PROVINCE OF BRITISH COLUMBIA

REPORT

OF THE

PROVINCIAL MUSEUM

OF

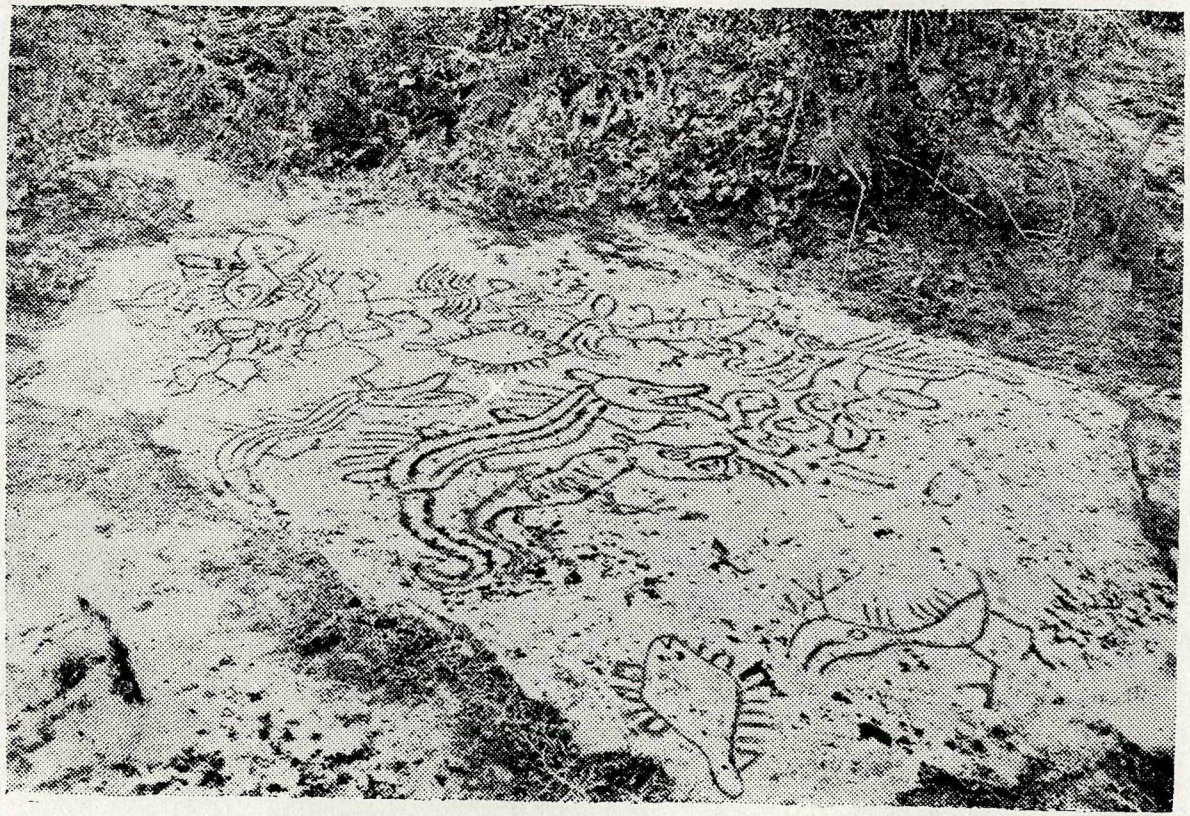
NATURAL HISTORY

FOR THE YEAR 1925

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1926.

PLATE I.



INDIAN ROCK CARVINGS
(*Petroglyphs*).

Near Nanaimo, B.C. From plate in "Petroglyphs in British Columbia," by C. F. Newcombe.
Courtesy of W. A. Newcombe.

To His Honour ROBERT RANDOLPH BRUCE,

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 1925.

WILLIAM SLOAN,

Provincial Secretary.

Provincial Secretary's Office,

Victoria, B.C., March, 1926.

PROVINCIAL MUSEUM OF NATURAL HISTORY,
VICTORIA, B.C., March 1st, 1926.

The Honourable William Sloan,
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, 1925, covering the activities of the Museum.

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

F. KERMODE,
Director.

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DEPARTMENT *of the* PROVINCIAL SECRETARY.

The Honourable WILLIAM SLOAN, *Minister.*

J. L. WHITE, *Deputy Minister.*

PROVINCIAL MUSEUM OF NATURAL HISTORY.

Staff:

FRANCIS KERMODE, *Director.*

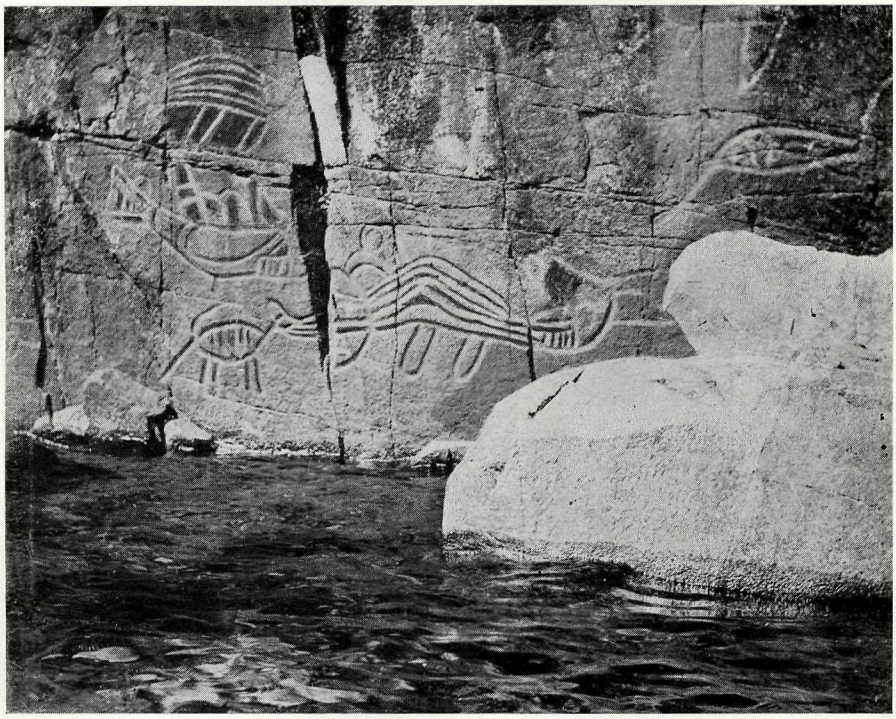
WINIFRED V. REDFERN, *Recorder.*

GEORGE A. HARDY, *Assistant Biologist.*

REGINALD W. PARK, *Attendant.*

EDWARD A. COOKE, *Attendant.*

PLATE II.



INDIAN ROCK CARVINGS
(PETROGLYPHS).

FIG. 1.

North-east shore of Sproat Lake, Vancouver Island. Photo by courtesy of Geological Survey of Canada, Ottawa.

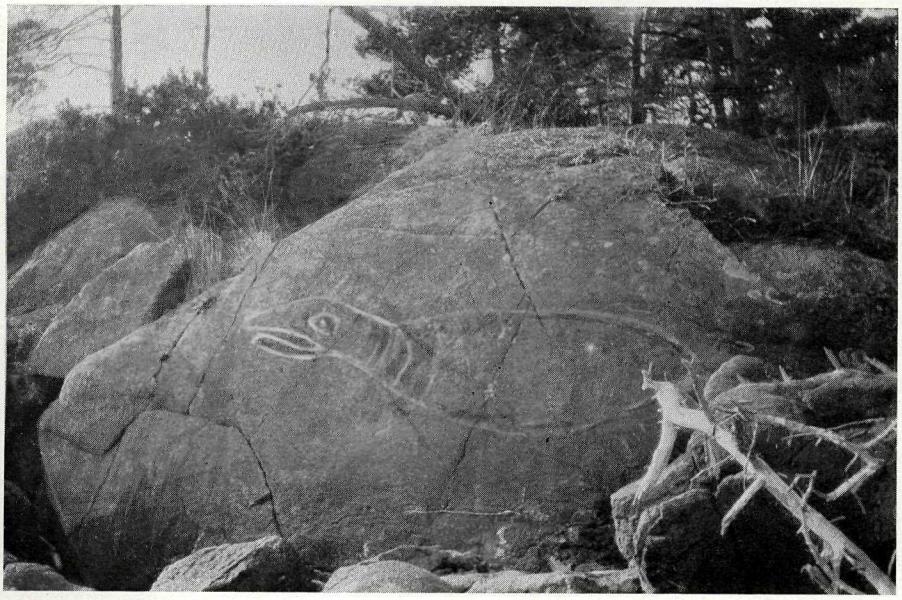


FIG. 2.

Eldridge Point, Sooke, near Victoria, B.C. Photo by courtesy of Geological Survey of Canada, Ottawa.

REPORT *of the*

PROVINCIAL MUSEUM OF NATURAL HISTORY

FOR THE YEAR 1925.

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, free, to the public daily throughout the year from 9 a.m. to 5 p.m. (except New Year's Day, Good Friday, and Christmas Day); it is also open on Sunday afternoons from 1 p.m. to 5 p.m. from May 1st until the end of October.

VISITORS.

During the past year the Department has inaugurated another system of checking, in conjunction with the visitors' register at the front door, in order to ascertain as accurately as possible the number of visitors to the Museum.

The following figures show the difference between those who registered their names in the book and those who were checked by the attendants, and it will be noticed that only 33,045 people registered, while the total of the check was 58,149.

	Register.	Check.
January	2,102	3,100
February	1,210	4,130
March	1,043	1,828
April	1,209	1,968
May	1,905	3,012
June	3,265	4,354
July	7,879	14,844
August	7,620	13,674
September	3,383	5,636
October	1,417	2,195
November	853	1,615
December	1,159	1,913
Totals	33,045	58,149

I am pleased to report that the students of the Normal School continue to use the collections extensively in their studies and are frequently noticed making drawings of the natural-history objects. Several classes have been brought from the Victoria College by their instructor in biology, and many other teachers of the public schools of Victoria and the surrounding district have visited the Museum with their classes for instruction in the various branches of science.

ACTIVITIES.

The anthropological collection, which has been catalogued according to tribes, was greatly in need of more complete labels as only the catalogue number and field number were on many of the exhibits. Temporary assistance was employed for several months in order to make it possible for this to be done. The relabelling has now been completed as far as possible, and the majority of the exhibits now have typewritten labels with complete data as to tribes,

localities, and the use of the article. Four new exhibition cases were installed and the rearrangement of the exhibits has added greatly to the appearance of this collection and made it still more interesting to the students and casual visitors.

A large number of heraldic poles, house-poles, and canoes which for many years were in storage under a frame building in the rear of the present Museum quarters were removed and taken to the old Drill Hall on Menzies Street for exhibition. This building has recently been renovated, the old wooden floors being replaced with cement. This made it possible, with the permission of the Public Works Department, to put on view all these very valuable Indian totems, which illustrate with carving the early history and legends of the aboriginal races, and which originally were erected by the Indians in front of their houses in the old villages.

At one time they stood in most of the Indian villages along the coast-line of British Columbia, more particularly the northern coast and Queen Charlotte Islands in the vicinity of Masset, Skidegate, and other villages. The majority of them have now been taken down and are in many museums of the world, and the remainder are in such a condition that it would be almost impossible to remove them. The Indian races have now practically given up the making of any more of these poles, the younger generation not doing the same artistic work as their forefathers.

In compliance with a request from His Honour the Lieutenant-Governor, Walter C. Nichol, I was given permission by the Minister of the Department, the Honourable William Sloan, to have one of these totem-poles erected in the grounds of Government House.

Casts of a number of historic petroglyphs or Indian pictures on the rocks near Bella Coola, which were presented to the Museum by the Victoria Memorial Museum, Ottawa, have now been arranged and are on exhibition on the walls of the entrance hall to the anthropological rooms, while on the walls of the staircase leading down to the entrance are several very fine paintings of Indian chiefs. (For further details of petroglyphs *see* page 9.)

Only three short field-trips were undertaken during the year—one by the Director, who visited the Kamloops District to investigate the remains of a mammoth *Elephas primigenius* (*see* Palæontology, page 10), the others by the Assistant Biologist to Sooke River, V.I., in order to obtain and study the new fern (*Dryopteris oregana*) discovered there last year, and to Duncan, V.I., to gather information in connection with the local Coleoptera, as the Department is publishing a list of the Cerambycidæ of Vancouver Island in this report on page 24.

This left time to work over some of the older material which had needed attention for some time. Some of it, owing to changes in classification, had to be sent to specialists for verification and for the latest scientific names.

The interest taken by the late Dr. C. F. Newcombe in several branches of the Museum work has been carried on by his son, Mr. W. A. Newcombe, especially in the conchological section, and he has donated a large number of shells to complete our collection.

The shells have been rearranged, relabelled, and mounted on grey cardboard, placed in new exhibition cases, and are very much improved in consequence. Further reference to this will be found on page 18.

The collections of amphibia and reptiles have also received their share of attention. Some of these had been in storage, but are now on exhibition. It is to be hoped that further work will be carried on in this branch to a greater degree during the coming year than heretofore. The list of amphibians and reptiles will be seen on page 21.

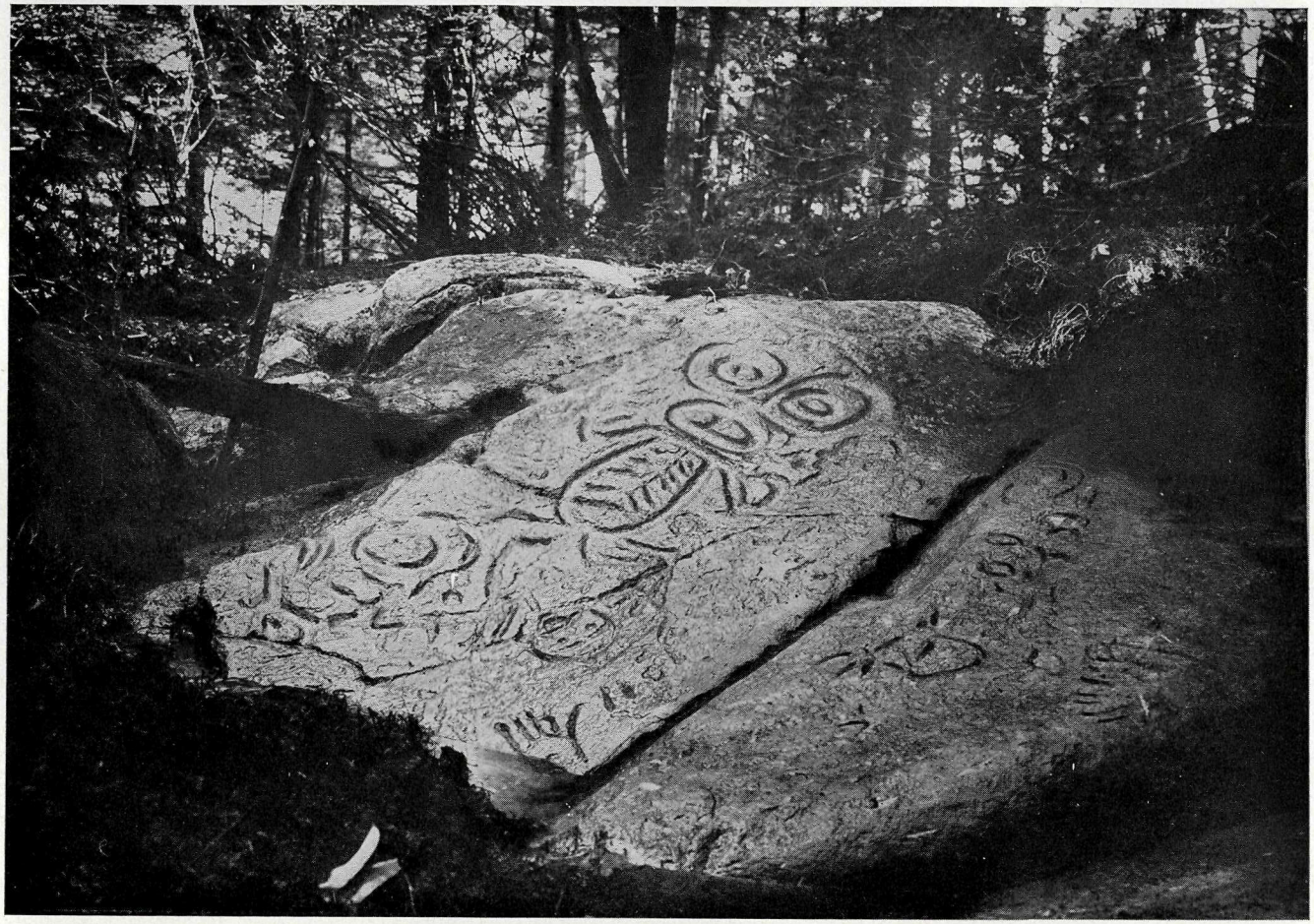
The Herbarium still continues to receive the largest amount of our time, as this is one of the branches in which many people are deeply interested throughout the Province, and a detailed account of the work done and material received will be found on page 10.

Special attention has been given to Coleoptera, and several exhibits have been on view showing the life-history and work of some of the beetles, which elicited a great deal of favourable comment.

With regard to the publication of a list of British Columbia Lepidoptera, Mr. E. H. Blackmore has been working on this list for a number of years, and as the manuscript is now nearly completed it is hoped it will be available for publication during the coming fiscal year.

The Director was called upon several times to give lectures on natural-history subjects. One was given under the auspices of the Natural History Society of British Columbia on "Marine Animals" to an appreciative audience. Another popular lecture was delivered in the Victoria West Public School for the Parent-Teachers' Association and the children of the upper

PLATE III.



INDIAN ROCK CARVINGS
(PETROGLYPHS).

Bella Coola River, B.C. Photo by courtesy of Geological Survey of Canada, Ottawa.

grades of the school. This was illustrated and dealt with a trip along the coast-line of British Columbia as far north as Atlin, showing the Indian villages and the birds and animals to be found in these regions.

Mr. G. A. Hardy, Assistant Biologist, also gave several illustrated lectures before the Natural History Society and other organizations, which were well attended and appreciated. Those for the Natural History Society were given on "Seashore Life" and "Starfish and Sea-urchins."

Several requests for the loan of specimens for educational purposes have been received and complied with whenever practicable. Where distance precludes a personal visit on the part of such inquirers, every effort is made to accommodate them, although at present there is no duplicate collection for the purpose.

ANTHROPOLOGY.

The Honourable William Sloan, Provincial Secretary and Minister of the Department, has taken a great interest in the preservation of Indian petroglyphs or rock carvings, which were made by the old aborigines of the Coast region of British Columbia.

With this in view the Honourable Minister had an Act passed by the last sesson of the Legislature which provided for the preservation of historic objects, as it has been found that from time to time some unscrupulous persons have defaced portions of these most interesting and historic carvings. A copy of this Act is embodied in this report.

Casts of a number of these petroglyphs are on exhibition in the Museum, and one of the latest added to the collection through the courtesy of the Victoria Memorial Museum, Geological Survey of Canada, per Harlan I. Smith, is from a boulder in the grounds of the hospital at Hazelton.

These petroglyphs date back many years and nobody seems to know the meaning of them or what some of the carvings represent. They are to be found in a number of localities, namely: Aldridge Point; Beecher Bay, near Victoria; near the mouth of Nanaimo River; Sproat Lake; Yellow Rock, near Comox; and along the coast in the vicinity of Bella Coola, Elko Harbour, Swallop Creek, about 11 miles south of Dean River, and Noosatsum.

In the Interior portions of the Province these Indian pictures were made by painting designs along the sides of old Indian trails and shelving rocks.

Published literature relating to these petroglyphs is as follows:—

"Petroglyphs in British Columbia," by Dr. C. F. Newcombe, Sept., 1907.

"The Petroglyph at Aldridge Point, near Victoria, British Columbia," by Harlan I. Smith. Reprint from the "American Anthropologist," Vol. 26, No. 4, Oct.–Dec., 1924.

"A Prehistoric Petroglyph on Noeick River, British Columbia," by Harlan I. Smith, published in "Man," Vol. XXV., No. 9, Sept., 1925.

An Act to provide for the Preservation of Historic Objects.

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:—

1. This Act may be cited as the "Historic Objects Preservation Act."

2. The Lieutenant-Governor in Council may declare any primitive figure or legend cut in or painted upon rock, or any group of such figures or legends, or any structure, or any natural object existing within the Province to be a "historic object" within the meaning and scope of this Act, and may make provision for the erection and maintenance in the vicinity of such historic object of a notice referring to this Act, in such form as may be deemed advisable.

3. Where a notice has been erected in the vicinity of any historic object pursuant to this Act, no person shall, except pursuant to a permit in writing of the Provincial Secretary first obtained, remove, deface, obliterate, alter, add to, or otherwise interfere with that historic object, or the notice so erected, nor shall any person cut, or carve, or write, or paint any figure, legend, or name in or upon any rock or material comprised in or appurtenant to that historic object.

4. Every person violating any provision of section 3 shall be liable, on summary conviction, to a fine not exceeding five hundred dollars.

PALÆONTOLOGY.

In the latter part of October the Deputy Minister of Public Works, Mr. P. Philip, presented the Museum with several portions of the fore-leg bones (humerus and ulna) of a mammoth (*Elephas primigenius*).

These had been unearthed while making a cutting along the side of a mountain for a new road which was being constructed by the Government, under the direction of Mr. George Chase, along the east side of Chum Creek from Squilax to Chum Lake, in the Shuswap District, at an elevation of 2,000 feet.

The importance of the find was sufficient to warrant further investigation; accordingly the Director left for Chase, B.C., early in November, and proceeded to the location without any delay, as wintry conditions necessitated prompt action in the event of a freeze-up.

The cutting in question is constructed in a gravel-bed overlying volcanic rock and is evidently the old bed of the lake when at a ligher level than now obtains. Above the gravel is a layer of sand and a thin layer of lime formation, in turn capped with sand and silt.

A trench was dug through the most likely part of the gravel-bed well into the side of the mountain, but no further remains were found, and it became evident that an extended and systematic plan of operation would be necessary at a more favorable time of the year in order to give the matter the attention it deserves.

About the year 1896 the Museum received through the Superintendent of Police, F. S. Hussey, a large tooth of a mammoth from Shuswap Lake. This was the locality given, and it may have come from near Chase, which is in the same vicinity.

A number of teeth of a large prehistoric mammoth have been taken in the vicinity of Victoria from time to time. We have one tooth from James Island, one from Cordova Bay, another from Mount Tolmie, and also a tusk which was taken out of a sand-bank at Island View beach, about 10 miles from Victoria, opposite James Island. We also have several mammoth-teeth presented to the Museum by Judge Swan, of Port Townsend.

The Museum has received a gift from Mr. S. C. Burton, of Kamloops, comprising a very fine collection of fossils found in the fossiliferous sandstone of the Tranquille geological formations at the west end of Kamloops Lake. Mr. Burton had been doing a little work on this formation during the latter part of the year and intends to carry on further investigations during the coming summer if time permits. These specimens have been sent to Dr. Walcott, of the Smithsonian Institution, for examination and determination.

It has recently been reported from the vicinity of Kelowna, B.C., that further remains have been found of a bison about 12 feet under the surface in blue clay. These are probably more of the vertebræ mentioned in the Annual Report of the Provincial Museum for the year 1922, which were found at McCullock Station in blue clay at about 10 feet from the surface while building a dam at an elevation of 4,000 feet.

BOTANY.

By G. A. HARDY.

The activities of the past season have resulted very satisfactorily to the interests of this section. Although last year was considered exceptionally dry, this one has beaten all records, conditions of drought having been experienced almost uninterruptedly from April to November in the vicinity of Victoria, while from other sections of the Province reports of drier periods than usual have been received. This had the effect of shortening the flowering period of many species, and in some cases shrivelling them completely before maturity.

Throughout the spring and summer a supply of freshly gathered living wild flowers has been exhibited in the case labelled "Seasonal Exhibit." These have proved to have been much appreciated not only by casual visitors, but by school-children and other students. This is very encouraging, as the time and care needed to maintain a high standard of efficiency can only be realized by those responsible. One hundred and thirty-four species were dealt with in this way, each of which was renewed many times during the season, or until their natural flowering season was over.

As an auxiliary to the exhibit series of local dried plants, it has been of great help to inquirers in enabling many of them to identify their specimens for themselves. For this reason the number of plants recorded as brought in for identification cannot be properly compared with

last year, when the above facilities for the public did not exist. Approximately 800 specimens are noted for this purpose.

Additions to the Herbarium total close on 350 specimens, nearly all of these being rare or otherwise very acceptable, either as augmenting localities for distribution or increasing the series where needed. Altogether forty species are new to the Herbarium.

As in former years, we are especially indebted to Mr. W. B. Anderson, Dominion Inspector of Indian Orchards, and Mr. G. V. Copley, of the Grazing Commission, for their continued enthusiasm and industry in collecting and preserving whatever plants of interest they find on their frequent professional visits to out-of-the-way localities not often visited by botanists, with the result that the Museum collections have been greatly enriched thereby.

Mr. Copley has always paid particular attention to the grasses and sedges of the Province, and to him, more than any one, we are greatly indebted for the fine collection of such which are now in the Herbarium.

Mr. Brinkman, of Craigmyle, Alta., has a small collection of hepatics he is kindly revising.

Mrs. J. P. MacFadden, of New Denver, B.C., has recently presented a most valuable collection of British Columbia Hepaticæ, amounting to seventy-one species, all beautifully mounted and authoritatively named, and also some thirty species of mosses, in the same excellent state of preservation. A list of the Hepaticæ received is appended after the flowering plants.

A complete list in alphabetical order of donors of specimens during the past season is here given. To each and all our best thanks and appreciation is tendered, as it is fully realized that only by the co-operation of every one can an adequate knowledge of our flora be attained: J. R. Anderson, W. B. Anderson, F. J. Barrow, J. C. Bridgman, Rev. R. Connell, Miss E. Copley, G. V. Copley, S. Flitcroft, T. Gerdhouse, W. Downes, G. A. Hardy, Colonel Hodgins, Mrs. Johnstone, Miss L. Koyle, S. Matthews, Mrs. J. P. McFadden, W. A. Newcombe, A. Nicholls, Mrs. Parsons, W. H. A. Preece, Miss W. V. Redfern, Miss K. Ross, A. Tomlinson, and P. deNoe Walker. We take here, also, the opportunity of thanking the many contributors to the living flower exhibit, who have thus helped to lighten the work in connection therewith.

The thanks of the Department are tendered to the several specialists mentioned below who have so cordially and generously given of their expert knowledge in the determination and verification of material submitted to them on various occasions: Professors C. V. Piper, C. R. Ball, and A. S. Hitchcock, all of the United States Department of Agriculture, Washington, D.C. To Professor Piper especially are we under obligation, who has spared no pains to render the utmost assistance by going through a very large amount of material. We are further indebted to him for an analytical key to the subspecies of *Lathyrus pauciflorus*. Professor P. A. Rydberg, New York Botanical Garden, N.Y.; Professors N. L. Gardner and W. A. Setchell, of the University of California, Berkeley, Cal.

The classified list which follows contains a selection of accessions which appeared to be of general interest, and notes are appended under the respective species as occasion demands.

It will be noticed that four species are recorded as new to the Province; these are marked with a † sign. Names preceded by an asterisk are new to the Herbarium, while localties not followed by V.I. (Vancouver Island) refer to the Mainland of British Columbia. Initials in brackets are those of the collector.

Polypodiaceæ (Fern Family).

Aspidium Filix-mas (L.) Sw. Nass River (W. B. A.).

Dryopteris oregana C. Chr. Sooke River, V.I. (G. A. H.).

Further specimens of this graceful fern were added this year and notes as to its habits made. It has a preference for crevices among rocks on the border, and even the bed of streams which are exposed during the summer months, but are flooded in the winter. As a result there is a very strong root system which tightly fills up all available fissures.

Polypodium Scouleri Hook. & Grev. Beecher Bay, V.I. (Rev. R. Connell).

This is the most southern record of its occurrence on Vancouver Island.

Equisetaceæ (Horsetail Family).

Equisetum sylvaticum L. Hazelton (W. B. A.).

**Equisetum scirpoides* Michx. Bonaparte River (G. V. C.).

PINACEÆ (PINE FAMILY).

Chamæcyparis nootkatensis (Lamb.) Spach. Sooke, V.I. (J. C. B.).

GRAMINEÆ (GRASS FAMILY).

Agropyron violaceum (Hornem.) Lange. Chilcotin, altitude 7,400 feet (G. V. C.).
Bromus Richardsonii Link. Necoslie River (G. V. C.).
Festuca brachyphylla Schultes. Chilcotin, altitude 8,300 feet (G. V. C.).
**Festuca saximontana* Rydb. Cariboo Road (G. V. C.).
Torresia odorata (L.) Hitchc. Nass River (W. B. A.); Cariboo (G. V. C.).
Oryzopsis asperifolia Michx. South Bonaparte River (G. V. C.).
Polypogon monspeliensis (L.) Desf. Kamloops (G. V. C.).
Puccinellia Nuttalliana (Schultes) Hitchc. Cariboo Road (G. V. C.).
**Poa crocata* Michx. Clinton, altitude 4,000 feet (G. V. C.).

CYPERACEÆ (SEDGE FAMILY).

**Carex concinnoides* Mackenzie. Cariboo (G. V. C.).
**Carex Douglasii* Boott. Chilcotin, altitude 4,500 feet (G. V. C.).
**Carex læviculmis* Meinsch. Chilcotin, altitude 4,000 feet (G. V. C.).
Carex scirpoidea Michx. Mount Baldy, altitude 7,000 feet (G. V. C.).
Scirpus nevadensis S. Wats. Cariboo Road (G. V. C.).

LILIACEÆ (LILY FAMILY).

Allium acuminatum Hook. Victoria (Colonel Hodgins).
Camassia Leichtlinii (S. Wats.). Mount Douglas, V.I. (Miss K. Ross).
White varieties of the above.

ORCHIDACEÆ (ORCHID FAMILY).

Cypripedium parviflorum Salisb. Adams Lake (G. V. C.).
Habenaria dilatata (Pursh.) Gray. Chilcotin, altitude 6,500 feet (G. V. C.).
Habenaria viridiflora (Cham.) Rydb. Clinton (G. V. C.).

SALICACEÆ (WILLOW FAMILY).

**Salix glaucops* And. Paradise Valley (W. B. A.).
**Salix brachycarpa* Nutt. Invermere (W. B. A.).

LORANTHACEÆ (MISTLETOE FAMILY).

**Arceuthobium Douglasii* Engelm. Sechelt, V.I. (W. B. A.).
Arceuthobium americanum Nutt. Sooke, V.I. (T. Parker).
This was found locally abundant on bank of Sooke River, growing on both main stem and branches of young trees of lodgepole or bull pine (*Pinus contorta*), the thinning effect on the leaves of which was very noticeable in some cases.

POLYGONACEÆ (BUCKWHEAT FAMILY).

Eriogonum subalpinum Greene. Chilcotin, altitude 6,500 feet (G. V. C.); Paradise Valley (W. B. A.).
Polygonum viviparum. Clinton (G. V. C.).
**Rumex Acetosa* L. Chilcotin, altitude 5,250 feet (G. V. C.).

CHENOPODIACEÆ (GOOSEFOOT FAMILY).

Salsola Kali var. *tenuifolia* G. F. W. Mey. Lasqueti Island (Miss E. Copley).

CARYOPHYLLACEÆ (PINK FAMILY).

Arenaria serpyllifolia L. Mount Douglas, V.I. (G. A. H.).
Silene acaulis L. Clinton (G. V. C.).
Silene antirrhina Linn. Mount Douglas, V.I. (G. A. H.).
Silene gallica L. Gordon Head, V.I. (Rev. R. Connell).

**Silene latifolia* (Mill.) Brit. & Ren. Victoria, V.I. (Mrs. Parsons).
An introduced plant occurring in waste places. A native of Europe and Asia.
Silene Menziesii Hook. Nicola (G. V. C.).
**Stellaria strictiflora* Rydb. Fort Fraser (W. B. A.).

Portulacaceæ (Purslane Family).

Montia dichotoma (Nutt.) Howell. Victoria, V.I. (G. A. H.).
**Montia spathulata* (Dougl.) Howell. Victoria, V.I. (G. A. H.).

Ranunculaceæ (Crowfoot or Buttercup Family).

Anemone occidentalis Freyn. Chilcotin, altitude 7,000 feet (G. V. C.).
**Caltha asarifolia* DC. Nass River (W. B. A.).
†Delphinium Brownii Rydb. Chilcotin, altitude 5,250 feet (G. V. C.).
New record for British Columbia; previously reported, as far as can be gathered, from Saskatchewan, Montana, Alaska.
Ranunculus acris L. Fort Fraser (W. B. A.).
†Ranunculus occidentalis robustus Gray. Kincolith (W. B. A.).
This large form constitutes the first record for British Columbia.
**Ranunculus limosus* Nutt. Chilcotin, altitude 4,925 feet (G. V. C.).
Ranunculus saxicola Rydb. Clinton (G. V. C.).
**Thalictrum venulosum* Trel. Fort Fraser (W. B. A.).
Trollius albiflorus Rydb. Chilcotin, altitude 7,000 feet (G. V. C.).

Berberidaceæ (Barberry Family).

**Berberis vulgaris* L. Richter Pass (G. V. C.).
One lone bush which has been brought in from the south or east, where it has become naturalized from Europe and Asia.

Papaveraceæ (Poppy Family).

Papaver pygmæum Rydb. Big Creek (G. V. C.).
A single specimen sent in for identification, but retained by Mr. G. V. Copley.
Platystigma oreganum (Nutt.) B. & H. Mount Douglas, V.I. (W. V. R.).

Cruciferæ (Mustard Family).

Arabis acutina Greene. Chilcotin, altitude 7,600 feet (G. V. C.).
Arabis lyrata occidentalis Wats. Nass River (W. B. A.).
Cakile edentula (Bigel.) Hook. Graham Island, Q.C.I. (W. A. N.).
First record for Q.C.I.
Draba aurea Vahl. Cariboo, altitude 5,500 feet (G. V. C.).
**Draba fladnizensis* Wulf. Clinton, altitude 7,600 feet (G. V. C.).
Draba oligosperma Hook. Chilcotin, altitude 7,600 feet (G. V. C.).
Lepidium campestre L. Millstream, V.I. (G. V. C.).
Platyspermum scapigerum Hook. Mount Douglas, V.I. (W. V. R.).
A rare species, one of the "dry belt" plants, only recorded twice before, from Mount Finlayson, V.I., and Observatory Hill, V.I. Manuscript note, late Dr. C. F. Newcombe, "Flora of Vancouver and Queen Charlotte Islands."

Saxifragaceæ (Saxifrage Family).

Hemieva ranunculifolia Raf. Katz Landing (W. B. A.).
Heuchera cylindrica Dougl. Victoria, V.I. (Rev. R. Connell).
Mitella ovalis Greene. Goldstream, V.I. (A. Nicholls).
Saxifraga Bongardi (Presl.) Pursh. Nass River (W. B. A.).
**Saxifraga cernua* L. Clinton, altitude 7,000 feet (G. V. C.).
Saxifraga Mertensiana Bong. Leech River, V.I. (Rev. R. Connell).
**Saxifraga odontoloma* Piper. Chilcotin, altitude 6,900 feet (G. V. C.).
Saxifraga oppositifolia L. Clinton (G. V. C.).
**Saxifraga rivularis* L. Clinton (G. V. C.).
Saxifraga tricuspidata Retz. Nass River (W. B. A.).

ROSACEÆ (ROSE FAMILY).

Dryas Drummondi Richards. Clinton, altitude 6,000 feet (G. V. C.).
Dryas octopatala L. Clinton, altitude 6,600 feet (G. V. C.).
Geum rivale L. Smithers (W. B. A.).
Potentilla glaucophylla Lehm. Chilcotin, altitude 4,500 feet (G. V. C.).
Potentilla tridentata Aig. Chilcotin, altitude 7,800 feet (G. V. C.).
Potentilla villosa Pall. Chilcotin, altitude 7,600 feet (G. V. C.).
Rosa Sayi S. Wats. Chilcotin, altitude 4,500 feet (G. V. C.).
Rubus acaulis Michx. Chilcotin, altitude 4,500 feet (G. V. C.).
Rubus pedatus Smith. Jordan River, V.I. (Rev. R. Connell).

LEGUMINOSÆ (PEA FAMILY).

Astragalus alpinus L. Hazelton (W. B. A.).
Astragalus canadensis L. Chilcotin, altitude 4,200 feet (G. V. C.).
Astragalus hypoglottis L. Chilcotin (G. V. C.).
Astragalus multiflorus Gray. Nicola (G. V. C.).
Astragalus stenophyllus T. & G. Nicola (G. V. C.).
Hedysarum Mackenzii Richards. Cariboo (G. V. C.).
Hosackia denticulata Drew. Trial Island (G. A. H.).
Lathyrus ochroleucus Hook. Chilcotin, altitude 4,500 feet (G. V. C.).
Lathyrus pauciflorus Fernald. Nass River (W. B. A.).
Lotus corniculatus L. Victoria, V.I. (G. V. C.).
A native of Europe, well established locally near cultivation.
Lupinus laxiflorus Dougl. Victoria, V.I. (Rev. R. Connell).
Lupinus littoralis Dougl. Graham Island, Q.C.I. (W. A. N.).
Lupinus Lyallii Gray. Chilcotin, altitude 7,600 feet (G. V. C.).
Oxytropis deflexa DC. Chilcotin, altitude 4,200 feet (G. V. C.).
Oxytropis gracilis A. Nels. Lytton (W. B. A.); Cariboo (G. V. C.).

GERANIACEÆ (GERANIUM FAMILY).

Geranium erianthum DC. Hazelton (W. B. A.); Lac la Hache (J. R. A.).
Geranium Richardsonii F. & T. Graham Island, Q.C.I. (W. A. N.).

RHAMNACEÆ (BUCKTHORN FAMILY).

Ceanothus sanguineus Pursh. Sooke River, V.I. (J. C. B.).

MALVACEÆ (MALLOW FAMILY).

Sidalcea Hendersonii Wats. Trial Island (W. V. R.).

ONAGRACEÆ (EVENING-PRIMROSE FAMILY).

Godetia caurina Abrams. Mount Douglas, V.I. (G. A. H.).
**Taraxia breviflora* Nutt. Chilcotin, altitude 4,500 feet (G. V. C.).

HALORAGIDACEÆ (WATER-MILFOIL FAMILY).

Hippuris vulgaris L. Graham Island, Q.C.I. (W. A. N.).
First record for Q.C.I.

UMBELLIFERÆ (PARSLEY FAMILY).

Carum Carvi L. Chilcotin (G. V. C.).
Leptotænia dissecta Nutt. Victoria, V.I. (G. A. H.).
Sanicula marilandica Linn. Nass River (W. B. A.).

ERICACEÆ (HEATH FAMILY).

**Phyllodoce hybrida* Rydb. Chilcotin, altitude 7,600 feet (G. V. C.).
Pyrola chlorantha Swartz. Clinton, altitude 4,000 feet (G. V. C.).

Primulaceæ (Primrose Family).

Dodecatheon Cusickii Greene. Adams Lake (W. B. A.).
Lysimachia thyrsiflora L. Jordan River (Rev. R. Connell).

Gentianaceæ (Gentian Family).

Chondrophylla americana (Engelm.) A. Nels. Chilcotin, altitude 5,075 feet (G. V. C.).
Gentiana Douglasiana Bong. Prince Rupert (W. B. A.).

Hydrophyllaceæ (Waterleaf Family).

Phacelia ciliosa Rydb. Cariboo (G. V. C.).
Phacelia linearis (Pursh.) Holzinger. Mount Douglas, V.I. (G. A. H.).
**Phacelia sericea* Gray. Chilcotin, altitude 6,000 feet (G. V. C.).

Boraginaceæ (Borage Family).

Mertensia oblongifolia Don. Adams Lake (W. B. A.).
Myosotis alpestris Schmidt. Clinton, altitude 7,000 feet (G. V. C.).
Plagiobothrys tenellus Gray. Mount Douglas, V.I. (G. A. H.).
Another of the "dry belt" plants, characteristic of the Californian association.

Labiatæ (Mint Family).

Dracocephalum parviflorum Nutt. Nicola, altitude 4,000 feet (G. V. C.).
Physostegia parviflora Nutt. Kamloops (G. V. C.).

Solanaceæ (Potato Family).

**Solanum triflorum* Nutt. Fort Steele (W. B. A.).
†*Solanum rostratum* Dunal. East Kootenay (A. Tomlinson).
New record for British Columbia; a native of the South-western Provinces, adventive in the East; possibly introduced with fodder or other agricultural produce.

Scrophulariaceæ (Figwort Family).

Castilleja oreopola Greenman. Chilcotin, altitude 7,000 feet (G. V. C.).
**Castilleja lancifolia* Rydb. Chilcotin, altitude 4,300 feet (G. V. C.).
Mimulus alpinus (Gray) Piper. Chilcotin, altitude 7,200 feet (G. V. C.).
Orthocarpus attenuatus Gray. Esquimalt, V.I. (G. A. H.).
**Pedicularis scopulorum* A. Gray. Chilcotin, altitude 7,000 feet (G. V. C.).
Veronica Tournefortii C. C. Gmel. Clinton (G. V. C.).

Lentibulariaceæ (Bladderwort Family).

Utricularia vulgaris L. Millstream, V.I. (G. A. H.).

Plantaginaceæ (Plantain Family).

Plantago lanceolata L. Victoria, V.I. (J. C. B.).
Abnormal form.

Rubiaceæ (Madder Family).

†*Asperula odorata* L. Victoria, V.I. (S. Flitcroft).
This is the first record for British Columbia of this sweet-scented little flower. It is a native of Europe and Russian Asia, introduced in Eastern North America.

Valerianaceæ (Valerian Family).

**Valeriana occidentalis* Heller. Cariboo (G. V. C.).

Cucurbitaceæ (Gourd Family).

Echinocytis oregana (Torr & Gray) Cogn. Sidney, V.I. (H. M. Wootton).

CAMPANULACEÆ (BLUEBELL FAMILY).

Specularia perfoliata (L.) A.DC. Mount Tolmie, V.I. (G. A. H.).
This is the second record of it being found in a wild state on Vancouver Island.

LOBELIACEÆ (LOBELIA FAMILY).

Lobelia Dortmanna L. Saltspring Island (P. deN. W.).

COMPOSITÆ (COMPOSITE FAMILY).

**Agoseris gracilens* (A. Gray) Kuntze. Chilcotin, altitude 5,900 feet (G. V. C.).
Artemisia biennis Willd. Cariboo (G. V. C.).
**Artemisia norvegica saxatilis* Besser. Chilcotin, altitude 5,900 feet (G. V. C.).
**Artemisia dracunculus typica* L. Fort Steele (W. B. A.).
Artemisia gnaphaloides Nutt. Cranbrook (W. B. A.).
**Brickellia oblongifolia* Nutt. Hedley (G. V. C.).
Chrysothamus nauseosus. Osooyos (G. V. C.).
**Crepis nana* Rich. Chilcotin, altitude 8,000 feet (G. V. C.).
Erigeron compositus Pursh. Chilcotin, altitude 7,600 feet (G. V. C.).
Erigeron glabellus Nutt. Prince Rupert (W. B. A.).
**Erigeron lanatus* Hook. Paradise Valley (W. B. A.).
Erigeron lonchophyllus Hook. Clinton (G. V. C.).
Erigeron salsuginosus Gray. Mount Baldy, altitude 7,000 feet (G. V. C.).
Erigeron salsuginosus angustifolius Gray. Nootka, V.I. (T. Gerdhouse).
**Sassurea densa* (Hook.) Rydb. Paradise Valley (W. B. A.).
Senecio cymbalaroides Nutt. Cariboo (G. V. C.).
**Senecio Farriæ* Greenm. Chilcotin, altitude 4,000 feet (G.V.C.).
**Senecio Burkei* Greenm. Chilcotin, altitude 4,000 feet (G. V. C.).
Tanacetum huronense Nutt. Graham Island, Q.C.I. (W. A. N.).

MARINE ALGÆ.

A number of exquisitely mounted specimens of "seaweeds" were given to the Museum by Mr. J. C. Edwards, of Sooke, V.I. These have been identified by Professor N. L. Gardner, University of California, Berkeley, Cal., and include the following:—

Microcladia borealis Rupr. Whiffen Spit Beach, V.I.
Microcladia californica Farlow. Whiffen Spit Beach, V.I.
Farlowia mollis (J. Ag.) Setchell. Whiffen Spit Beach, V.I.
Plocamium coccineum (Hudson) Lyngbye. Whiffen Spit Beach, V.I.
Laurencia spectabilis Post & Rupr. Whiffen Spit Beach, V.I.
Odonthalia Kamtschatica (Rupr.) J. Ag. Whiffen Spit Beach, V.I.

HEPATICÆ OF THE SELKIRK AND ROCKY MOUNTAINS OF CANADA.

(Collected by Mrs. J. P. MacFadden. Identified by Dr. Conklin, Superior, Wis., U.S.A.)

Anthelia Juratzkana (Limpr.) Trevis.
Anthelia julacea (L.) Dumort.
Astrella Lindenbergiana (Croda.) Lindb.
Astrella Ludwigii (Schangr.) Underwood.
Blasia pusilla L.
Blepharostoma trichophyllum (L.) Dumort.
Calypogeia Neesiana (Massal & Carrest.) K. Mull.
Cephalozia media Lindb.
Cephalozia pleniceps (Aust.) Lindb.
Cephaloziella bifida (Schreb.) Schiffn.
Chiloscyphus pallescens (Ehrh.) Dumort.
Concephalum conicum (L.) Dumort.
Diplophyllum gymnastomophilum (Kaal).
Diplophyllum taxifolium (Wahl.) Dumort.
Diplophyllum apiculata.
Gymnomitrium concinnatum (Litghtf.) Corda.
Gymnomitrium obtusum (Lindb.) Peors.
Gymnomitrium variens (Lindb.) Schiffn.
Jungermannia atrovirens Dumort.
Jungermannia condifolia Hook.
Jungermannia lanceolata L.
Jungermannia riparia Tayl.
Lepidozia reptans (L.) Dumort.
Lophocolea cuspidata (Nees) Lempr.
Lophocolea minor (Nees).
Lophozia alpestris (Schleich.) Evans.
Lophozia barbata (Schreb.) Dumort.
Lophozia confertifolia Schiffn.
Lophozia Floerkei (Web. & Mohr.) Schiffn.

Lophozia Hatcheri (Evans).
Lophozia heterocolpa (Thed.) M. A. Howe.
Lophozia Hornschuchiana (Nees) Schiffn.
Lophozia incisa (Schrad.) Dumort.
Lophozia guttulata (Lindb. & Arnell.) Evans.
Lophozia Kunzeana (Huben.) Evans.
Lophozia Longidens (Lindb.) Macoun.
Lophozia longiflora (Nees) Schiffn.
Lophozia lycopodioides (Wallr.) Cogn.
Lophozia porphyroleuca (Nees) Schiffn.
Lophozia quadriloba (Lindb.) Evans.
Lophozia quinquedentata (Huds.) Cogn.
Lophozia ventricosa (Dicks.) Dumort.
Marchantia polymorpha L.
Marsupella emarginata (Ehrh.) Dumort.
Marsupella sparsifolia (Lindb.) Dumort.
Nardia Geoscyphus (DeNot.) Lindb.
Nardia hyalina (Lyell) Carringt.
Pallavicinia Flotowiana (Nees) Lindb.
Plagiochila asplenioides (L.) Dumort.
Pleuroclada albescens (Hook.) Spruce.
Porella cordaeana (Huben.) Dumort.
Porella Roellii Steph.
Ptilidium cilare (L.) Nees.
Ptilidium pulcherrimum (Web.) Hampe.
Ptilidium californicum (Aust.) Underw. & Cook.
Preissia quadrata (Scop.) Nees.
Riccardia pinguis (L.) S. F. Gray.
Riccardia multifida (L.) Dumort.
Radula obconica (Sulliv.).
Scapania curta (Mart.) Dumort.
Scapania curta var. *geniculata* (Massalong.) K. Mull.
Scapania nemorosa (L.) Dumort.
Scapania Umbrosa (Schrad.) Dumort.
Scapania subalpina (Nees) Dumort.
Scapania undulata (L.) Dumort.
Sauteria alpina (Nees & Birch.) Nees.
Sphenolobus minutus (Crantz) Steph.
Sphenolobus minutus var. *cuspidatus* Kaal.
Sphenolobus exsectæformis (Breidl.) Steph.
Sphenolobus politus (Nees) Steph.
Geocalyx graveolens (Schrad.) Dumort.

Plants which are supplementary additions to the Provincial Museum Preliminary Check-list, "The Flora of Vancouver and Queen Charlotte Islands," 1921 (introduced plants being printed in italics in conformity with the printing of the Check-list) :—

Asperula odorata L. Victoria, V.I., April 13th, 1925. S. Flitcroft.

MARINE ZOOLOGY.

By G. A. Hardy.

The exhibit of living marine animals commenced last year has been maintained throughout the year, with success. Perhaps there has not been the same variety as hithertofore, as to keep the aquaria presentable requires a considerable expenditure of time and detail work; hence a smaller number of the more hardy kind is all that has been attempted, a procedure quite justified by the results, for the tank now in use has attained perfect "balance" of its occupants, the best proof of which is the length of time the water can be left before changing without detriment to the occupants. Five months have elapsed since such a change has taken place, only fresh water being added to replace evaporation; the water is crystal-clear and its denizens perfectly healthy.

For aerating purposes we have had most successful results by using *Vaucheria* which was kindly sent from Essex, England, by Mr. F. J. Lambert early last season. It grows remarkably fast and maintains its freshness continually; small pieces require to be periodically taken out in order to prevent it from completely filling the tank.

One of the hardiest fish so far tried is the clingfish (*Caularchus meandricus*), which has lived up to the present, since last July, a period of over six months; the crested blennie (*Anoplarchus atropurpuratus*) has lived for one year and is quite an attractive little fish. For some time several of the beautiful colour forms of the chameleon-fish (*Pholis ornatus*) were on exhibition; one of these is bright Ulva green; another, vivid red; while a third is a brown-ochre. As the three phases were in the tank at the same time, they gave a very pleasing effect to the *tout ensemble*. All the species mentioned in the last report were from time to time on view and were taken at low tide off Dallas Road.

Success also has been met with in the management of anemones, crustacea of various species, and starfishes of the smaller sizes.

The general conclusion arrived at, after two years' experience with marine aquaria in the Museum, is that it is a distinct improvement and well worth the trouble involved. Above all, the actual living animal can be seen and studied as an agreeable adjunct to the preserved material without any inconvenience, and possibly added pleasure to the casual visitor and students alike.

No active field-work has been undertaken by the Department during the year, apart from attending to the aquarium, so that the list of accessions listed below does not compare favourably with last year. On the other hand, donations have continued to come in from inquirers and others interested. The outstanding feature in marine accessions is the donation of a duplicate series of bivalve mollusca by Mr. W. A. Newcombe, originally collected by the late Dr. C. F. Newcombe. All these have been named by Dr. Dall and are now being mounted for inclusion in the general collection. (*See* next page.)

Mr. F. J. Lambert, of Leigh-on-Sea, Essex, England, has continued his interest in the marine section, and has sent some interesting stages of the "Jelly-fish" group, mentioned later, as well as much valuable information respecting the general management of marine aquaria, on which he is an authority.

ACCESSIONS.

(For Fish *see* Ichthyology in general Accessions, page 35.)

PORIFERA.

Sponge sp. Ucluelet (Reverend C. J. Young). A deep-water species washed up on the shore. In good state of preservation and attached to a shell.

COLENTERATA.

Early stages of Jelly-fish (*Aurelia*), the *Scyphistoma* and *Ephyra*. Well-preserved specimens of a most difficult phase to obtain. Leigh-on-Sea, Essex, England (F. J. Lambert).

"Stick-fish." Prince Rupert (Reverend J. F. Dimmick). This Stick-fish is closely related to the "Sea-pens." The specimen brought in is really the core of a colony of small anemone-like creatures.

Hydroid (*Aglaophenia struthionides*). Ucluelet (Margaret Burde).

ARTHROPODA.

Crustacea.

Turtle-crab (*Cryptolithodes typicus*). Dallas Road, Victoria (B. Smith).

Gribble (*Limnoria lignorum*). With wood showing its ravages. Dallas Road, Victoria (G. A. Hardy).

Whale-louse (*Paracyamus boopii*). From a Hump-backed Whale (*Megaptera versalitis*). Cachelot, West Coast, V.I. (I. E. Cornwall).

Fresh-water Crayfish (*Astacus trowbridgii*). One of the two species presumed to occur in British Columbia. Specimens of this Crayfish sent some time ago to Dr. A. G. Huntsman for identification were assigned to this species provisionally.

Large Barnacle (*Balanus nubilis*). Orcas Island (Mrs. G. Edmunds).

MOLLUSCA.

Large Branched Sea-slug (*Dendronotus giganteus* O'Don.). Willows Beach, Victoria, January 18th (L. Stark).

Hooded Sea-slug (*Melibe leonina* Gld.). A delicate, translucent floating form. Cordova Bay, August 21st (V. L. Denton).

Red-tipped Sea-slug (*Triopla aurantiaca* Coch.). Sidney, April 24th (W. H. A. Preece).

Rock-boring Shell (*Pholadidea penita*). Jordan River, October (H. G. White). Perfect shells in holes of sandstone pebble.

Squids (*Gonatus fabricii*). Cachelot, West Coast, V.I., July (I. E. Cornwall). Taken from stomach of "Sie" Whale (*Balænoptera borealis* Lesson). Squids are an important article of diet with certain whales.

REVISED LIST OF BRITISH COLUMBIA MARINE BIVALVE MOLLUSCA IN THE MUSEUM COLLECTION.

(ARRANGED ACCORDING TO DALL'S LIST, 1921.)

During the year 1924 the late Dr. C. F. Newcombe undertook, with the co-operation of the Museum, to have all his magnificent collection of Marine Shells rechecked and brought up to date with the recent nomenclature.

For the naming and revising, Dr. Bartsch, of the United States National Museum, was approached and willingly and most generously consented to undertake this work. Dr. Bartsch referred this to Dr. Dall, one of the foremost authorities on the subject in the world, and the value of his determinations cannot be overestimated or adequately expressed. We can only record here our lasting debt of gratitude for the service he has been so good as to render to the late Dr. Newcombe and the Museum.

This work was barely started when Dr. Newcombe passed away, leaving it in abeyance for a time. His son, Mr. W. A. Newcombe, then kindly consented to the work being carried on as originally planned. As a result, the whole collection has now been brought up to date. Specimens in the Museum have been compared with those in the Newcombe collection, and in most cases duplicates of those identified by Dr. Dall have been donated, a gift of inestimable value, as there is now available indisputably authentic material for reference to any one interested.

With this material in our hands it has been deemed advisable to publish herewith a list of all the species submitted to the latter, and also to add others which were not included as being either well-known common species or identified by other authorities, such as Mrs. Oldroyd, who named a large number of the smaller *Gastropods* for Dr. Newcombe, to be listed later.

Dr. Newcombe's thoroughness and assiduity in the collecting of trhe Marine Mollusca of Vancouver Island and Queen Charlotte Islands has resulted in a very near complete list of such as are to be found in our waters, and we hope will prove of use to local collectors. For description and distribution reference should be made to Mrs. Oldroyd's "Marine Shells of Puget Sound & Vicinity," published 1924, while for systematic arrangement and distribution the work of W. H. Dall (1921), "Marine Shell-bearing Mollusca of North West Coast of America," should be consulted. The arrangement adopted in the Museum collection follows that of the latter work.

Changes in synonymy have been rather involved, giving no small amount of work to assign the more recent nomenclature. It is proposed to include some of the older names along with the new on the labels under the specimens, in order, we hope, to facilitate their identification.

Mention should be made, in passing, to the excellent annotated list of "Marine Mollusca of Pacific Coast," by the late Rev. G. W. Taylor, published in 1895, giving interesting facts of local occurrences and distribution; and also to a list by Dr. Newcombe in 1893 and the Museum Report of 1898.

The majority of the Molluscan collection was originally donated by Dr. C. F. Newcombe; to these have now been added many specimens generously presented by Mr. W. A. Newcombe, who has succeeded to his father's collection. Nearly all of these have been revised by Dr. Bartsch and Dr. Dall.

A complete list of the Bivalve marine shells in the Museum and the late Dr. C. F. Newcombe's collection follows. Those marked with an asterisk are in the Newcombe collection only, and are not represented in the Museum at present.

For the sake of convenience the *Brachiopods* or Lampshells are included.

Family SOLEMYACIDÆ.

**Acharax johnsoni* Dall.

Family NUCULIDÆ.

Nucula tenuis Montague.

Acila castrensis Hinds.

Family LEDIDÆ.

Leda cellulita Dall.
Leda acuta Conrad.
Leda minuta Fab.
Leda fossa Baird.
Yoldia thraciaeformis Storer.
Yoldia myalis Couthouy.
Yoldia limatula Say. (*amygdala* Hanlay.).
Yoldia scissurata Dall. (*lanceolata*).
Yoldia seminuda Dall.
Yoldia cnsitera Dall.

Family ARCIDÆ.

Glycymeris (*Axinea*) *septentrionalis subobsoleta* Carp.

Family PHILOBRYIDÆ.

Philobrya (*Bryophila*) *setosa* Carp.

Family OSTREIDÆ.

Ostrea lurida Carp.
Chlamys (*Pecten*) *hericius* Gould.
Chlamys (*Pecten*) *hindsii* Carp.
Chlamys caurinus Gould.

Family ANOMIIDÆ.

Monia (*Placuanomia*) *macroschisma* Deshayes.

Family MYTILIDÆ.

Mytilus californianus Conrad.
Mytilus edulis Linn.
Modiolus modiolus Linn.
Modiolus flabellatus Gould.
Adula californiensis Philippi (*stylina* Cpn.).
Musculus (*Modiolaria*) *niger* Gray.
Musculus (*Modiolaria*) *niger obesus* Dall.
Musculus (*Modiolaria*) *taylori* Dall.
Musculus (*Modiolaria*) *vernicosus* Middendorff. (*lævigatus*).
Crenella decussata Montagu.
Crenella columbiana Dall.

Family THRACIIDÆ.

**Thracia curta* Conrad.

Family PANDORIDÆ.

Kennerlia grandis Dall.
Kennerlia glacialis Leach.
Kennerlia filosa Carp.
Heteroclidus (*Clidophora*) *punctatus* Conrad.

Family LYONSIIDÆ.

Lyonsia californica Conrad.
Lyonsia pugetensis Dall.
Entodesma saxicola Baird.
Mytilimeria nuttallii Conrad.

Family CUSPIDARIIDÆ.

Cuspidaria pectinata Carp.
Cuspidaria beringensis Leche.

Family ASTARTIDÆ.

Astarte alaskensis Dall (*undata*).
Astarte esquimalti Baird.

Family CARDITIDÆ.

Cardita (*Lazaria*) *subquadrata* Carp.
**Venericardia alaskana* Dall.
Venericardia ventricosa Gould (*borealis*).
Miodontiscus (*Miodon*) *prolongatus* Carp.

Family THYASIRIDÆ.

Thyasira gouldii Philippi.
Axinopsis sericatus Carp.

Family DIPLODONTIDÆ.

Diplodonta orbella Gould.

Family LUCINIDÆ.

Lucinoma (*Lucina*) *annulata* Reeve.
Parvilucina (*Lucina*) *tenuisculpta* Carp.

Family LEPTONIDÆ.

Kellia laperousii Deshayes.
**Kellia* var. *chironii* Carp.
Kellia suborbicularis Montagu.
Rochefortia tumida Carp.
Pseudopythina rugifera Carp. (*Lepton rude*).
Lasæa rubra Montagu.

Family CARDIIDÆ.

Cerastoderma corbis Martyn.
Cerastoderma (*Cardium*) *californiense* Deshayes (*blandum*).
Cerastoderma (*Cardium*) *fucanum* Dall.
Protocardia centifilosa Carp. (*Cardium centifilosum*).
Serripes gronlandicus Gmelin.

Family VENERIDÆ.

Saxidomus giganteus Deshayes.
Marcia (*Venus*) *kennerlyi* (Carpenter) Reeve.
Marcia (*Cementia*) *subdiaphana* Carp.
Protothaca (*Paphia* or *Tapes*) *tenerrima* Carp.
Protothaca (*Tapes*) *staminea* Conrad.
Gemma gemma Totten.
Psephidia lordi Baird.

Family PETRICOLIDÆ.

Petricola carditoides Conrad.

Family COOPERELLIDÆ.

Cooperella (*Œdalina*) *subdiaphana* Carp.

Family TELLINIDÆ.

Moerella salmonea Carp.
Angulus carpenteri Dall. (*Tellina variegata*).
Oudardia (*Tellina*) *buttoni* Dall.
Peronidia (*Tellina*) *bodegensis* Hinds.
Macoma incongrua Martens.
Macoma brota Dall. (*Tellina edentula*).
Macoma calcarea Gmelin (*salulosa*).
**Macoma moesta* Deshayes.
Macoma nasuta Conrad.
Macoma inquinata Deshayes.
Macoma balthica Linn. (*inconspicua*).
Macoma balthica var. *inconpicua* Baird & Sby.
Macoma inflatula Dall.
Macoma quadrana Dall.
Macoma carlottensis Whiteaves.
Macoma yoldiformis Carp.
Macoma secta Conrad.

Family SEMELIDÆ.

Semele rubropicta Dall.
Cumingia lamellosa Sowerby (*californica*).

Family PSAMMOBIIDÆ.

Gobræus californicus Conrad. (*Psammobia rubroradiata*).

Family SOLENIDÆ.

Solen sicarius Gould.
Siliqua (*Machaera*) *patula nuttallii* Conrad.

Family MACTRIDÆ.

Mactrotoma dolabriformis Conrad.
Hemimactra hemphilli Dall.
Hemimactra (*Standella*) *falcata* Gould.
Symmorphomactra (*Mactra*) *planulata* Conrad.
Schizothaerus (*Tresus*) *nuttallii* Conrad.

Family MYACIDÆ.

Mya truncata Linn.
Mya arenaria Linn.
Cryptomya californica Conrad.

Family SAXICAVIDÆ.

Panope (*Glycimeris*) *generosa* Gould.
Panomya ampla Dall. (*Saxicava Norvegica*).
Saxicava arctica Linn.
Saxicava pholadis Linn.

Family PHOLADIDÆ.

Zirfaea gabbi Tryon (*crispata*).
Pholadidea penita Conrad.
Pholadidea ovoidea Gould.
Netta stomella (*Pholadidea*) *rostrata* Valenciennes.

AMPHIBIA OF BRITISH COLUMBIA.

BY G. A. HARDY.

Very little appears to be known regarding the distribution in British Columbia of these interesting animals. Possibly the reclusive or nocturnal habits of many of them mitigate against acquaintance by the ordinary observer, while the interested student must work hard if he would find them.

It is thought the following summary of the British Columbia species, as far as can be conveniently gathered, will stimulate interest and lead to increased knowledge of their habits and economy.

The majority lay their eggs in the water of ponds, etc.; these develop into "tadpoles," which gradually assume the adult form and then usually leave the water until the breeding season.

There are, however, interesting exceptions in the Salamanders *Plethodon intermedius* (Western Red-backed Salamander) and *Aneides ferreus* (Rusty Salamander), which are terrestrial throughout life. The young of these pass the larval or tadpole stage within the egg; the latter being deposited in cavities in rotten wood, etc., and are watched over by the parent until hatched.

Specimens marked with an asterisk are represented in the Museum collection. Of the species listed here it is instructive to note that without exception all of them inhabit the Pacific Coast or bodering regions, and do not extend across the continent.

In the Pre. Cat. Prov. Mus., 1898, is a list of seven species of Batrachians in the Province; the present one enumerates twelve. The nomenclature and arrangement here followed is taken from "A Synopsis of the Amphibia of California," T. L. Storer, 1925, an invaluable work to the student of the Amphibia of this region.

**Triturus torosus* (Rathke) (Pacific Coast Newt).

This is the most widely distributed species of salamander on the Pacific Coast, ranging from Alaska to California.

It is a true amphibian, spending the early part of the year in the water and the latter part on land, where it may be found at considerable distances from the former, under logs, bark, etc. At this period its skin is very rough and thick, which tends to retard dessication. The breeding stage of its life is spent in the water, where the skin becomes smoother, and in the males undergoes further changes, such as the development of "fins" on the tail. The males continue in the water for a greater length of time than the females. Protective poisonous glands are situated all over the dorsal surface.

Common on Vancouver Island.

Ambystoma macrodactylum Baird (Long-toed Salamander; Flat-footed Salamander).

Recorded from Moose River, B.C. (Canadian Alpine Jour., 1912), where it was caught in a mouse-trap set near the water. Very little appears to be known about this species, which ranges from British Columbia to California; it closely resembles the following species, differing more noticeably by the absence of the large parotoid glands on the sides of the head and by the presence of a light dorsal stripe of a greenish-yellow colour.

In speaking of the species at Croten Lake, Oregon, Storer quotes Evermann to the effect that many specimens were found in August under rocks at the edge of the lake, and that the majority were adults, only a few retaining external gills.

No records for Vancouver Island.

**Ambystoma paroticum* Baird (British Columbia Salamander; Vancouver's Salamander).

This species closely resembles the former, but in addition to characters already stated averages larger. It ranges from British Columbia to California.

On Vancouver Island it is recorded from Victoria and Nanaimo, from which localities specimens are preserved in the Museum collection.

The type locality of this species is Chilliwack Lake, B.C., 1868.

Dicamptodon ensatus (Esch.) (Marbled Salamander).

The largest of our salamanders. From 4¾ to 11¼ inches long. Recorded by Storer from Chilliwack.

Distribution: British Columbia to California.

**Plethodon intermedius* Baird (Western Red-backed Salamander).

This handsome little salamander is to be met with occasionally under bark and dead wood, in damp places. Very little is known of the habits of the species, but, judging from those of closely allied forms, it is strictly terrestrial. The eggs of *Ensatina eschscholtzii* in California have been found under a decayed log or in the deserted burrows of rodents, attended by the parent, who lay beside them with the tail looped round protectingly.

Protective poisonous glands exist in the skin of the tail.

Its range extends from British Columbia to Oregon. On Vancouver Island it is represented in the Museum collection by specimens from Sooke, Port Renfrew, Goldstream, and Brentwood, all taken under bark or clods in damp places.

**Ensatina eschscholtzii* Gray (Oregon Salamander).

One specimen from Vancouver Island in the Museum collection, identified by Dr. L. Stejneger. There are also specimens from Agassiz agreeing with the description of this species except in colour, which is not uniform dark red, but (in alcohol) blackish with an irregular blotchy band of light grey, the under-side dusky with numerous white dots. The most northern record in Storer's work is Discovery Harbour, Puget Sound. He states that this is the widest ranging species of Plethodont Salamander.

**Aneides ferreus* Cope (Rusty Salamander).

This slaty-coloured species is one of our most interesting salamanders. It is very closely allied to *A. lugubris* of California, about which more is known of habits. The latter is much addicted to climbing up trees, where they have been found in the decayed portion, protecting their eggs, which are suspended from the roof of a small cavity. Mr. Preece, of Sidney, found a specimen of *ferreus* 20 feet up a decayed arbutus in July, which suggests very similar habits to *lugubris*. The "larval" stage is passed within the egg; the young appear similar to adults in all but size. It is not, however, confined to trees, but has been found under stones half-way up Mount Finlayson and under bark of fallen trees. It is entirely terrestrial and has several structural modifications, such as the expansion of tips of toes as an aid to climbing, and a greater muscular development of the tail, which is more or less prehensile. Respiration is effected entirely through the skin, as they possess neither gills nor lungs.

Recorded from Mayne Island (Storer). Specimens in the Museum from Mount Douglas, Sidney, Mount Finlayson, and Sooke, Vancouver Island.

Storer states that all recorded species are from within 50 miles of the Coast.

Distribution: British Columbia to California; published records very few.

**Scaphiopus hammondii* Baird. (Western Spadefoot Toad).

This large toad is highly specialized to withstand dessication in an arid climate. One of the modifications is the habit of "digging-in" during the dry season. This is facilitated by the possession of horny cutting "spades" on the inner side of the hind feet. Spawning season very short.

Specimens represented in the Museum from Penticton, British Columbia.

Distribution: British Columbia to California.

**Bufo boreas boreas* Baird & Girard (North-western Toad).

This genial little fellow is frequently met in our rambles, squatting motionless on a log or ensconced under a stone, near water.

Common on Vancouver Island.

Specimens in Museum collection from Goldstream, V.I., and Okanagan, B.C.

Distribution: Alaska to California.

Hyla regilla Baird & Girard (Pacific Tree-frog).

This beautiful frog is the one most frequently met with. It has a greater predeliction for the ground than its Eastern and European relatives. It often takes up its station in a greenhouse, where it seems to thrive on the flies, etc., found there. The loud croaking, out of all proportion to its size, is uttered by the male during the breeding season, the volume of sound being produced by the expansive sac under the chin. There is also a single note used throughout the year. Its power of adapting its colour from varying shades of green to mottled browns, according to its environment, is one of its most notable characteristics.

Specimens from Victoria, V.I., in the Museum collection.

Distribution: British Columbia to California.

Rana aurora aurora Baird & Girard (Oregon Red-legged Frog).

The hind legs are proportionately longer than those of the following species, and the spotting on top of the head is absent. Under-side, red.

Recorded from Hatzic, B.C. (Storer).

Distribution: British Columbia to California.

**Rana pretiosa pretiosa* Baird & Girard (Western Spotted Frog).

Head spotted. A frog of the moister places, in the Interior it is represented by *R. p. luteiventris*, a phase with fainter spotting on the head. This is the common frog of our ponds and lake margins. The under-side is salmon-coloured. It is described as being somewhat stupid and easily caught, as when surprised in the water it dives to the bottom head first into the mud, leaving the legs plainly in view.

Specimens in Museum collection from Penticton, Okanagan, and Hanceville, British Columbia.

Distribution: Alaska to California.

Rana cantabrigensis latiremis.

Recorded from Meadow Lake, 20 miles north of Clinton, B.C., by Clyde L. Patch in "Copeia," Oct. 20th, 1922, No. 111.

CERAMBYCIDÆ OF VANCOUVER ISLAND.

(PRELIMINARY ANNOTATED LIST.)

BY G. A. HARDY.

The present article was suggested by the lack of any readily referable information concerning the Coleoptera of this district, and is put forward in the hope that it will be of interest to beginners and others.

The beetles belonging to the large family Cerambycidæ, or Longhorns, have been selected as having, perhaps, the widest appeal, and are most commonly met with either by the casual observer or general student during the spring and summer months.

With the mild, equable temperature that Vancouver Island enjoys, and its resultant response in a luxuriant forest-growth, insects dependent on such conditions here find a congenial home. The Longhorns, being essentially forest creatures, are richly represented in species, and are in fact one of our dominant families.

As is suggested by their common name, one of the characteristics of the group is the possession of a pair of long antennæ, in some cases exceeding the body in length, and in addition a generally graceful appearance and pleasing coloration give them a habitus quite distinctive. Many of them possess a special arrangement by which a stridulating sound is produced, as by rubbing the hind femora against the edge of elytra (*Prionus*) or by the attrition of the pronotum or thorax over a roughened process of the mesonotum at the base of the wing-cases (*Rosalia, Leptura*, etc.).

They are lovers of the forest and woodland, depending for their larval existence on the wood of trees, shrubs, or, rarely, herbaceous plants, in the neighbourhood of which the adults may be found, either flying along glades or forest roads; at rest on palings; under bark, etc. Flowers of spiræa, rose, yarrow, and goldenrod, etc., have a special attraction for many species, while to others newly felled timber is irresistible. Others again are night-flyers and are attracted to artificial light. They are short-lived for the most part, living from a few days to few weeks. Some feed on pollen (*Leptura*, etc.), while others eat the leaves (*Monochamus*, etc.).

The eggs are usually whitish, elongate, slightly curved, with rounded or tapering ends, having a smooth surface, often flexible so as to allow them to fit in the irregularity of the bark crevices in which they are generally laid. *Monochamus* makes an incision with the jaws in the bark for the reception of its eggs. Others utilize twigs for the purpose (*Oberea*).

The larvæ are white, fleshy, almost and often completely legless grubs, commonly known as "Round-headed Borers." They spend their entire existence of a few months to several years within the wood of trees or under the bark, in the majority of cases, or in the roots (*Prionus*). *Desmocerus* forms gall-like swellings at the base of elder-bushes.

The pupal case is very thin so that the parts of the future imago are readily seen. The metamorphosis is usually passed within an enlarged end of the larval gallery near the surface, or rarely (*Prionus*) an earthern cocoon is constructed. When fully developed the adult passes to the exterior by a passage previously made by the larva (*Neoclytus*) or gnaws its way out (*Plectura*).

From the habits of the larva it will thus be seen that the Longhorn family may be one of considerable economic importance. Newly felled timber, if left on the ground for a season, is greatly reduced in value by the extensive burrows permeating the solid wood. The death of many forest trees is hastened by the loosening of the bark from their activities, or by the entrance to the heart-wood through stubs of broken branches or other abrasions, while perfectly sound and healthy trees are occasionally attacked and killed.

Thus a study of these attractive beetles may not only be a source of much pleasure for its own sake, but by the investigation of their life-histories, means for their control where necessary may be found with resultant benefit to others not directly interested.

The basis of the material considered here is the result of active field-work during the past two seasons, augmented by records in the Museum and private collections. While not claiming

the title of a list, opportunity has been taken to include all records that could be fully authenticated to date, and thus make it the nucleus of a complete list in the future.

Collecting on the Island, as far as all available records go, seems to have been confined chiefly to the south-eastern parts and up the east coast to the neighbourhood of Nanaimo, a tract of Douglas fir country which contains the most northern extension of such trees as the garry oak, arbutus, etc., and comes within the Humid Transition Zone. From a study of the Western fauna, Van Dyke finds that the whole of the Pacific Coast extending from Alaska to California (including Vancouver Island) constitutes a distinct association apart from the rest of the continent, and which he calls the "Vancouver Strip." This better shows the general similarity north and south than the older zonal terms, which in general extend across the continent in roughly parallel groups, suggesting closer Eastern relationship of corresponding zones, which actually does not exist so strongly as might be supposed.

Of the sixty-eight species enumerated here, it will be noted that approximately 80 per cent. are confined to the Pacific Coast and neighbouring regions, and of these 83 per cent. are also recorded from northern California.

The influence of the humid coastal regions in producing dark or black forms is well demonstrated by several species, among which may be instanced: *Stenocorus vestitus* Hald., the black-legged and antennæ form prevailing, while in the Interior "dry belt" the red-legged and antennæ phase predominates. *Evodinus vancouveri* Csy., a dark form of *P. monticola*. *Judolia quadrillum* Lec., which is much darker on the Coast than in the Interior of the Province. *Strangalia subcostata* Fall, of which Vancouver Island individuals are black, while Interior forms tend more commonly to yellowish-brown, and *Anocomis lignea* Fab. (*Semanotus ligneus* Fab.) has a totally black phase. Others might be cited.

One species is new to Canada—*Clytanthus pacificus* Van Dyke, previously recorded from Oregon and California.

Appended is a list of periodicals in which reference is made to Vancouver Island records, which it was thought desirable to bring together for future reference. The majority contain short lists and records of captures.

Can. Ent., 1888, p. 91.
Can. Ent., 1891, p. 283.
Bull. Nat. Hist. Soc. B.C., 1893.
Can. Ent., 1899, p. 107.
Ent. Soc. Ont., 1904, p. 75.
Bull. B.C. Ent. Soc., 1907, Jan., No. 6.
Ent Soc., Ont., 1912, p. 126.
Ent. Soc. Ont., 1914, p. 137.

Other literature briefly referred to in the text:—

Garnett, R. T. "An Annotated List of the Cerambycidæ of California." Can. Ent., 1918.
Craighead, F. C. "North America Cerambycid Larvæ." 1923.
Van Dyke, E. C. "Distribution of Insects in Western North America." Ann. Ent. Soc. Am., 1919.

The nomenclature and arrangement followed is according to Leng's "Catalogue of Coleoptera of North America," 1920.

Popular names are added in the hope that it will make the list more generally useful, as a constant demand for such is made by the public. If as a result of the additions new recruits to the cause of entomology are added, then they will be more than justified.

A brief suggestion of the form or colour of the species is indicated, to be used in conjunction with the plates, or, when not figured, as touching upon the more salient features. The times of appearance are given in months, which include the first and last dates recorded in collections examined, and refer only to Vancouver Island. Unless otherwise stated, species mentioned are in the collection of the Provincial Museum.

The notes relating to frequency or otherwise of occurrence are only comparative and relate to specimens represented in local collections.

Host-trees stated refer to Vancouver Island, when possible by direct observation from the source indicated, but where this has been lacking, published records have been drawn upon in order to make it as complete as possible.

Names in full in the text refer to the authors of published works, while the following list refers to collectors whose initials appear in brackets: E. H. Blackmore, E. A. Cooke, H. C. Coppock, I. E. Cornwall, Muriel Davenport, W. Downes, A. W. Hanham, G. A. Hardy, C. Livingston, H. McKnight, A. Nicholls, W. H. A. Preece, G. W. Taylor, and P. deNoe Walker.

Acknowledgments.—For the determination of specimens we are under a lasting debt of gratitude to Dr. E. C. Van Dyke, of Berkeley, Cal., who has most kindly not only named and criticized nearly all of the species mentioned, but has also added valuable notes on distribution and host-trees, and to Mr. G. R. Hopping, of Vernon, B.C., for valuable criticism and verification. We have much pleasure in here signifying our thanks and appreciation for the kindness and cordiality shown throughout our correspondence. To the following gentlemen we also extend our thanks for the generous co-operation and interest shown: Messrs. W. H. A. Preece, Sidney; A. W. Hanham, Duncan; E. H. Blackmore, Victoria; W. Downes, Victoria.

CERAMBYCIDÆ (LONGHORN BEETLES).

Ergates Serv.

E. spiculatus Lec. (Spiny Wood-borer). (Pl. IV., Fig. 19.)

Edges of thorax with several small spines. To be found at rest under logs, etc., by day; flies by night. The male is less common in local collections than the female. July to August. Frequent. Breeds in Douglas fir (G. A. H.) and other conifers, the large larvæ making extensive mines in the heart-wood and often causing considerable damage to new lumber. Victoria (E. H. B.); Goldstream (G. A. H.); Duncan (A. W. H.). British Columbia to northern California.

Prionus Fab.

P. californicus Mots. (Californian Prionus). (Pl. IV., Fig. 2.)

Edges of thorax with three large spines. Often called the "Electric-light Bug," though this term strictly belongs to a large Water-bug (*Lethocerus*). It is a night-flyer, to be found by day under logs, leaves, etc. When excited is able to make a rasping sound by rubbing the hind femora against the edge of elytra. June to August. Common. The larvæ, the development of which takes from two to four years, feed on the roots of various trees—service-berry, sumac, and oak—often killing them (Craighead). Victoria (W. H. A. P.; M. D.); Saanichton (G. A. H.); Duncan (A. W. H.); Wellington (G. W. T.). British Columbia to California.

Tragosoma Serv.

T. depsarium var. *harrisi* Lec. (Pl. IV., Fig. 24.)

Thorax with one spine on each side. Smaller than the two preceding. Taken at "light," June, August. Scarce. Breeds in various coniferous trees (Garnett). Victoria (E. H. B.); Duncan (A. W. H.). Range very extensive. British Columbia to Newfoundland; south to New York and Pennsylvania; and California on the east and west coasts respectively.

Asemum Esch.

A. atrum Esch. (Western Asemum). (Pl. IV., Fig. 22.)

Two colour forms, black-brown or light brown; ribbed elytra. Found about freshly cut conifers, May, June, frequent. Breeds in Douglas fir (Garnett); spruce (Craighead). The larvæ mine chiefly in the sap-wood, rarely penetrating the heart-wood. Goldstream (E. H. B.); Sidney (W. H. A. P.); Duncan (A. W. H.); Departure Bay (G. W. T.). Pacific Coast.

Nothorhina Csy.

N. aspera Lec. (Hollowed Brown). (Pl. IV., Fig. 25.)

Elongate, brown. A single large depression on thorax. Has been taken under block of newly cut Douglas fir and at "light." July to August. Not common. Breeds in Douglas fir (Craighead) and firs (Van Dyke), the larvæ mining in the dead heart-wood. Victoria (E. H. B.; W. H. A. P.); Tod Inlet (G. A. H.); Duncan (A. W. H.); Sidney (G. A. H.). British Columbia to California.

Tetropium Kby.

T. cinnamopterum Kby. (Cinnamon Tetropium).

Like *velutinum*, but with narrower and more shiny thorax. June to September. Rare. One specimen from Nanaimo (G. W. T.) in collection of A. W. Hanham. Breeds in dead wood of firs, pines, and spruce, mining entirely in the bark (Craighead). North-west and Eastern America.

PLATE IV.

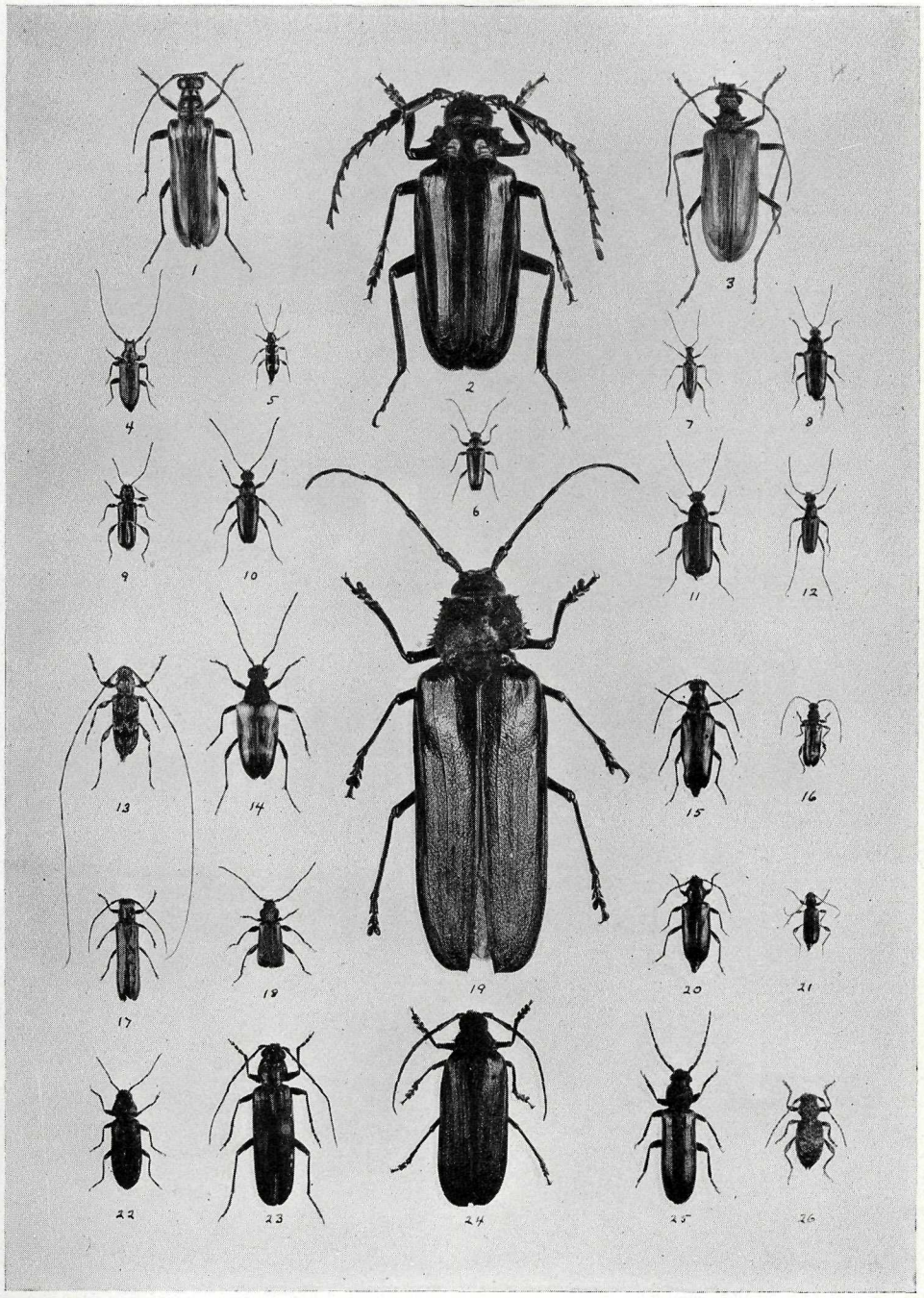
Family CERAMBYCIDÆ (Longhorn Beetles)

(Natural size.)

Fig.

1. *Ortholeptura valida* (Lec.).
2. *Prionus californicus* Mots. (Male.)
3. *Parapachyta spurca* (Lec.). (Female.)
4. *Opsimus quadrilineatus* Mann.
5. *Phymatodes nitidus* Lec.
6. *Atimia dorsalis* Lec.
7. *Hapalosalia scripta* (Lec.).
8. *Judolia quadrillum* (Lec.).
9. *Phymatodes vulneratus* Lec.
10. *Leptura dolorosa* Lec.
11. *Brachyleptura dehiscens* (Lec.).
12. *Brachyleptura lætifica* (Lec.). (Male.)
13. *Graphisurus obliquus* Lec. (Male.)
14. *Leptura matthewsi* Lec. (Female.)
15. *Strangalia subcostata* (Fall).
16. *Hybodera tuberculata* Lec.
17. *Oberea schaumi* var. *quadricallosa* Lec.
18. *Callidium antennatum* var. *hesperum* Csy.
19. *Ergates spiculatus* Lec. (Female.)
20. *Anocomis lignea* (Fab.).
21. *Phymatodes dimidiatus* (Kby.)
22. *Asemum atrum* Esch.
23. *Criocephalus productus* Lec.
24. *Tragosoma depsarium* var. *harrisi* Lec.
25. *Nothorhina aspera* Lec.
26. *Plectrura spinicauda* Mann.

PLATE IV.



T. velutinum Lec. (Velvet Tetropium). (Pl. V., Fig. 33.)

Small, elongate, brown, paler at base of elytra. Found about newly cut Douglas fir. May to July. Not common. Breeds in Douglas fir and pines. The larvæ mine between bark and wood. It is of some economic importance, having caused the death of hemlock and larch (Craighead). Tod Inlet (G. A. H.); Sidney (W. H. A. P.); Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California along the coast.

Criocephalus Muls.

C. productus Lec. (Long Ram's-head). (Pl. IV., Fig. 23.)

Very elongate, sooty-brown, parallel-sided, with two depressions on thorax. Met with unexpectedly in various places, floating on water, in spider's web (W. H. A. P.); on steps of Museum (G. A. H.). July to October. Frequent. Breeds in pines, firs, and Douglas fir, mining chiefly in the heart-wood of dead or dying trees (Craighead). Victoria (M. D.); Duncan (A. W. H.). Pacific Coast.

C. asperatus Lec. (Rough Ram's-head).

Similar to preceding, but stouter and less parallel-sided. Thorax rougher. September to October. Not common. Departure Bay (G. W. T.). British Columbia to California and bordering States.

Opsimus Mann.

O. quadrilineatus Mann. (Four-lined Opsimum). (Pl. IV., Fig. 4.)

Small, lead-coloured, one short spine on each side of thorax. June to August. Rare. Breeds in balsam (*Abies grandis*) (W. H. A. P.); Douglas fir (G. A. H.). Living specimens taken from pupal cell by Preece in December. The mines extend through the heart-wood. Victoria (A. W. H.; G. A. H.); Sidney (W. H. A. P.); Duncan (A. W. H.). Alaska to California along the Coast.

Dicentrus Lec.

D. bluthneri Lec. (Bluthner's Two-spot).

A very small black beetle with two greyish spots on elytra. Two short spines on each side of thorax. May and September. Rare. Found in neighbourhood of coniferous trees. Duncan (A. W. H.). British Columbia to California. Collection of A. W. Hanham.

Eumichthus Lec.

E œdipus Lec. (The Imitator).

Small, dark brown, two narrow cinereous bands on elytra. On flowers of ocean-spray (*Spiræa*) (Garnett). July. Very rare. Nanaimo (G. W. T.); Vancouver Island (originally described from V.I. specimen, J. L. Leconte, 1873, S.M. Col. No. 264). British Columbia to California. Collection of A. W. Hanham.

Rhagium Fab.

R. lineatum Oliv. (Ribbed Rhagium). (Pl. V., Fig. 29.)

Brownish-grey; short antennæ; strong spine on either side of thorax. March to June, occasional. Breeds in balsam (*A. grandis*) (W. H. A. P.); the larvæ live between bark and wood, pupating in a "nest" like cell in late summer and early fall, over-wintering as adults, the life-cycle taking about two years to complete. Victoria (E. H. B.; G. A. H.); Sidney (W. H. A. P.); Duncan (A. W. H.); Nanaimo (G. W. T.). Throughout coniferous regions in North America.

Leptalia Lec.

L. marcilenta v. *frankenhauseri* Mann. (Wisp Longhorn).

Elongate, black, with one yellow stripe on each elytra; variable. On flowers. May, June. Rare. Breeds in willow and alder (Kincaird). Saanich (W. D.); Duncan (A. W. H.). Alaska to Washington. Collection of A. W. Hanham.

Hapalosalia Csy.

H. scripta (Lec.) (Letter Longhorn). (Pl. IV., Fig. 7.)

Small, yellow, with black ticks. An active species found on flowers of rose, yarrow, thimbleberry, where it feeds on the pollen. May to July. Fairly common. Victoria (G. A. H.; W. H. A. P.); Goldstream (G. A. H.; E. H. B.); Duncan (A. W. H.); Cachalot (I. E. C.). British Columbia to California.

Ortholeptura Csy.

O. valida (Lec.) (Clouded-yellow Leptura). (Pl. IV., Fig. 1.)

One of our finest Longhorns. Ochraceous with suffused longitudinal dusky marking on elytra. Taken at "light"; by day under bark of an alder (G. A. H.). June to August. Rare. Breeds in Douglas fir (Van Dyke). Goldstream (G. A. H.); Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California.

Stenocorus Fab.

S. flavolineatus Lec. (Yellow-lined Beauty). (Pl. V., Fig. 37.)

A large handsome insect, black with broad yellow line on each elytra. Usually taken on the wing when flying along roads or in clearings in the vicinity of coniferous trees. June, July. Rare. Goldstream (G. A. H.); Brentwood (A. N.); Duncan (C. L.). British Columbia to California.

S. vestitus Hald. (Russet Longhorn). (Pl. V., Fig. 27.)

An elegant light-brown species. The form with black legs and antennæ most common on Vancouver Island. In the Interior, Mr. G. Hopping tells me, the red form is more prevalent. Usually found on flowers of rose, yarrow, etc. May to July—most records for June. Frequent, chiefly in neighbourhood of Victoria (G. A. H.); Sidney (W. H. A. P.); Shawnigan (A. W. H.); Duncan (C. L.). British Columbia to California.

Parapachyta Csy.

P. spurca (Lec.) (Wainscot Longhorn). (Pl. IV., Fig. 3.)

A large fulvous species with a small black dot on each elytra. Taken only at "light." Occasional. Latter part of May to July. Breeds in Douglas fir (Garnett). Victoria (W. H. A. P.; E. A. C.); Sidney (W. H. A. P.); Shawnigan (E. H. B.); Duncan (A. W. H.). British Columbia to California.

Pachyta Zett.

P. liturata Kby. (Marbled Longhorn).

A robust species, varying in colour from yellow to black. July, August. Breeds in fir (Garnett). Victoria (Can. Ent., 1888, W. J. Holland); Duncan (in E. H. B. collection). Throughout northern North America, at high altitudes in the southern parts of its range.

Evodinus Lec.

E. vancouveri Csy. (Vancouver Longhorn).

A small elegant species, yellow with black spots on sides of elytra, often converging. On flowers. Very scarce. Its close relative, *Pachyta monticola*, has been found breeding in hemlock, pine, and spruce (Craighead), the larva when full-fed leaving the log and forming an earthen cocoon in the earth beneath. Duncan (A. W. H.). Pacific Coast. *P. monticola* ranges east to the Atlantic.

Acmæops Lec.

A. pratensis Laich. (Meadow Longhorn).

A small almost rectangular brown species; occurs on flowers. June to August. Rare. One specimen from Nanaimo (G. W. T.) in collection of A. W. Hanham. Circumpolar; across northern North America.

Judolia Muls.

J. quadrillum (Lec.) (Small Angled Leptura). (Pl. IV., Fig. 8.)

A rather small species, black with yellow markings on elytra. Most commonly met with on flowers of ocean-spray (*Spiræa*), yarrow, thimbleberry, etc., and also flying over herbage. June to August. Common. Victoria (G. A. H.); Goldstream (G. A. H.); Sidney (W. H. A. P.); Royal Oak (W. D.); Duncan (A. W. H.). British Columbia to California.

Brachyleptura Csy.

B. dehiscens (Lec.) (Divergent-winged Leptura). (Pl. IV., Fig. 11.)

An inconspicuous, walnut-coloured species. Taken flying and on flowers of ocean-spray (*Spiræa*). July, August. Uncommon. Goldstream (G. A. H.; A. N.); Highland District (G. A. H.); Duncan (A. W. H.). British Columbia to California.

PLATE V.

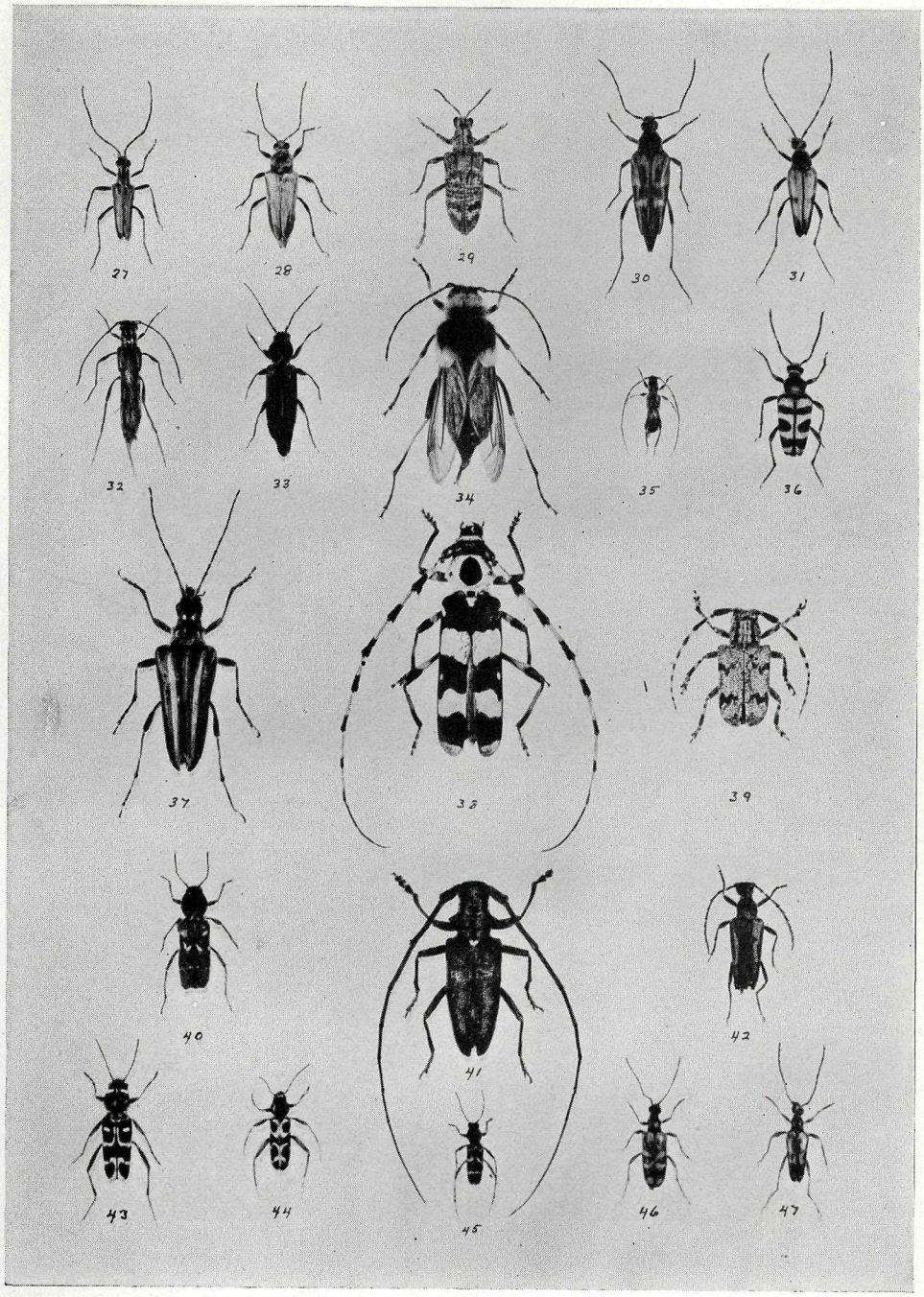
FAMILY CERAMBYCIDÆ (LONGHORN BEETLES).

(Natural size.)

Fig.

27. *Stenocorus vestitus* Hald.
28. *Leptura chrysocoma* Kby.
29. *Rhagium lineatum* Oliv.
30. *Strangalia obliterata* (Hald.).
31. *Strangalia soror* (Lec.).
32. *Necydalis lævicollis* Lec.
33. *Tetropium velutinum* Lec. (Female.)
34. *Ulochætes leoninus* Lec. (Female.)
35. *Molorchus longicollis* Lec.
36. *Strophiona læta* (Lec.).
37. *Stenocorus flavolineatus* Lec.
38. *Rosalia funebris* Mots. (Male.)
39. *Synaphæta guexi* (Lec.).
40. *Xylotrechus mormonus* Lec.
41. *Monochamus oregonensis* Lec. (Male.)
42. *Brachyleptura cribripennis* (Lec.).
43. *Xylotrechus undulatus* (Say.).
44. *Neoclytus conjunctus* (Lec.).
45. *Clytanthus pacificus* Van Dyke.
46. *Xestoleptura crassipes* (Lec.). (Female.)
47. *Xestoleptura crassipes* (Lec.). (Male.)

PLATE V.



B. cribripennis (Lec.) (Canadian Leptura). (Pl. V., Fig. 42.)

A handsome beetle; black with red shoulders in typical form; variable; some specimens have elytra all red, others entirely black. This is the Western phase of *canadensis* Fab., having more shiny elytra and coarser punctures. On flowers of tansy (A. W. H.). July to September. Very scarce. Breeds in hemlock and pines (Craighead). Victoria (W. D.); Goldstream (E. H. B.); Duncan (A. W. H.). Majority of records from Duncan. Pacific Coast region.

B. lætifica (Lec.) (Slender Leptura). (Pl. IV., Fig. 12.)

Similar in size to *J. quadrillum*, but more slender and with longer legs. Male black, female red, with black spots on elytra. On flowers of ocean-spray, yarrow, thimbleberry, and rose. May to July, especially June. Common. Victoria (G. A. H.; E. H. B.); Goldstream (G. A. H.); Sidney (W. H. A. P.); Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California.

Parallelina Csy.

P. subargentata Kby. (Clouded Silver).

A small black species with very short sparse white pubescence. Occurs on flowers of rose and black hawthorn (*Cratægus brevispina*). May to July. Fairly common. Victoria (G. A. H.), where it is most frequently observed; Sidney (W. H. A. P.); Duncan (A. W. H.). Widely distributed throughout Canada and United States.

Strangalia Serv.

S. obliterata (Hald.) (Black-marked Halter). (Pl. V., Fig. 30.)

A conspicuous graceful species, yellow, with black bands and spots. On flowers of ocean-spray, crawling over newly cut Douglas fir, resting on leaves, but chiefly flying in the hot sun along roads, etc. Females predominate. June to September; one record for latter month. Very common. Breeds in dead conifers, fir, Douglas fir, pine, spruce, etc. (Craighead). Victoria (E. H. B.); Goldstream (G. A. H.); Sooke (P. deN. W.); Sidney (W. H. A. P.); Duncan (A. W. H.). British Columbia to California.

S. subcostata Fall (Thin-ribbed Halter). (Pl. IV., Fig. 15.)

Same size as *obliterata*. Black. In the Interior a form with yellowish-brown elytra with black tip occurs more commonly (G. R. Hopping). On flowers of ocean-spray. July. Rare. Highland District (G. A. H.); Duncan (E. H. B. coll.). British Columbia to California.

S. soror (Lec.) (Black-tipped Halter). (Pl. V., Fig. 31.)

Similar to *obliterata*, but black chiefly on tips of elytra. On flowers of yarrow, ocean-spray, and flying along roads. Males predominate. End of June to August. Not common. Goldstream (G. A. H.); Brentwood (A. N.); Duncan (A. W. H.). Breeds in pines (Garnett). British Columbia to California.

S. amabilis (Lec.) (Lovely Leptura).

Small, black, with three yellow bars, often reduced to spots. On flowers. Rare. June to August. Shawnigan (Mus. coll.); Duncan (A. W. H.). British Columbia to Oregon.

Xestoleptura Csy.

X. crassipes (Lec.) (Yellow-footed Leptura). (Pl. V., Figs. 46, 47.)

Small. Yellow with tip of elytra black in male, additional black bands on elytra in female. On flowers of ocean-spray, water-parsley (*Œnanthe sarmentosa*), goldenrod (*Solidago*); at rest on leaves, or flying by roadsides. June to August. One in September (E. H. B.). Common. Breeds in heart-wood of dead balsam (*Abies grandis*) (G. A. H.) and pine (Craighead). Victoria (G. A. H.); Esquimalt (A. N.); Goldstream (G. A. H.); Sidney (W. H. A. P.); Duncan (A. W. H.). British Columbia to California.

X. tibialis (Lec.) (Black-footed Leptura).

Similar to *crassipes*, but black under surface and on legs, and occurs at higher elevations. On flowers. June to August. Rare. Duncan (A. W. H.). British Columbia and, according to Leng, Washington, Michigan, and New Hampshire.

Strophiona Csy.

S. læta (Lec.) (Resplendent Oak-borer). (Pl. V., Fig. 36.)

A beautiful insect, golden-yellow with velvet-black bands. At rest on tree-trunks, etc. July, August. Scarce. Breeds in garry oak (W. D.). Victoria (W. D.; W. H. A. P.); Duncan (C. L.). British Columbia to California where oak occurs.

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Leptura Linn.

L. chrysocoma Kby. (Golden Longhorn). (Pl. V., Fig. 28.)

Finely pubescent, golden-yellow. On flowers of rose, ocean-spray, yarrow, thimbleberry. May to July. Fairly common. Breeds in pines (Craighead). Victoria (G. A. H.); Goldstream (E. H. B.); Sidney (W. H. A. P.); Duncan (A. W. H.). Across northern Canada to British Columbia and down the coast to California.

L. dolorosa Lec. (Black Leptura). (Pl. IV., Fig. 6.)

All black. On flowers of spiræa, etc., but most often along roads and about herbage, resting on the leaves, on which they like to bask in the sun. Latter part of June to August. Common. Breeds in heart-wood of Douglas fir (W. H. A. P.). Brentwood (G. W. H.); Sidney (W. H. A. P.); Goldstream (G. A. H.); Duncan (A. W. H.); Wellington (G. W. T.). British Columbia to California.

L. matthewsi Lec. (Matthew's Leptura). (Pl. IV., Fig. 14.)

A robust species; elytra pale yellow with black tips and interrupted median band; a very fine insect. Flying or at rest on herbage. July to September. Rare. Breeds in cedar (Van Dyke). Goldstream (A. N.; E. H. B.); Duncan (A. W. H.). British Columbia to California.

L. aspera Lec. (Rough Leptura).

Very black, elytra with small elevated points. Breeds in birch (Craighead). (Described from a Vancouver Island specimen by Leconte in Smith. Misc. Colls. No. 264, 1873, p. 228.) British Columbia to Lake Superior.

Pyrotrichus Lec.

P. vitticollis Lec. (Yellow Collar).

A very distinctive species, bluish with three orange lines on thorax, elytra margined with same, hind angles of former rounded. April, May. Rare. Breeds in heart-wood of alders in California (Garnett). Victoria (Mus. coll.); Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California.

Desmocerus Serv.

D. piperi Webb (Banded Horn).

Similar in general appearance to *P. vitticollis*, but hind angles of thorax acuminate, and lacking orange stripes. Male with elytra entirely orange. April to June. Rare. Breeds in base and stems of elder (*Sambucus*), forming galls at base, often killing the host-plant. Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California. Collection of A. W. Hanham.

Ulochætes Lec.

U. leoninus Lec. (Bumble Longhorn). (Pl. V., Fig. 34.)

A very peculiar beetle departing altogether from the typical form. In general appearance looks like a large bumble-bee, being somewhat similarly marked, and possessing a covering of dense hairs. The wing-cases are reduced to mere scales, while the flight-wings are large and conspicuously exposed. Has a heavy bee-like flight. When alarmed the tip of the abdomen is carried curled over the back, the long yellow ovipositor being directed forward and constantly in motion, resembling a sting. Seen flying in neighbourhood of newly felled Douglas fir (G. A. H.; A. N.) and at rest on trunk of balsam (*Abies grandis*) (W. H. A. P.). June to August. Rare. Breeds in balsam (W. H. A. P.); Douglas fir, spruce, and pine (Craighead), mining in the heart-wood. Victoria (E. H. B.); Sidney (W. H. A. P); Tod Inlet (G A. H.; A. N.); Duncan (A. W. H.); Departure Bay (G. W. T); Alert Bay (Bull Nat. Hist. Soc., 1893, apparently first record for Canada). British Columbia to California.

Necydalis Linn.

N. cavipennis Lec. (Short-winged Oak Longhorn).

Another highly specialized form, closely resembling an ichneumon; the wing-cases are even smaller in proportion to the preceding; general colour light brown with fine golden pubescence on sides. August. Rare. Breeds in oak (W. D.). Victoria (W. D.; A. W. H.). British Columbia to California. Collection of A. W. Hanham.

N. lævicollis Lec. (Short-winged Longhorn). (Pl. V., Fig. 32.)

Similar to preceding, but averaging smaller and without pubescence. Most often seen flying; many dead specimens taken from exit-holes in alder, not having been able to gnaw their way

through the portion of bark left by the larva, possibly due to the long drought making it too hard. July, August. Scarce. Breeds in alder and willow on Vancouver Island, mining in the heart-wood. Victoria (G. A. H.; E. H. B.); Sidney (W. H. A. P.); Goldstream (G. A. H.; W. H. A. P.); Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California.

Molorchus Fab.

M. longicollis Lec. (Ichneumon Longhorn). (Pl. V., Fig. 35.)

Another ichneumon-like beeetle, much smaller than preceding and almost black. Hovering over flowers of pyrus (G. W. T.), cultivated spiræa (W. H. A. P.). Uncommon. May, June. Sidney (W. H. A. P.); Duncan (A. W. H.). British Columbia to California

Hybodera Lec.

H. tuberculata Lec. (Tuberculated Longhorn). (Pl. IV., Fig. 16.)

Small, brown, with grey band across elytra, tuberculate thorax. Flying over cordwood in late afternoon (A. W. H.). April, May. Rather rare. Breeds in maple (*Acer macrophyllum*) (Van Dyke). Victoria (E. H. B.); Duncan (A. W. H.); Wellington (G. W. T.). British Columbia to California. Collection of A. W. Hanham.

Rosalia Serv.

R. funebris Mots. (Large Banded Borer). (Pl. V., Fig. 38.)

Without doubt our most handsome Longhorn. Flying and crawling about alder logs and slashings. July and August. Not common. Breeds in alder and willow. Victoria (M. D.; E. H. B.); Goldstream (H. McK.; G. A. H.); Duncan (A. W. H.); Departure Bay (G. W. T.); Westholme (H. C. C.). Alaska to California.

Anocomis Csy.

A. lignea (Fab.) (*Semanotus ligneus* Fab.) (Blue-clouded Miner). (Pl. IV., Fig. 20.)

Blue-black with varying extent of orange bands and spots on elytra. April, May. Frequent. Breeds in cedar (*Thuja plicata*), from which numbers have been extracted from pupal cell in August and during the ensuing winter. A hymenopterous parasite, *Xorides insularis*, preys extensively on the larvæ. Taken ovipositing on fresh cedar log (W. H. A. P.). Tod Inlet (G. A. H.); Sidney (W. H. A. P.); Goldstream (G. A. H.); Duncan (A. W. H.). Ranges across continent.

A. litigiosa Csy. (*Semanotus nicolas* White) (Black-clouded Miner).

Similar to preceding, but more hairy and coarser punctuation; pitch-black. "Flying to light from fresh-sawn pine logs" (C. L.). March, April. Not common. Breeds in fir (*Abies grandis*) (Van Dyke). Duncan (A. W. H.; C. L.). Alaska to Lake Superior and Pacific slope.

Callidium Fab.

C. antennatum v. *hesperum* Csy. (Azure Miner). (Pl. IV., Fig. 18.)

Dull metallic blue. Found on logs of arbutus (W. H. A.). May. Very scarce. Breeds in Douglas fir and pine (Van Dyke). Saanich (W. D.); Sidney (W. H. A. P.); Duncan (A. W. H.). Pacific Coast.

Phymatodes Muls.

P. dimidiatus (Kby.) (Umber Wings). (Pl. IV., Fig. 21.)

Fuscous with lighter bar at base of elytra. Flying; running over spruce logs. June, July. Not common. Breeds in spruce and other conifers (Van Dyke). Victoria (W. D.); Duncan (A. W. H.). Alaska to California and Lake Superior.

P. vulneratus Lec. (Scar Wings). (Pl. IV., Fig. 9.)

Smaller than preceding, one cross-bar on each elytra. "Sweeping" herbage. June. Rare. Breeds in maple (*Acer macrophyllum*), mining in sap-wood of dead branches. Victoria (G. A. H.); Sidney (G. A. H.); Goldstream (G. A. H.); Duncan (C. L.). British Columbia to California.

P. decussatus Lec. and var. *obliquus* Csy. (Oblique-lined).

Similar to preceding. Opaque, black, with two cross-bars on each elytra. *Decussatus* has pale-brown base to elytra. Flying. On oak trunks. May to July. Scarce. Breeds in sap-wood

of garry oak (G. A. H.). Victoria (G. A. H.; A. W. H.); Duncan (A. W. H.). British Columbia to California where oak occurs

P. nitidus Lec. (Shiny Wings). (Pl. IV., Fig. 5.)

Similar to *obliquus*, but very shining black, with two white cross-bars on each elytra. Flying, "sweeping." June, July. Rare. Breeds in all the cupressine trees (Van Dyke) in sap-wood. Victoria; Prospect Lake (G. A. H.); Goldstream (G. A. H.); Duncan (A. W. H.); Wellington (G. W. T.). British Columbia to California.

Xylotrechus Chev.

X. mormonus Lec. (Mormon Runner). (Pl. V., Fig. 40.)

Rather elongate, cylindrical, dull brown with obscure markings, short antennæ. July. Rare. Breeds in poplar and aspen (Van Dyke). Esquimalt (A. N.); Nanaimo (G. W. T.). Rockies and North-west.

X. undulatus Say. (Scroll Runner). (Pl. V., Fig. 43.)

Like *mormonus*, but black with well-defined white or yellowish markings. On newly cut Douglas fir. June to September, chiefly June and July. Not uncommon. Breeds in the heart-wood of Douglas fir and other conifers. Victoria (W. H. A. P.; E. H. B.); Sidney (W. H. A. P.); Goldstream (G. A. H.); Tod Inlet (A. N.); Duncan (A. W. H.); Departure Bay (G. W. T.). Lake Superior to Alaska, south to California.

X. annosus (Say.) (Ringed Runner).

Similar in shape to *undulatus*, but dark brownish with obscure irregular bands of grey. June, July. Rare. Breeds in willows and poplars. Nanaimo (G. W. T.). Across continent.

Neoclytus Thoms.

N. conjunctus (Lec.) (Double X Oak Borer). (Pl. V., Fig. 44.)

Similar to *undulatus*, with distinct double X on elytra. On logs or tree-trunks. April, May. Uncommon. Breeds in heart-wood of garry oak, arbutus. Taken from pupal cells in November (G. A. H.). Victoria (G. A. H.; E. H. B.); Sidney (W. H. A. P.). British Columbia to California.

Clytanthus Thoms.

The genus *Clytanthus* is placed as a synonym of *Anthoboseus* Chev. in Leng's Catalogue, but here it is retained as used by Dr. E. C. Van Dyke in the reference mentioned below.

C. pacificus Van Dyke (Pacific Clytanthus). (Pl. V., Fig. 45.)

First record for Canada. Type locality Mary's Peak, near Corvallis, Oregon. Described 1920 in Bull. Brook. Ent. Soc., p. 38. Very rare in collections. One specimen, Goldstream (G. A. H.), obtained by sweeping low herbage. British Columbia, Oregon, California.

Clytus Laich.

C. planifrons Lec. (Velvet Beauty).

A handsome species similar to a small *undulatus*, black with broad yellow bands and markings. June. On flowers. Rare. Bred from dead willow (Garnett). Victoria (E. H. B.); Duncan (A. W. H.); Departure Bay (G. W. T.). Pacific Coast, British Columbia to California. Collection of E. H. Blackmore.

Atimia Hald.

A. dorsalis Lec. (Brownie). (Pl. IV., Fig. 6.)

A small, though distinctive species, brownish with coarse appressed pubescence. May, June. Very rare. Breeds in cupressine trees, cedars, juniper (Craighead). Sidney (W. H. A. P.); Duncan (A. W. H.). British Columbia to California.

Plectrura Mann.

P. spinicauda Mann. (Spider Beetle). (Pl. IV., Fig. 26.)

A light-brown, very spider-like beetle, wingless. Elytra tuberculated and ending in a spine posteriorly. To be found crawling on palings, etc. April, May, September, and October. Not common. Breeds in maples, alders, and willows. Larvæ feed in the sap-wood of dead wood

forming a pupal cell in the heart-wood, out of which the adult gnaws its way. Victoria (G. A. H.; A. W. H.; E. H. B.); Esquimalt (G. A. H.); Sooke (G. A. H.); Goldstream (A. N.); Sidney (W. H. A. P.); Duncan (A. W. H.). Alaska to Oregon.

Monochamus Serv.

M. oregonensis Lec. (Blacksmith Longhorn). (Pl. V., Fig. 41.)

A large black beetle sparsely speckled with a varying amount of white; feelers very long in male. To be found flying and crawling about newly cut Douglas fir and also at "light." July, August. Not very common. Breeds in pines, firs, and spruces, mining in the heart-wood. Can be very destructive to timber allowed to lie over for a season. Victoria (W. H. A. P.); Highland District (G. A. H.); Duncan (A. W. H.); Departure Bay (G. W. T.). British Columbia to California and adjoining country. This species closely approaches *M. scutellatus*, which carries on the range throughout boreal America.

Synaphæta Thoms.

S. guexi (Lec.) (Barred Grey). (Pl. V., Fig. 39.)

Another fine Longhorn, the illustration needs no amplifying. At "light" or at rest on bark of trees. April to October. Scarce. May to July is the average time of appearance. Breeds in willow (G. A. H.), larvæ mining in the sap-wood and constructing a pupal cell in heart-wood of the cases examined. In California many other trees are attacked, including maple, alder, oak, etc.; especially harmful to the walnut (*Juglans vegia*) (Van Dyke). Victoria (G. A. H.; E. H. B.); Sidney (W. H. A. P.); Westholme (W. D.); Duncan (A. W. H.); Wellington (G. W. T.). British Columbia to California.

Graphisurus Kby.

G. obliquus Lec. (Elegant Longhorn). (Pl. IV., Fig. 13.)

A very distinctive and graceful insect, the male possessing exceptionally long antennæ. Found on palings, etc. Rare. Breeds in pines and spruces, the larvæ mining entirely in the bark, pupating in sap-wood (Craighead). Victoria (A. W. H.); Duncan; Departure Bay (G. W. T.). British Columbia to California. Collection of A. W. Hanham.

Pogonocherus Latr.

P. crinitus Lec. (Tufted Pogon).

Similar to *oregonus*, but smaller with less white pubescence. July. One specimen in Hanham collection from Nanaimo (G. W. T.); also recorded in Leng and Hamilton, "Synopsis of the Lamiinæ," p. 135, from Vancouver Island. British Columbia to California.

P. oregonus Lec. (Oregon Pogon).

A handsome little species, black with long hairs; black band on middle of elytra, tips of which are rounded. May, July. Rare. Breeds in firs (Van Dyke). Victoria (A. W. H.); Nanaimo (G. W. T.). British Columbia to California. Collection of A. W. Hanham.

Saperda Fab.

S. calarata Say. (Poplar Longhorn).

A large elongate almost cylindrical beetle, pale sulphur-grey. July. Breeds in poplar and aspen, the larvæ mining in the heart-wood of the living tree, often killing them. No recent records. Included on the evidence of Leng and Hamilton, "Synopsis of Lamiinæ of North America," p. 148, 1896, where it is recorded from Vancouver Island. Northern, across continent, and on Pacific Coast.

Oberea Muls.

O. schaumi v. *quadricallosa* Lec. as *O. quadricallosa* Lec. in Leng (Four-spotted Oberea). (Pl. IV., Fig. 17.)

Another very characteristically formed Longhorn, superficially resembling a "Soldier Beetle"; elongate, with red thorax and blue elytra. Found flying, or at rest on willow twigs and poplars. July, August. Rare. Breeds in living twigs of willow, burrowing in the centre and finally killing it (Craighead). Saanich (W. D.); Goldstream (G. A. H.); Duncan (E. H. B. coll.); Wellington (G. W. T.). Pacific Coast.

ACCESSIONS.

The cordial thanks of the Department are extended to the donors of the following accessions for the year 1925:—

MAMMALOGY.

Lump-nosed Bat (*Corynorhinus townsendii* Cooper). Victoria, May 20th, 1925 (R. Katze). This bat possesses two curious lumps on the face, one each side of the nose, which have several long hairs appended. It is possible these are sensory organs, somewhat analagous to a cat's whiskers. It also has very long ears which distinguish it at once from any other local bat, and is very similar in general appearance to the long-eared bat of Europe.

Silver-haired Bat (*Lasionycteris noctivagans* Lec.). Millstream, July 7th, 1925 (F. S. Mitchell). Apparently not uncommon in the vicinity of Victoria, as there are several specimens in the Museum collection.

Large Brown Bat (*Eptesicus fuscus* Peale & Beauvois). Victoria. One caught in the Museum and another by Miss W. V. Redfern. A wide-ranging species throughout North America.

Puget Sound Weasel (*Mustela streatori* Merriman.) Duncan, December 14th, 1925 (A. H. Hanham). A small Pacific Coast variety; one of its most noticeable features is that the brown of sides extends on to the under-side, nearly meeting in the median line, thus differing from the Mainland form (*M. cicognanii*), which is also larger.

Mule-deer (*Odocoileus h. hemonius* Raf.). Ashcroft, November 19th, 1925 (M. Bailey). A doe having well-developed horns, an abnormal condition approaching hermaphroditism, of rare occurrence.

A fine collection of British small mammals was presented by Mr. J. Stark, of Creston, B.C., numbering forty-seven specimens; these are all in excellent condition, with full data, and afford a very useful basis of comparison.

ORNITHOLOGY.

Western Grebe (*Æchmorphorus occidentalis* Law). Uplands, October 17th, 1925 (P. deNoe Walker).

Rhinocerus Auklet (*Cerorhinca monocerata* Pallas). Discovery Island, October 2nd, 1925 (G. A. Hardy).

California Murre (*Uria troille californica* H. Bryant). Shoal Bay, February 17th, 1925 (R. W. Hunter). In spring plumage, weak from oil, possibly, matting the feathers.

Pigeon Guillemot (*Cepphus columba* Pallas). Cadboro Bay, September 24th, 1925 (G. A. Hardy). Winter plumage.

Ring-billed Gull yg. (*Larus delawarensis* Ord.). Cadboro Bay, September 24th, 1925 (F. Kermode).

Heermann's Gull (*Larus heermanni* Cassin). Cadboro Bay, September 24th, 1925 (F. Kermode). Four fine specimens. This gull breeds in Mexico in early spring, afterwards migrating northward, and returning the same year after a short stay.

Violet-green Cormorant (*Phalacrocorax pelagicus robustus* Ridgway). Cadboro Bay, September 24th, 1925 (F. Kermode).

European Widgeon (*Mareca penelope* Linn.). Crofton, January 10th, 1925 (H. F. Carter). This appears to be the fourth record for British Columbia.

Trumpeter Swan (*Olor buccinator* Rich.). Kelowna, January 22nd, 1925. Picked up dead by R. D. Sullivan.

Ring-necked Pheasant (*Phasianus torquatus* Gmelin). Victoria, March 4th, 1925 (A. P. Cummins).

Bob-white (*Colinus virginianus lexanus* Law). Victoria, March 2nd, 1925 (R. Gidley). Two specimens from the Government Pheasant Farm. Imported from Oregon for acclimatization purposes.

California Quail (*Lophortyx c. californica* Shaw). Mount Tolmie, January 31st, 1925 (W. H. A. Preece).

Hungarian Partridge or European Partridge (*Perdix perdix* Linn.). Victoria, March 2nd, 1925 (R. Gidley). From the Government Pheasant Farm, also imported from Oregon.

Sharp-shinned Hawk (*Accipiter velox* Wilson). Somenos, December 18th, 1925 (D. Millidge).

Golden Eagle (*Aquila chrysætas* Linn.). Sidney, November 10th, 1925 (W. H. A. Preece).

Northern Raven (*Corvus corax principalis* Ridge.). Mill Bay, November 24th, 1925 (J. E. Deloume).

North-western Robin (*Planesticus migratorius caurinus* Grinnell). Victoria, October 5th, 1925 (E. G. Kermode).

Robin's Nest. Two nests built side by side—pannier-wise—on a chicken-roost. Lost Lake, V.I., January, 1925 (E. B. Cooke).

Egg of Bob-white. Oak Bay, June 30th, 1925.

Egg of Mallard of unusually dark green. Shoal Bay, March 16th, 1925 (Colonel Schrieber).

REPTILIA.

Garter-snake (*Eutænia* sp.). Thetis Lake, V.I. (A. Nicholls).

Northern Alligator-lizard (*Gerrhonotus principis*) (3 specimens). Creston (J. Stark); Goldstream (G. A. Hardy; W. H. A. Preece).

AMPHIBIA.

Tree-frog (*Hyla regilla* B. & G.). Mount Tolmie, 1925 (W. H. A. Preece); Mount Douglas, 1925 (G. A. Hardy).

Pacific Newt (*Triturus torosus Rathke*). Goldstream, 1925 (G. A. Hardy).

Rusty Salamander (*Ancides ferreus* Cope). Sidney (W. H. A. Preece); Mount Douglas, Mount Finlayson, 1925 (700 feet) (G. A. Hardy); Sooke (P. deNoe Walker).

Western Red-backed Salamander (*Plethodon intermedius* Baird). Port Renfrew (J. G. French); Sooke (G. A. Hardy).

ICHTHYOLOGY.

Spring Salmon (*Oncorhynchus tschawytscha* Wal.). Sooke Harbour. Taken from the trap of J. H. Todd & Co. A fine specimen weighing 85 lb.

Grunt-fish (*Cottus richardsoni* Gunther). Duncan (G. G. Henderson). A peculiar and strikingly coloured little fish of the shore waters.

Three-spined Stickle-back (*Gasterosteus catraphractus* Pallas). Victoria (A. E. Redfern).

ENTOMOLOGY.

A considerable number of insects of the various orders have been presented from time to time, much of which is undetermined. They are, however, being placed in their respective groups until such time as they can be submitted to specialists for study.

Coleoptera.

A large amount of information respecting the family Cerambycidæ or Long-horned Beetles of Vancouver Island has been accumulated during the past two years, for results of which *see* page 24. Material belonging to other families is on hand, to be worked up as time permits.

A number of mounts showing the work of the following wood-boring beetles have been prepared. They show sections, etc., of the wood, their burrows and pupal cells. In some cases the larvæ and pupæ are also shown, while in every case the adult beetle forms part of each exhibit. These are placed temporarily in the case to the right of the entrance to the main floor, formerly devoted to Seasonal Exhibits.

Short-winged Alder Beetle (*Necydalis laevicollis* Lec.).

Double X Oak Borer (*Neoclytus conjunctus* Lec).

Spider Beetle (*Plectrura spinicauda* Mann.).

Large Wood-borer (*Ergates spiculatus* Lec.).

Blue Clouded Miner (*Semanotus ligneus* Fab.).

Unicorn Beetle (*Sinodendron rugosum* Mann.).

Lepidoptera.

Mr. E. H. Blackmore, of Victoria, has presented a collection of some 700 specimens of Noctuid and Geometrid Moths, which, together with those already in the collection, make a fairly representative presentation of the British Columbia species of these families.

Mr. W. H. A. Preece, of Sidney, has donated approximately 400 specimens of the commoner Butterflies and Moths of Victoria and vicinity; these are particularly useful as they increase the study series.

In addition, the following have been received:—

Enargia decolor Wlk. Miss J. M. Tucker, Prince Rupert.

Hawk-moth (*Proserpinus Clarkiæ* Bdv.). Found hovering over Sea-blush (*Valerianella congesta*) (P. deNoe Walker, Highland District). An uncommon species.

Tiger-moth (*Arctia americana* Harr.). Victoria, August 12th (Mr. Lofts).

Feralia deceptiva Blackmore. Westholme, April 16th (Jack Sweeney).

Pseudohazis eglanterina Bdv. Highland District, July 12th (G. A. Hardy).

Sphinx perelegans race *vancouverensis* Hy. Edw. Saltspring Island, July 20th (P. deNoe Walker).

Alypia ridingsi Grt. Goldstream, June, 1924 (G. A. Hardy). Another uncommon species.

Silk-moth (*Telea polyphemus* Cram.). Victoria, June 10th (J. F. Mann).

Mourning Cloak (*Vanessa antiopa* L.). Victoria, November 24th (Miss M. Holmes). A hibernating butterfly often aroused into activity by warm weather. Specimens of this species were seen abroad on December 27th near Victoria.

OTHER INSECTS.

Thread-waisted Wasp, or Mud-dauber (*Pelopœus*). Saltspring Island, June 30th (P. deNoe Walker). The mud-cells of this wasp have been "dissected" and mounted to show the method of its life, such as the storage of small spiders for the consumption of the larvæ, cocoons, etc.

Rabbit Bot-fly (*Cuterebra tenebrosa* Coq.). Mr. C. H. Curran, of Ottawa, kindly identified this, adding that it is a rare insect. It was sent in by Dr. M. D. McEwen, of Hedley, B.C., on August 31st.

FOSSILS.

A piece of *Amphibole schist.* Lost Creek, V.I. (A. Jenkins). This bears radiating groups of crystals of Tremolite, arranged in such a manner as to bear a striking resemblance to a fossil plant, and hence is a good example of the term Pseudo-fossil or false fossil. Identified by Rev. R. Connell.

Mould of *Pecten* sp. in sandstone. Parksville, August 15th (G. M. Bernard).

Fossil Crab (*Zanthopsis vulgaris* Rathbun). Dr. Mary Rathbun has kindly determined this fossil crab, which came from near Pachena Bay, Vancouver Island, near the north point of entrance into the Strait of Juan de Fuca. Oligocene formation near the boundary between Sooke and Carmanah formations. Dr. Rathbun adds that it was very abundant in North America during that period. This has been in the possession of the Museum for some time, but has only recently been identified.

Collection of fossils sent in by Mr. S. C. Burton, Kamloops, November 24th.

Leg-bone of a Mammoth (*Elephas primigenius*) from Chum Lake Road above Squilax. Sent to the Department of Public Works by District Engineer Taylor, October. (For further details *see* page 10.)

MISCELLANEOUS.

Section of Douglas Fir, showing inclusion of bark on an old scar, and demonstrating its powers of recuperation. Victoria, December 17th (H. Wiffen).

Orb-weaver (*Aranaria trifolia*). Victoria (R. Lankester). A large handsome "garden spider," several of which have from time to time been brought here for determination.

MARINE ZOOLOGY, ANTHROPOLOGY, AND BOTANY.

(*See* special report.)

PUBLICATIONS RECEIVED FROM OTHER INSTITUTIONS.

(Alphabetically arranged.)

Acadian Entomological Society, Nova Scotia	1
American Museum of Natural History, New York	4
Bernice Pauahi Bishop Museum, Honolulu, Hawaii	1
Boston Society of Natural History	1
Bristol Museum and Art Gallery, England	1
British Association for the Advancement of Science	1
British Museum, London, England	2
Brooklyn Institute of Arts and Sciences	1
Buffalo Society of Arts and Sciences	1
Bureau of Science, Manila, P.I.	1
California Academy of Sciences, San Francisco, Cal.	14
California State Commission of Horticulture	1
California University, Berkeley, Cal.	21
Charleston Museum, Charleston, S.C.	1
Children's Museum of Boston, Mass.	1
Cincinnati Museum Association, Ohio	1
City Art Museum, St. Louis, Mo.	5
Cleveland Museum of Natural History, Ohio	8
Cornell University, Ithaca, N.Y.	3
Department of Public Works, Philadelphia, Pa.	1
Dominion Government Publications, Ottawa	40
Field Museum of Natural History, Chicago, Ill.	20
Grand Rapids Public Library, Mich.	2
Instituto General Y. Tecnico de Valencia	1
Insular Experiment Station, Rio Piedras, San Juan, P.R.	7
John Crerar Library, Chicago, Ill.	1
Library of Congress, Washington, D.C.	1
Lloyd Library, Cincinnati, Ohio	7
Missouri Historical Society Collections	6
Museum of the American Indian Heye Foundation	1
Museum of Fine Arts, Boston, Mass.	4
Nebraska State Museum and University, Lincoln, Neb.	11
Newark Museum Association, Newark, N.J.	2
New York State Museum, N.Y.	1
New York Zoological Society, N.Y.	9
Observatorio Astronomico Nacional de Tacubaya, Mexico	2
Ohio Agricultural Experiment Station, Wooster	7
Peabody Museum, Yale University	16
Pennsylvania Museum, Philadelphia, Pa.	13
Province of British Columbia	4
Province of Ontario	2
Public Museum, Milwaukee, Wis.	3
Puget Sound Biological Station, Seattle, Wash.	33
Royal Canadian Institute, Toronto, Ont.	1
Royal Ontario Museum, Toronto, Ont.	1
San Diego Society of Natural History	2
Scripps Institution for Biological Research, La Jolla	2
Smithsonian Institution, Washington, D.C.	62
State College of Washington, Pullman, Wash.	11
Staten Island Institute of Arts and Sciences	8
United States Department of Agriculture	7
University of Iowa	1
Carried forward	358

PUBLICATIONS RECEIVED FROM OTHER INSTITUTIONS—*Continued.*

Brought forward	358
University of Manitoba	6
University of Montreal	1
University of Washington, Seattle, Wash.	8
Vancouver City Museum	9
Wales National Museum, Cardiff, Wales	3
Zoological Society of Philadelphia	1
Total	386

IN MEMORIAM.

Professor Charles Vancouver Piper, botanist, was born in Victoria, British Columbia, and died at Washington, D.C., February 12th, 1926; aged 58 years.

He was one of the greatest authorities on the flora of North America, a study of which he had taken up in boyhood. When quite a youth he left Victoria and moved to the State of Washington, just across the International Boundary, where he continued his research in the study of botany and graduated from the University of Washington, afterwards taking a post-graduate course at Harvard University. He has published several very valuable works on botany and since 1903 specialized on the grasses of North America. At the time of his death he was Chief Agronomist in Charge of Forage Crop Investigations for the United States Department of Agriculture, Bureau of Plant Industry, Washington, D.C.

His passing is an inestimable loss to the Provincial Museum; the kindly interest and readiness with which he gave of his wide and expert knowledge in matters affecting the Herbarium will ever be gratefully remembered by the present staff, while his signature under the many specimens will remain as an ineffaceable tablet to his memory in the future.

F. K.

VICTORIA, B.C.:
Printed by CHARLES F. BANFIELD, Printer to the King's Most Excellent Majesty.
1926.

CORRIGENDA AND ADDENDA.

On page 26, Prov. Mus. Rep., and page 3, Reprint:

After *T. depsarium* var. *harrisi* Lec. insert (Harris' Prionus).

On page 27, Prov. Mus. Rep., and page 4, Reprint:

Read *macilenta* for *marcilenta.*

On page 31, Prov. Mus. Rep., and page 8, Reprint:

A. litigiosa Csy. After (*Abies* omit *grandis*).

On page 32, Prov. Mus. Rep., and page 9, Reprint:

Clytanthus pacificus. After Goldstream insert June 29th.

Clytus planifrons. Omit On flowers. Insert Breeds in Douglas Fir and Firs (Van Dyke). Found in numbers on newly cut Douglas Fir tops. Sidney, April and May (W. H. A. P.).

On page 33, Prov. Mus. Rep., and page 10, Reprint:

Read *Synaphoeta* for *Synaphaeta.*