**Nymphalis antiopa* L. — aspen. (J. R. J.)
**Papilio eurymedon* Luc.— species of apple (garden varieties). (J.R.J.)

Heterocera

**Arctia caja americana* Harr.—aspen, black poplar. (J. R. J.)
Ellopia fiscellaria lugubrosa Hlst.—Western hemlock (*Tsuga heterophylla* (Raf. Sarg.)), Engelmann spruce (*Picea engelmanni* Engelm.), Douglas fir (*Pseudotsuga taxifolia* (*mucronata* (Raf.) Sudw.)), and many other trees. (G. R. H.)
Epinotia nanana Treit.—*Picea pungens*. (W.G.M.)
**Erannis vancouverensis* Hlst.—Wild Roses (*Rosa gymnocarpa* Nutt. & R. *nutkana* Presl.). (J. R. J.)
Eupithecia palpata Pack. — Engelmann spruce. (G. R. H.)
**Halisidota maculata angulifera* Wlk.—arbutus (*Arbutus menziesii* Pursh.) (J. R. J.)
Mimeola supposita Heinr.—Spp. of Cotoneaster. (R.G.)
Lithocolletis salicifoliella Cham. — mines leaves of species of *Populus*. (W. G. M.)
**Notolophus antiqua badia* Hy. Edw.—blue spruce. (*Picea pungens* (ornamental)) at Vernon, B. C. (G. R. H.)
**Peridroma (Lycophotia) margaritosa saucia* Hbn.—seedlings of cedar, hemlock, balsam, fir (*Abies grandis* Lindl.) in the Quinsam Forest Nursery (M.L.P., J.McK.) Also fireweed (*Epilobium angustifolium* L.) (M. L. P.)
Petrova luculentana Heinr.—scrub pine (*Pinus contorta* Dougl.) (W.G.M.)
Rhyacionia buoliana Schiff.—scrub pine and *P. mughus*. (W. G. M.)
Synanthedon albicornis Hy. Edw.—species of willows (*Salix*). (W. G. M.)
Thiodia marmontana Kft.—balsam root (*Balsamorhiza sagittata* Nutt.). (G. J. S.)
Vespamima sequoiae Hy. Edw. — scrub pine. (W. G. M.)
**Caripeta divisata* Wlk. — Engelmann spruce. (G. R. H.)

INSECTS ACTIVE THROUGHOUT THE WINTER AT VANCOUVER, B. C. PART I: INTRODUCTION AND LISTS OF THE COLEOPTERA AND NEUROPTERA

By R. E. Foster

Department of Biology and Botany, University of B. C., Vancouver

Situated between the 49th and 60th parallels, British Columbia is subject to a moderating influence from the Japanese Current and the moisture-laden westerly winds from the Pacific Ocean. The mild winters so produced on the coast make it possible for a considerable number of insects to remain active during the winter months. At the suggestion of Professor G. J. Spencer of the Department of Zoology of the University of British Columbia,

this survey was started in the fall of 1939, in an effort to determine the extent and character of the insect population of a portion of the University Forest. As identified to date, the preliminary list of insects includes 11 orders and 65 families.

This collecting ground, the University Forest, is today but a remnant of a typical coast lowland stand. The original stand of timber was mainly Douglas fir. Much of this was logged off around 1900. For some years nothing was done to clear windfalls, dead trees or slash from the logging operations. An extensive invasion of deciduous trees followed. Recently silvicultural methods have been accomplished. Traces of all these developments are represented in sections of the survey area. The forest now consists of a mixed stand of Douglas fir (*Pseudotsuga taxifolia*, (Lambert) Britton), Western red cedar (*Thuja plicata* Donn.), Sitka spruce (*Picea sitchensis* (Bong.) Carr.), broad-leaved maple (*Acer macrophyllum* Pursh.) and red alder (*Alnus rubra* Bong.). The sub-flora in a few regions is still quite dense. Sword fern (*Polystichum munitum*, (Kaulf.) (Underw.), salal (*Gaultheria shallon* Pursh.) and oregon grape (*Berberis nervosa* Pursh.) are dominant in the sheltered areas, while the ground covering in the open sections consists of salmonberry (*Rubus spectabilis* Pursh.), thimbleberry (*Rubus parviflora* Nutt.) and blackberry (*Rubus ursinus* Cham. & Schl.). The soil is glacial till with a hard-pan layer close to the surface. This results in a higher water table with pools in the low-lying areas. Aquatic insects are thus provided with excellent breeding grounds.

In Greater Vancouver during the past ten years (1929-39), the average mean minimum temperature was 36 degrees F., the average mean maximum temperature 46 degrees F., the precipitation average 7.7 inches, and the average hours of bright sunshine 71 hours per month for the period from November to March inclusive. These records will give a fair idea of the conditions under which my collecting was done, and are submitted here very briefly, in place of my own detailed records.

The survey was carried out from November, 1939, to March, 1940. Collections were made three times a week for two and one-half hour periods per day, between the hours of 11 a.m. and 3 p.m., the hours of greatest insect activity in this area. In collecting, actively moving insects received the most attention, although during very wet periods most of the specimens were obtained by sweeping fern and salal beds. The forest floor showed a number of active Thysanura and Collembola, but they were not collected. Only in the case of the Pentatomidae and Elateridae are hibernating insects represented. It may be noted that the University campus is the type locality for two species of winter staphylinid beetles, *Trigonodemus fasciatus* Leech and *Coprophilus sexualis* Leech (1939), and presumably for the fly *Cramptonomyia spenceri* Alexander (1931).

Winter insects in British Columbia can be differentiated into two groups, those few peculiar forms that work their way up through snow and suddenly appear on the surface, and those that are active throughout the winter months. Concerning the first group, I do not know of any published records referring to the coast of British Columbia, but Cockle (1, 2) wrote up his observations at Kaslo, on noctuid larvae and the mecopteron *Boreus califor-*

nicus Packard, while Treherne (5) gave Harry Blurton's notes on the wingless tipulid *Chionea valga* Harris, at high elevations near Mara. For the second group, namely those that are active throughout the entire winter, the late J. K. Jacob (3) gave data on the dipteron *Cramptonomyia spenceri* Alexander in the University forest. During the first three months of 1939, Miss A. M. Gwyn of Vancouver did some intermittent collecting in the same area as did Jacob; her findings were presented in a short essay to the Department of Zoology of the University of British Columbia.

LIST OF THE COLEOPTERA

Family CANTHARIDAE

Podabrus piniphilus Esch.

Family CERAMBYCIDAE

Opsimus quadrilineatus Mann.
Plectrura spinicauda Mann.

Family CHRYSOMELIDAE

Altica ambiens Leconte. Feeding on *Alnus rubra.*

Family COCCINELLIDAE

Coccinella californica Mann.
Cycloneda sanguinea L.
Psyllobora 20-maculata taedata Leconte. On *Alnus rubra.* Very common.

Family CURCULIONIDAE

Geoderces melanothrix Kby.

Family DERODONTIDAE

Derodontus trisignatus Mann.
Laricobius n. sp.

Family ELATERIDAE

Ampedus rhodopus Leconte.
Dalopius sp.
Both of these genera were obtained under the bark of Western red cedar *(Thuja plicata).*

Family GYRINIDAE

Gyrinus picipes Aube'. In temporary limnophilous community.

Family HYDROPHILIDAE

Cercyon sp. A.
Cercyon sp. B.
Cercyon sp. C.
All three species in temporary limnophilous communities.

Family LAMPYRIDAE

Lucidota californica Mots. Disturbed from the bark of Western red cedar

Family LEIODIDAE

Anisotoma sp.

Family SILPHIDAE

Agyrtes longulus Leconte.
Necrophilus hydrophiloides Mann.
Necrophorus marginatus Fab.

Family SCARABAEIDAE

Aphodius pardalis Leconte.

Family SCOLYTIDAE

Pseudohylesinus sp.

Family STAPHYLINIDAE

Aleochara sp.
Amphichroum sp.
Anthobium sp. (probably *A. pothos* Mann.).
Boletobius sp.
Coprophilus sexualis Leech.
Falagria sp.
Lathrimaeum sp. (near *fimetarium* Mann.).
Lathrimaeum sp. (near *subcostatus* Makl.).
Micropeplus sp.
Omalium sp.
Oxytelus sp. (near *exiguus* Er.).
Staphylinus lacustris Bernh.
Stenus sp. A.
Stenus sp. B.
Stenus sp. C.
Stictolinus sp.
Tachinus crotchii Horn.
Tanyrhinus singularis Mann.

Family TENEBRIONIDAE

Helops pernitens Leconte.

ORDER NEUROPTERA

Family HEMEROBIIDAE

Hemerobius stigmaterus Fitch.
Hemerobius pacificus Banks.

Family CHRYSOPIDAE

Chrysopa harrisii Fitch.—"This determination made by N. Banks, but note that the specimen lacks the abdomen, so that its determination cannot be made with absolute certainty." (F. M. Carpenter).

Acknowledgments

I am indebted to Professor G. J. Spencer for assigning me this problem, to Dr. W. A. Clemens, Head of the Department of Zoology, and to Dr. A. H. Hutchinson, Head of the Department of Botany, for permission to present a summary of my findings before this Society, to Mr. Hugh B. Leech, Dominion Entomological Laboratory, Vernon, B.C., for the identifications of the Coleoptera, and to Dr. Frank M. Carpenter of the Museum of Comparative Zoology, Cambridge, Mass., for determining the Neuroptera.

References

1. **Cockle, J. W.**, 1908. The mating of Boreus californicus. Canadian Ent. **40** (3): 101.
2. **Cockle, J. W.**, 1918. Notes on the hybernation [sic!] of some larvae and the

movements of Boreus on the snow. Proc. Ent. Soc. British Columbia No. 10, pp. 14-15.
3. **Jacob, J. K.,** 1937. Winter insects in British Columbia. Diptera: Cramptonomyia spenceri Alexander. Proc. Ent. Soc. British Columbia No. 33, pp. 30-31.
4. **Leech, H. B.,** 1938. Hibernation of the cerambycid Plectrura spinicauda Mann. Pan-Pacific Ent. **14** (2); 69.
5. **Treherne, R. C.,** 1920. A note on the wingless tipulid Chionea valga Harris. Canadian Ent. **52** (9): 201-202.

A PRELIMINARY LIST OF THE NEUROPTERA OF BRITISH COLUMBIA

G. J. Spencer

Department of Zoology, University of British Columbia, Vancouver, B. C.

The following list of Neuroptera is based on the University collections which are mostly of my collecting, supplemented in the case of the Hemerobiidae and the Chrysopidae by records from the Canadian National Museum at Ottawa, mentioned respectively by Carpenter (1) and Smith (3). The collections were submitted to Dr. Nathan Banks who had very kindly consented to name them, but unfortunately a number of specimens of some families was not included in the shipment so it is possible that several more species occur in these collections than are represented in this list. Moreover, this list contains only the names of the specimens that were returned to me; some, especially the one specimen of Mantispidae and Berothidae respectively, were retained by Dr. Banks and are now, I presume, in the Museum of Comparative Zoology at Cambridge, together with perhaps others whose names I do not have. This effort is therefore not representative of all the species named or collected up to the present but it is sufficiently encouraging to indicate that the Neuroptera are very well represented in this province and would well repay consideration of some collecting enthusiast.

I am deeply indebted to Dr. Nathan Banks for naming my material and for submitting certain families to Dr. F. M. Carpenter who identified all the Hemerobiidae, the one sisyrid and the one berothid; also to Dr. H. H. Ross for checking my identification of the Harrison Lake *Sialis rotunda*.

Classifications of the order Neuroptera vary among systematists; Brues and Melander raise two families to ordinal status: for the moment it is easier to adopt the arrangement of Essig (2). Some 23 families are found in the world, 13 of these in North America, and of the 13, no less than 10 are so far represented in British Columbia.

Family SIALIDAE. Alder flies, Dobson flies.

Here occur the giants of the order—insects some 2½ inches long, the Dobsons. They seem to be more common at Cowichan Lake than elsewhere; a few occur in the lower Fraser Valley.

Neohermes disjunctus Walker. Vancouver, Mission, Cowichan, Bella Bella.
Chauliodes pectinicornis L. Cloverdale, Cowichan.
Sialis rotunda Banks. Vancouver, Cameron Lake, Courtenay, Harrison.
Sialis fuliginosa Pictet. Wellington. (3)

A considerable flight of *Sialis rotunda* Banks occurred from about