaze of colour that might have been a bed of Godetia attracted us, which turned out to be masses of the Alaskan Willow Herb *Epilobium latifolium*. The stems average 18 inches in height and the exceedingly prolific flowers are fully 2 inches across; of a brilliant rose-magenta, they made gay gardens of the sand-bars, which was also the chosen home of *Dryas Drummondii*. There was literally acres of this species, carrying some nodding yellow flowers, but mostly in fruit, and the thousands of erect feathery grey awns provided a unique and most interesting sight to a botanist. An attracive member of Gentianaceæ, *Gentiana propinqua*, was sparingly distributed about the sand-bar; it grows erect and branching, with numerous mauve-purple flowers in the axils of the leaves. A gleam of gold from the edge of a backwater caught our eye; it was a single plant of a magnificent Mimulus, about 10 inches in height, stout and branching, brown-blotched leaves and enormous clear golden-yellow flowers. We are fairly well acquainted with the Mimulus species of the Pacific Coast, but this is new to us; it is not common and only a few plants were seen during the trip.

Leaving the sand-bars, we passed on to the rich silted land of some low flats where we were greeted by the cœrulear spires of *Lupinus nootkatensis* and delighted by the sight of numbers of a lovely blue Geranium, *Geranium erianthum*. This species under favourable conditions approximate *Geranium grandiflorum* in stature and size of bloom; the flowers are lavender with a black stripe down centre of each petal; at times they achieved a beautiful combination by straggling into the bushes of a wild Rose which carried very large luminous pink flowers.

Here also among the marsh-grass and sedges flourished the strange Lily *Fritillaria Kamtschatcensis*, with several bronze-coloured campanulate flowers nodding from the 2-foot-high whorled stems.

As the sun was sinking below the ramparts of mountains that ringed us around we repaired to our cabin in anticipation of hitting the trail in the morning. Our objective of the next day was Mount McGrath and the sharp spire of Mount Theophilus beyond it, gleaming cold and white against a dark-blue sky; we sought our bunks by daylight, though it was nearly 11 p.m., and turned in, keenly anticipative for another day.

Bright and early the next morning we set out for the mountains. At first the trail led through flat land densely furnished with Alder, Crab-apple, Wild Raspberry, Vaccinium in variety; Salmonberry, *Rubus spectabilis* and *Rubus parviflorus*, *Amelanchier*, *Viburnum pauciflorus*, *Spiræa Douglasii;* and Elder, *Sambucus racemosa*. From the last mentioned I obtained several specimens of a fine Longhorn Beetle, *Desmocerus cribripennis*, with olive-green elytra bordered with orange. Herbaceous plants were represented chiefly by Aster, Solidago, Epilobium, and Smilacina. After about 2 miles we left the flats and the trail abruptly began to ascend through a magnificent forest of Hemlock, *Tsuga heterophylla*, and for 2,000 feet this species was predominant, with an occasional Balsam, *Abies lasiocarpa*. Here we saw

> " Beneath dim aisles, in odorous beds,
> The slight Linnæa hang its twin-born heads."

From the time of entering the timber the ground plants were pure delight; here and there the forest floor was sheeted with the white bracts of *Cornus canadensis* interspersed with carpets of the dainty little *Rubus pedatus*, its snowy fragile flowers just clearing the mats of tiny palmate leaves; unbelievable tufts of *Moneses uniflora* with dozens of waxy bloom; nodding clumps of *Pyrola bracteata* with 15-inch spikes of deep rosy bells; colonies of the exquisite Pipsissewa *Chimaphila umbellata*, one of the loveliest of a lovely race. And here, in their legions, was my best-loved north-woods plant, the Skeena Lily *Clintonia uniflora*, a plant of such sweet simplicity and endearing charm as would make an East Indian Dendrobium look garish by comparison. From between two broad simple leaves rises the stem carrying a single Lily flower 2 inches across, the tips of the petals flaring slightly backwards, neither stiffly upright nor nodding, but at precisely the proper angle, a flower of such crystalline purity and snowy whiteness as to be arresting to the most unimaginative forest traveller. Indeed, I think even the surly Bear must pause in his aimless perambulations to admire such pure unalloyed beauty, nor do I know of any other plant so perfectly appropriate to its setting, for

> " Here the soul of silence broods "

in the subdued light, filtered through the interlacing fronds above, softly lighting the straight brown boles of the Hemlock and glinting gently from the gold-green fronds of the Oak ferns interspersed among the shining green leaves and silver stars of the Queen of the North woods *Clintonia uniflora.*

As we continue, the trail steadily ascending, we note occasional colonies of the curious Coral Root Orchid *Corallorhiza multiflora,* a saprophyte with reddish stems and ten to thirty white and purple-blotched flowers of conventional orchid design, and in odd corners small gatherings of the perky little Twayblade (*Listera* sp.) in two species. Another lilaceous plant, *Streptopus,* became much in evidence, in three species of which the most interesting was *Streptopus streptopoides,* new to our experience; it is quite small, simple stems 4 to 6 inches, and tiny reflexed flowers followed by a bright crimson bead-like berry.

About midday we shed our heavy packs beside a singing stream of clear cold water and admired the bright yellow of *Viola glabella* growing along the creek and the rosy flowers of *Rubus spectabilis* overhanging it.

The trail so far had been pretty good as trails go in this part of the world, but now windfalls became frequent, and then the trail got real bad. It suddenly started up a long ascent which at an earlier season must have been the bed of a rampaging torrent, for big holes were gouged out in places and great boulders rolled on to it, and here all the winds of high heaven must hold revel for big trees lay across the trail.

From here on the trail was better and we plodded steadily on, frequently exclaiming at some especially beautiful bit of forest flora, or stopping to tease a staid and dignified old man Porcupine. Once I reached out and gathered a fine specimen of particularly poisonous-looking green-topped toadstool. As a matter of fact, this species, *Russula virescens,* is one of the few mushrooms that are good to eat out of hand; it is crisp and of distinctly chestnutty flavour.

Eventually as the shadows began to lengthen we came in sight of a tight little log cabin beside a cheerful creek that came tumbling down from heights above. We proposed to use the cabin while we were in this section, as it was only a couple of miles from our objective, Mounts McGrath and Theophilus.

The cheerful song of the ubiquitous Wren roused me very early the next morning. From the Atlantic to the Pacific, the woods traveller is sure to be greeted by the cheery melody and friendly attentions of this busy little cosmopolite.

When we took to the trail again the timber was now thinning out and diminishing in stature, and we became aware of the lush green of *Veratrum viride* and the immense leaves and towering flower-heads of *Heracleum lanatum.* Bear signs were much in evidence and, judging by the tracks, they used the trail along here as a promenade. As we swung into the lower end of a long green valley we were startled by the loud shrill whistle of the Hoary Marmots, a sound that seems peculiarly fitting to the wild mountain valleys. The piercing note is then taken up and repeated again and again for miles along the valley and up the slopes, heralding the approach of strangers to their wild domain. On the left side of the valley long, very steep green slopes led up to the summit of Mount McGrath; on the right Mount Theophilus reared an imposing bulk, its long flanks striped with white where the snow still lay thick in the draws.

We continued along under McGrath looking for an easier ascent, but it got worse if anything, so we decided to tackle the slide.

I had already provided myself with a stout staff, pointed at one end, and my method was to thrust this into the sod and push myself up and grab a tuft of heather or prostrate willow and repeat. In this way I inched and hunched upward through a hanging garden of bewildering colour. *Myosotis alpestris* of an earthly blue; Indian Paint Brush (*Castilleja*) in rose-purple, scarlet, orange, and yellow. *Saxifraga Bongardi, nivalis, Mertensiana, spicata,* and others. The crassula-like Rhodiola *Sedum integrifolium* with bronzy flower-heads; *Anemone parviflora* white cups with heavenly blue reverse of petals; bright splashes of pink on outcroppings revealed *Silene acaulis;* a dwarf Monkshood with one or two large helmets of midnight blue; scarlet bells of *Aquilegia formosa* swinging among the cœrulean spikes of Lupine; lavender and rose of *Geranium erianthum* and *Epilobium latifolium,* here only a few inches high; mats of Alpine Willows with disproportionate large catkins of pink and yellow; enchanting masses of white Bell Heather, *Cassiope Mertensiana,* with its dark-green club-moss foliage and myriads of pearly-white bells.

These things softened the strain of hauling my not inconsiderable weight up that long incline. Also at intervals I came to a Marmots' burrow and the little bench formed by their excavations afforded a comfortable place to sit down and smoke a pipe. And so I continued my dubious way and at length saw the glorious sight of a mile-long band of *Anemone narcissiflora*, a sight I shall never forget. They flowed in a broad belt all along the rim of the steep we had ascended, away and away till their form was lost in distance and merged in a continuous band of creamy white, and in the mountain breeze they swayed and rippled in unison.

I think that most of us carry certain pictures or impressions of sight or sound, which, at will,

"Flash upon that inward eye."

Of such I can, with undiminished clarity, recapture the vision of a hundred or more pearly-pink blooms of *Cypripedium Reginæ* once seen in the backwoods of Quebec, or the rosy cloud of acres of *Kalmia angustifolia* blooming in a boreal bog of Northern Ontario; or again the conjunction of a vivid sunset and the other world melody of the song of a Hermit Thrush by a lonely lake in Algoma. With these and others will be stored in the mysterious recesses of memory the picture of *Anemone narcissiflora* as we saw them that day on a mountain of Northern British Columbia.

We wandered about for hours on the broad rolling summit, revelling in the magnificent views in every direction, and here for the first time we saw the Alaskan Bell Heather *Cassiope Stelleriana* on its native heath, like a tiny club-moss, growing in close tufts, each wee growth of 2 or 3 inches tipped with a creamy white bell, by actual measurement ½ inch wide. This is one of the treasures of the north and is quite amenable in cultivation, given appropriate conditions.

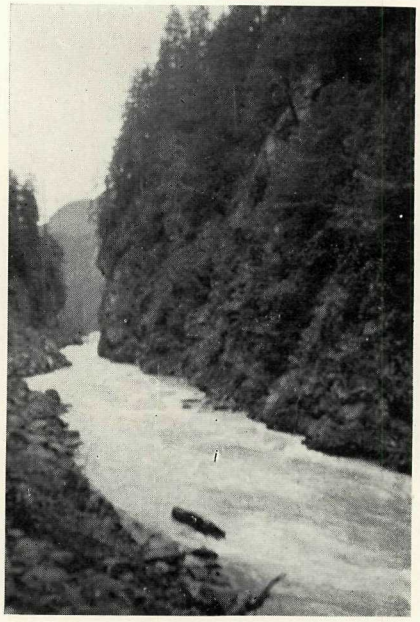
As the sun disappeared in the west it became decidedly cool, and we made our way carefully and circumspectly down that fearsome slide into the valley and to our cabin; planning to tackle Mount Theophilus on the morrow.

We resumed our explorations early the next morning and soon arrived at the base of the valley, which is here a mile and a half wide, with two or three intervening ridges and several streams coming from the head; these in turn augmented by many streamlets from the slopes on either side. We struck into the wet meadows which were gay with legions of the magnificent Giant Shooting-Star *Dodecatheon tetrandrum*, a splendidly robust plant of lanceolate leaves a foot long and stout flower-stems 15 inches high, with rosy-purple corolla and yellow basal ring. Other plants of these soaking meadows were Deer Cabbage, *Menyanthes cristagalli*, with round leaves instead of the three-fingered ones of *Menyanthes trifoliata*, which was also plentiful; the flowers also in somewhat rounded heads, otherwise similar to the common Buckbean. *Caltha leptosepala* was abundant with fine white flowers bluish on reverse of petals, also *Petasites frigida* with fragrant pinkish corymbs. Later on these meadows will be a sea of *Gentiana calycosa;* we were, alas! too early for them, but it must be an unforgettable sight in August or September, as stout healthy clumps were springing into growth wherever we looked. The intervening ridges were covered with a dense growth of gnarled Conifers, *Tsuga mertensiana* and *Abies lasiocarpa*, and ericaceous plants such as *Cassiope mertensiana*, *Menziesia ferruginea*, and *Ledum groenlandicum*. We forced our way laboriously through the tangle and eventually reached the lower slopes of Theophilus, and by fairly easy stages up a series of benches attained to the hanging meadows over 5,000 feet and directly under the spire, which shot up another thousand and something feet. I cached our impedimenta beside a great boulder which was splashed with the silver and gold of *Potentilla villosa* and proceeded to examine the ledges and patches of short-tufted meadow round about. Right at my feet I discovered a colony of wee Gentians, *Gentiana glauca;* from fat little tufts of roundish leaves standing bravely erect to the height of 3 inches were several of the neatest little green-blue trumpets, a most entrancing mountain jewel. Conspicuous in the short turf was a mountain buttercup, *Ranunculus Eschscholtzii*, with smooth fleshy dissected leaves and flowers of thick wax-like texture and golden colour, and the numerous violets of *Viola adunca*, small of leaf and huge of flower.

On dry rocky ledges grew large mats of *Saxifraga tricuspidata* of similar aspect to *Saxifraga Bronchialis*, but with three spines on leaf and bearing pale-yellow flowers. A Pedicularis grew here and there, leaves, stems, flowers, all coloured a dull red-purple. *Cassiope stelleriana* was at its best in this locality, some tufts being so smothered in flower as to hide

PLATE III.

First glimpse of Kitsault Glacier. Alice Arm, Northern B.C.



Kitsault River. Alice Arm, Northern B.C.

Northern Country, Bridge across Cariboo Creek. Alice Arm, Northern B.C.

the foliage entirely. *Myosotis alpestris* was a constant delight; on these wind-swept lawns they scintillate with a brilliancy undreamed of in lowland gardens.

I meandered about admiring and occasionally digging a selected specimen when suddenly a startling clamour broke out up the valley; a snarling, barking, screeching medley which must surely emanate from half a dozen wild cats, a couple of bear and a pack of wolves having a free-for-all fight. Somewhat alarmed but wholly curious, I hustled around a shoulder to see what it was all about; it was merely a couple of Hoary Marmots having an argument about a boundary-line and ended by one chasing the other off the disputed territory, so I went back to my plant-hunting.

Some time later I glanced upward to the peak and saw Ed on his way down. With him he brought some beautiful mats of *Saxifraga oppositifolia*, jade cushions studded with amethysts, some fine plants of *Lloydia serotina*, and a curious little Moonwort, *Botrychium* sp., and some specimens of the charming little Willow *Salix reticulata*.

There is a large slate-blue Grouse indigenous to this region, quite the largest of the Grouse family I think. It is locally known as Fool Hen and the appellation is no misnomer; we had seen several mother birds with half-grown chicks, but coming down through the timber a cock flushed from a log and perched on a Hemlock branch about 60 feet up.

We awoke next morning

> "To the lilt of a low refrain,
> The drip, drip, drip, of the lush green leaves
> After a night of rain."

And it continued to rain most of the day, so we were content to take a day off from more strenuous activity. We packed our collected plants in Sphagnum and wax paper, wandered about investigating the holes in the hillsides laboriously excavated by erstwhile prospectors, admired the sheen of rain-washed foliage, and sniffed the pleasant woodsey smells.

Our next sally was to a high plateau about 15 miles distant from our base in an easterly direction. As a preliminary we had to ford the Illiance River, a very cold and swift-flowing stream; having negotiated this, we stopped to empty the water out of our boots and wring out our nether garments and commenced a long stiff climb. On the grade we passed through a belt of *Pinus contorta* growing in a very dense stand, straight, and limbless beneath; this belt was marked by an almost total absence of undergrowth. Soon this gave way to the usual Hemlock forest and in a few hours we had gained considerable altitude, but lost some of it by having to descend into a deep canyon where the white water of Caribou Creek rushed down in a deafening roar. We made the descent by the aid of wire strung down the walls, crossed the creek by a single log with a wire guard, and hauled ourselves up the opposite side by the aid of more wire.

As we eventually approached the plateau we became aware of the lovely Yellow Cedar *Chamæcyparis nootkatensis*, which grows to a fair-sized tree in this section; in young specimens the bark is smooth and of a mahogany-red colour; the close-grained yellow wood is very fragrant, a property it retains indefinitely and is valuable for cabinet-work and similar uses. And now the trees thin out and we enter the muskeg, a high rolling country of park-like aspect dotted with small lakes and scattered groves of trees and occasional dry knolls.

The walking was pleasant over the spongy tundra, which was spangled with the violet-like flowers of the Butterwort *Pinguicula* and the glistening rosettes of Sundew *Drosera* in both the round and long-leaved varieties. There were wide colonies of the Cloudberry *Rubus Chamæmorus*, each 6-inch stem surmounted by a solitary white flower, and its red-flowered congener, *Rubus arcticus*, in blushing contrast. Conspicuous was a fine golden Geum, *Geum calthifolium*, somewhat like a taller-growing *Geum montanum*. An Erigeron with white to rose flowers on solitary stems was widely distributed. The dwarf Spiræa *Lutkea pectinata* was very abundant, masquerading as a mossy saxifrage and trailing its finely cut foliage and creamy brushes through the wiry stems of *Kalmia polifolia*. The family Ericaceæ are well represented, *Cassiope mertensiana* and *stelleriana*, *Andromeda polifolia*, *Ledum Groenlandicum*, and the Kalmia, the most universal, *Menziesia ferruginea* also abundant, the flowers being very reminiscent of the Japanese Enkianthus in both colour and form; we saw some distinctly glaucous-leaved forms of this.

Less common was the interesting Copper-bush *Cladothamnus pyrolæflorus*, with quite large wide-open copper-hued flowers, the style long and curved as in some of the Pyrolas. *Phyllodoce glanduliflora*, with pale-yellow flowers, was frequent on the drier knolls, also the Crowberry *Empetrum nigrum*. *Vaccinium oxycoccus*, with its tiny pink cyclamen flower, trailed through the Sphagnum. An attractive little Gentian grew around the margins of the lakes, upright and branching to 8 or 10 inches, with sharply lobed white flowers speckled with blue in the throat; it is probably annual or biennial.

Wherever we wandered on this plateau we were never out of sight of the clean little white stars of *Trientalis arctica*, *Coptis trifoliata*, in Eastern Canada a woodland plant; here trailed its golden threads all over the open moor. *Coptis asplenifolia* was also present, its dissected leaves very like the fronds of *Asplenium adiantum nigrum*. *Liliaceæ* was represented by the false Asphodel *Tofieldia* in two species. But the most delightful of all was a white Orchid, *Habenaria dilatata?;* unlike most of the Western Habenaria, the flowers of this species are a pure clean white. They average about 15 inches in height and usually grow in large colonies, sometimes as many as a hundred spike within the radius of a few yards, thrusting up through the fine grass and the dangling jade-green and black hearts of *Carex atrata* var. *nigra*. As such it is beautiful, but its great attraction is an entrancing fragrance; personally I consider it one of the most sweetly fragrant of all Orchids, and I say this having cognizance of the pleasant odours of some Odontoglossums and Dendrobiums and other exotic species.

I formed the habit of plucking a spike and carrying it about all day, taking a sniff now and again. I have never been able to compare it with any other flower-scent, but there is a certain spicy tang mingled with the undescribable sweetness. (There is some doubt about the appellation of this species; one authority claims *Habenaria dilatata* does not occur west of the Rocky Mountains.)

On our return journey from the plateau we turned up the Illiance River and followed its course till we came to the Illiance Canyon, a deep gorge between frowning black cliffs, where you were deafened by the roar of the river and chilled by a dank cold breath from the bowels of the earth; a place that immediately recalled the illustrations of Gustave Dore. Here we established a new station for the rare fern *Polystichum Andersoni;* it is not surprising this fern is reputed rare as it prefers to grow in most impossible places. Here they were growing in pockets and small ledges on the cliffs, where a little humus had collected. We subsequently found it in more accessible situations on the Kitsault River. This fern until quite recently was recorded from a single station in the interior of Vancouver Island and named after its discoverer, Mr. W. B. Anderson, of Victoria. It is a fine upstanding fern, recalling *Polystichum aculeatum*, but a peculiar feature is that it carries two or three bulblets near the tip of mature fronds that are potential new plants.

We returned to headquarters for a day's rest and to make preparations for another sally. Next morning Ed went fishing and I collected beetles, and among others secured some specimens of *Euvodina monticola*, a pretty Longhorn with elytra of old ivory spotted with black, and I gathered a couple of quarts of juicy Saskatoons, the fruit of *Amelanchier florida*.

I saw a sleek and glossy Mink foraging along the banks of a stream and was keenly interested in stalking and observing one of the rare Black Marmots. This species or sub-species is considerably smaller than the Hoary, are invariably black, and are confined to the wooded valley of the lowlands.

Our next survey led us to the vicinity of the great Kitsault Glacier, a mass of ice 40 miles long by 20 broad, and a distance of 30 miles from the coast. We made the hike in two days, which, to the uninitiated, may seem somewhat slow, but to any one who knows the country they will concede it is not bad. The way led up the long valley, broad at the base but eventually narrowing to a canyon, down which the Kitsault River flashed in a swirl of milky foam. The first several miles of the trail took us through a jungle of vegetation almost tropical in its exuberance. In addition to the usual Hemlock, there were stands of Sitka Spruce, *Picea sitchensis*, and Cottonwood, *Populus trichocarpa*, with some Alder and Willows, and a few of the smooth Maple *Acer glabrum*. We measured one Hemlock; it was exactly 6 feet in diameter; the Spruce and Cottonwood also attained to magnificent proportions in this valley, but the sub-shrubs and herbaceous plants were truly astonishing.

The graceful spires of *Spiræa aruncus* towered to fully 7 feet. The musa-like leaves of *Lysichiton kamtschatcense* were often 5 feet long. This is a most striking plant in these

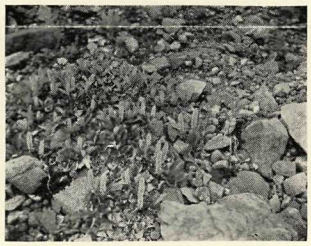
PLATE IV.

Mountain at head of Cottonwood Creek, Cowichan Lake, Vancouver Island.

Pentstemon Menziesii. Vancouver Island.

Caltha leptosepala. Alice Arm, Northern B.C.

Cornus Canadensis. Alice Arm, Northern B.C.



Salix arctic. Alice Arm, Northern B.C.

latitudes, the general aspect giving the impression of an extraordinary specimen of *Asplenium nidus avus;* the yellow arum-like flowers were of course long since past. And here the Devil's Club *Fatsia horrida* was extra horrid, 10 feet high, the immense palmate leaves 20 inches across. This ferocious plant is covered with thorns from the root up, including the backs of the leaves and the flower-stems. As a slight mitigation of its offensiveness it carries a handsome terminal raceme of bright-red bead-like berries.

Ferns were most abundant and luxuriant; the commonest species included the Lady Fern *Athyrium Felix-femina, Dryopteris dilatata, Struthiopteris spicant, Dryopteris dryopteris,* and the western Maidenhair *Adiantum pedatum aleuticum.* The Lady Fern was especially handsome with fronds 4 feet in length, and *Dryopteris dilatata* running a close second. One has to be very alert to keep track of the constantly changing nomenclature of the Ferns; as an instance, *Struthiopteris spicant* is the same plant that I knew long ago in Sussex woods as *Blechnum spicant;* it also flourished for a while under the denomination of *Lomaria spicant.* It is plentiful and luxuriant on the Pacific Coast, where it is popularly called Deer Fern.

The names (of Ferns) I am using are as authorized by the Smithsonian Institute of America and in Abram's " Flora of the Pacific States." As we advanced farther inland the Beech Fern *Dryopteris phegopteris* showed up, draping the rocky banks and outcroppings with overlapping layers of its elegant triangular fronds. Later on we passed through a gloomy canyon, the dripping walls of which were literally clothed with the reputedly rare *Asplenium viride,* and on cliffs along the river we found more of *Polystichum Andersoni.* We also noticed *Cryptogramma acrostichoides* and collected a Woodsia, probably *Woodsia glabella.* While on the subject of ferns I might mention we had collected a few days before some specimens of *Dryopteris cristata* from its home in a soaking mountain bog. To date there was no positive record of this species for British Columbia.

The Pyrolas were also exceptional in this valley; of *Pyrola minor* we noted some lovely colonies with pure white flowers, together with the type having pink blossoms. *Pyrola bracteata* and *asarifolia* were very fine, the slender racemes of twelve to twenty rosy bells rising from the crowded masses of shining rounded leaves to a height of 18 inches. Scarcer, but very fascinating, was *Pyrola chlorantha,* with smaller leathery leaves and flowers of pale primrose. Common all through the region was the unpretentious *Pyrola secunda,* with short one-sided spikes of greenish flowers.

But most delightful of all was *Moneses uniflora,* so appropriately called " Single Delight." In more southern latitudes we have been thrilled by the sight of a foot-wide colony with perhaps half a dozen flowers, but here they were yards wide, with a score of the 3-inch stems surmounted by a single waxy-white or pale-pink blossom a little less than an inch wide. It loves to nestle among the mosses at the foot of a giant Hemlock, and a frequent associate is *Peramium decipiens,* an orchid with more attractive leaves than flowers, being most beautifully reticulated with silvery veining.

Indigenous fruits were plentiful in more open situations, represented by several species of Vacciniums, including *V. parviflorum,* the red Huckleberry, and at least two species of the blue-fruited *V. ovalifolium* and *V. oblatum,* which bore heavy crops of large well-flavoured berries. *Rubus parviflorus* was in flower; the name of this species is a joke; it is much the largest flowered of the genus, the flowers being commonly over 2 inches across. *Rubus spectabilis,* the Salmonberry, was just ripening its handsome golden or red-brown berries.

Fungi were represented by many species, especially notable being the curious *Gyromitra esculenta,* roughly spherical in outline; it attained the dimensions of a medium-sized cauliflower, of a brown leaf colour, the surface irregularly gnarled and convolute, after the manner of an exaggerated Brain Coral, as the name implies; they are edible and quite good in the young stages, having something the flavour of Morels.

The valley gradually narrowed till we were traversing a precarious way; with the foaming torrent of the Kitsault River below us on one hand and sheer cliff or crumbling slide on the other, I stumbled along over the broken talus spangled with the blue bells of *Campanula rotundifolia.*

As the afternoon waned we came in sight of an abandoned mine-working and several deserted cabins, and as we had done about 17 miles we called it a day and established ourselves in the best cabin for the night.

We were now at the head of the lower valley and next morning we ascended into the upper valley, which is a repetition of the other, except that it is of higher elevation and gradually narrows till it ends at the foot of the Kitsault Glacier. Also the trail was more open and gaily bedecked with the scarlet of *Aquilegia formosa*, gold of Arnica, dark blue of Monkshood, and pale pink of *Valeriana sitchensis;* Saxifraga in variety, a few clumps of the large-flowered Mimulus; Heuchera in great profusion; also *Tiarella trifoliata*, of which we noted some very pretty lilac-pink forms; the yellow-flowered *Epilobium luteum* and some dwarf species of that genus. *Mitella pentandra, Sedum divergens,* and dainty little *Galium kamtschaticum,* two or three species of Ribes, Habenarias of sorts, Asters, Erigeron, Lupines, and many others.

While in Alice Arm we had made the acquaintance of a most kindly and helpful person, who had a mineral claim and cabin on a mountain adjacent to the glacier. He had given us explicit direction how to find the cabin, and 10 miles along the upper valley we discovered a log bridge across the river and the trail leading up a mountain-side in twisting corkscrew fashion; indeed, it was the only way to take the grade.

Presently we came to a flat of a few yards with two or three Cedar (*Thuja plicata*) trees and a delicious cool and bubbling spring. After a short rest we went on and up that interminable twisting trail and at length discovered our cabin sitting snug on a strip of bench land just within the timber-line.

We sallied forth the next morning and proceeded along a ridge parallel with the summit, and in half an hour we suddenly emerged from the timber and I stood petrified at the sublime spectacle spread before us. Far below the nose of the great glacier had thrust down into the valley and the eye followed the upward curve as it flowed up in a gigantic V, up and up over the saddle between the mountains many miles apart, and away till lost in an immensity of distance to where our vision could dimly discern a row of saw-tooth peaks. For 40 miles it stretches away in a vast billow of white, and from it is born, lusty and full-fed, the Kitsault River, visible from our view-point as a flashing line of silver leading out of a blue-green cavern of ice.

From here we followed a high ridge that led around to the peak on the left of the glacier. On these heights we were too early for the main flower display as the snow still lay deep, except in especially favoured pockets, or little wind-swept shoulders, but these places were invariably gay with the many hues of Violas, Castilleja, Calthas, Ranunculus, Pedicularis, Myosotis, Heather, and here we came upon lovely mats of the unique *Saxifraga Tolmiei,* flowering bravely at the very edge of the melting snow. This saxifrage has the appearance of a fat little Sedum covered with starry white flowers, spotted by the black anthers.

Lured by the high peak, we ploughed upward over the soft snow till we found ourselves standing under a concave wall of snow 60 or 70 feet high that crowned the summit. I suppose some freakish action of upsweeping winds had hollowed out the snow wall in this peculiar manner.

Another day we descended into the valley to examine the extensive moraine at the foot of the glacier, and the lower slopes in the vicinity where they were free of snow. On these slopes a very fine form of *Aquilegia formosa* was most conspicuous, having larger flowers and broader petals and verging on orange-scarlet in their intensity of colour. A Poterium with handsome sea-green pinnate foliage and tall creamy spire mingled with the crimson seed-vessels of *Leptarrhena pyrolifolia;* the flowers of this member of the Saxifraga are uninteresting, but the quickly maturing fruiting-heads are decidedly showy and always a conspicuous feature of the wet alpine meadows. The wet banks were succulent with masses of *Parnassia fimbriata* and spangled with the blue violet-like bloom of *Pinguicula vulgaris. Romanzoffia sitchensis* furnished many damp ledges with its pale, delicate flowers.

The moraine was rich in species of dwarf Willows, including the distinctly ornamental *Salix reticulata* and other perfectly prostrate species such as *Salix arctica* and *Salix stolonifera.* Saxifraga was abundant in such species as *mertensiana, nivalis, odontoloma, spicata, Bongardi,* and others. We noted a couple of species of Oxytropis, one with yellow flowers, the other blue; also a silvery mat-forming Artemisia and a curious little Dandelion, *Agoseris aurantica,* with narrow lanceolate leaves and flowers of the tawny shade of *Hemerocallis fulva.* The Holly Fern *Polystichum lonchitis* made neat rosettes in the lee of huge boulders and several species of Club-moss *Lycopodium* trailed here, there, and everywhere.

And now our month's escape was drawing swiftly to a close, and it was without elation we contemplated exchanging the unconventional freedom of the hills for the pettifogging amenities of business and such adjuncts of civilization.

However, we had seen the northern flowers at the acme of perfection; we had seen the Golden Eagle and the *Narcissi Anemone* in their empyrean abode, and revelled in the pure air of snowy height. Through long northern days we had loitered along the wild valleys where the only sounds were the piercing whistle of the Marmot and the clattering music of mountainous streams. Of course there is a reverse side of the picture, but why dwell on Mosquitoes and Blackflies and the sweat of burdensome packs.

Of course there are many species of flowering plants and ferns we have not mentioned that were noticed on our wanderings up and down. For instance, I recall an upland bog studded with the delicate lilac violets of *Viola palustris*, and still pools decorated with the slender white spires of *Polygonum viviparum* and elegant Mare's Tails of *Hippuris montana;* and from a damp ditch near the coast gleamed the little brass buttons of *Cotula coronopifolia*. Of ferns we noted twenty-five species in all.

Items of special Botanical interest we collected include a minor form of *Dryas Drummondii*, a neat little plant hardly half the size of the type, it is infertile and develops no achenes; and a golden-berried form of the Elder *Sambucus racemosa*, with clear amber berries in place of the typical red; and the large-flowered Mimulus mentioned before, this is being cultivated under observation.

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