DEPARTMENT OF AGRICULTURE.

REPORT OF HONORARY ENTOMOLOGIST.

To the Honourable HUGH NELSON,

Lieutenant-Governor of the Province of British Columbia:

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to present the Report of the Rev. G. W. Taylor, Honorary Entomologist for the Province.

J. H. TURNER,

Minister of Agriculture.

Victoria, B. C.,

21st March, 1888.

REPORT OF THE HONORARY ENTOMOLOGIST

(REV. G. W. TAYLOR).

VICTORIA, 12th March, 1888.

To the Honourable J. H. Turner,
Minister of Agriculture, &c.:

SIR,—I have the honour to hand you herewith my report as Honorary Entomologist to your Department.

I have for some time past been engaged in the preparation of a report much more lengthy than the one now submitted. In it I was giving, in the first place, an elementary sketch of the science of Entomology, which I considered might be useful to those farmers and others who were unable to study the subject more exhaustively. This was to be followed by an account of the life histories of those injurious insects that are known to me as occurring within this Province; and, thirdly, I proposed to commence a catalogue of our native insects, intending, year by year, as material accumulated, to make it more complete.

This report, you hinted, would have been rather too voluminous to print at this time, and as I have found it difficult to curtail it without injury to its completeness, I have thought it best to present nothing save a short statement now, and to endeavour to publish the longer report, in pamphlet form, later in the year, either at my own expense or with the assistance of your department.

Immediately upon my appointment to this office, in August last, I issued a circular (kindly printed for me at the Government press), addressed to agriculturists and others, and I mailed 500 copies to various parts of the Province, making a selection of names (I fear not very judiciously) from the British Columbia Directory. In reply to that circular I have received several interesting communications from some of the more observant farmers and fruit-growers, relating their experience with noxious insects.

Although these replies were not so numerous as, from the importance of the subject, one might have expected them to be, enough was written to confirm me in the opinion I had formed, viz., that the value of scientific investigation in relation to these matters would be recognized and appreciated as soon as attention was directed to it; and, secondly, that this Province is especially prolific in injurious insects, and that, in the near future, very active measures must be taken to protect our crops and produce from their attacks.

I have, during the term of my office, and for five years previously, collected assiduously our native insects. I have thus formed a large collection in all orders, and, with the kind help of the principal entomologists in Canada and the United States, have been able to determine the correct names of the majority. My labours have resulted in the discovery of many very interesting species, including quite a number previously unknown to science.

It is my wish to place my entire collections on loan in the Provincial Museum whenever that institution is in a position to receive them.

I have had, and still have, the following insects more especially under observation. The list includes the best known and most injurious of our insect pests, as far as at present known:—

Order Homoptera.

Family Coccidae (scale insects).

The oyster shell bark louse (Mytilaspis pomorum, Bouche). Scale insects are a great pest, and the above-mentioned species is rapidly increasing here. There are very many American species, and no doubt some of them will, sooner or later, find a home in British Columbia.

Family Aphidae (plant lice).

The woolly aphis of the apple, popularly known as the American blight (Schizoneura lanigera, Hausman).

The apple tree aphis (Aphis mali. Fabr).

The currant plant louse (Aphis ribis. Linn).

The cherry tree plant louse, or black aphis (Myzus cerasi. Fabr).

The turnip green fly (Aphis rapae. Curtis).

To this family belongs the dreaded Phylloxera, which has wrought such wholesale destruction among the vines in various parts of the world.

Family Cicadaridae.

The larvae of the cicadas (or "locusts," as they are improperly called here) are very destructive to the roots of various trees and plants.

Order Hemiptera (bugs, properly so-called).

All the vegetable-feeding species of this numerous order are more or less injurious, while the carnivorous ones are beneficial in keeping other insects in check.

Order Orthoptera.

The great majority of species are distinctly injurious, many pre-eminently so.

The *Family Acrydii*, or grasshoppers, is well represented here, and the species require to be collected and studied.

Order Neuroptera (dragon flies, caddis flies, &c., &c.).

Most of these are beneficial, destroying, both in the larval and perfect states, multitudes of other insects. A distinction, however, must be made in the case of the *Termitidae*, or so-called white "ants," which sometimes do much damage.

Order Diptera (two-winged flies).

The radish fly (Anthomyia raphani. Harris).

The onion fly (Anthomyia ceparum. Harris).

The cabbage maggot (Anthomyia brassicae. Bouche).

The following must be carefully watched for :—

The wheat midge (Diploxis tritici. Kirby).

The clover seed midge (Cecidomyia leguminicola. Lintner).

The Hessian fly (Cecidomyia destructor. Say).

Order Lepidoptera (butterflies and moths).

All more or less injurious in the larval, *i. e.*, caterpillar state. Of special interest are—

Tent caterpillars (Clisiocampa californica), on fruit and many other trees.

Tent caterpillars (Halisidota sobrina. Stretch), on firs and pines.

Cutworms—larvae of various Noctuae or thick-bodied night-flying moths.

Cankerworms—larvae of moths of genus Anisopteryx.

The codling moth (Carpocapsa pomonella. Linn).

Order Hymenoptera (bees, wasps, ichneumonflies, saw flies, etc.).

Most of the insects of this order are beneficial. One family, however, consists entirely of injurious species, viz., the *Family Tenthredinidae*, or saw-flies. I hope to pay special attention to these during the coming summer.

The *Uroceridae*, feeding in solid wood, are also very destructive at times.

Order Coleoptera (beetles).

In this large order we have very many species. The more distinctly injurious ones, and those that will consequently have my special attention, are those popularly known as "flea beetles" (Haltica); weevils (Curculionidae), including the pea weevil (Bruchus pisi. Linn); the grain weevil (Calandra oryzae. Linn); the plum curculio (Conotrachelus nenuphar. Herbst); also "wireworms," which are the larvae of species of *Elateridae*, popularly known as "click" or "skipjack" beetles.

Many of the insects named above are likely to appear at different times in large numbers, and to do considerable damage. Perhaps the greatest amount of injury has been done in different parts of this Province in former years by the scale insects, tent caterpillars, cutworms, and wireworms. For all these, and for many other pests, more or less effectual preventive or destructive remedies are known, which I hope to describe at length in my next report. In the meantime, I shall be only too happy to send the best advice I can to anyone applying for information. Very serious damage was done in 1887 by cutworms and wireworms. These insects, which are, as stated above, the larval forms of a moth and a beetle respectively, destroyed, in more than one instance, the entire crop that they had attacked. Scale insects, too, and the American blight, are increasing each year, and must be checked. Tent caterpillars are periodically abundant or scarce. Last spring they were very destructive. This year, unless I am much mistaken, they will be still more numerous. In all probability, by next year, the natural enemies (parasites) of these caterpillars will have succeeded in checking the increase, and in 1889 the pest most likely will be scarce; but unless precautions are taken now, we shall this year see our fruit trees defoliated—at any rate round Victoria, to which district my investigations have been so far confined.

The remedy is, first, careful pruning, and searching at the same time for the egg masses, which may be found all through the autumn and winter on the twigs just below the new wood; and, second, a constant watch on the trees throughout the spring, cutting off and burning the "nests" as soon as they appear. I call attention to this insect in particular because of the immediate necessity of dealing with it, if fruit trees are to be saved during the present year.

I do not, as I have said above, intend to enter in this report into details as to our injurious insects, or the best means to be adopted for their destruction or prevention; but I will here call attention to some other sources of information that are easily accessible,—in fact, within the reach of almost everybody in the Province:—

1. The annual reports of the Entomological Society of Ontario. The first was issued in 1870, and the eighteenth will appear shortly. They contain very valuable and well illustrated popular papers on practical entomology. The publication is subsidized by the Ontario Government, and is distributed free to all members of the Entomological Society. The subscription to the society is only $1 per annum, and the subscriber, in addition to the annual report, receives gratis a copy of the society's journal, the Canadian Entomologist, a most useful illustrated monthly magazine.

2. The reports of the Dominion Entomologist, Mr. Fletcher. Two have been published—1884, 1885—and another—1887—will, I suppose, appear about the same time as this report.

3. The annual reports of the Select Standing Committee on Immigration and Colonization of the House of Commons. These frequently contain evidence of great value, given before the Committee, not only by scientific entomologists and agriculturists, but by many other practical men, on all sorts of subjects connected with agriculture and horticulture.

4. The reports of the Select Committee appointed by the House of Commons in 1884 to obtain information as to the agricultural interests of Canada.

And, lastly, the bulletins issued by the Central Experimental Farm at Ottawa.

All these, except the first, are parliamentary publications, and can, no doubt, be obtained by anyone wishing to study them, by applying to one or other of our local members. The above magazine and papers all contain stores of information on Canadian insects and Canadian agriculture, and that, too, in a form and in language which can be understood by the non-scientific; and as they may be so easily and inexpensively obtained, they should be present on the bookshelves of every British Columbian agriculturist.

During the present year it is my intention to continue my collection and study of insects as heretofore. I shall hope to have an increased list of correspondents, who may, I can assure them, not only benefit themselves, but materially aid me and advance the science by communicating frequently and fully all they note in relation to insects. I purpose also to visit, during the year, the principal settlements on the Mainland. Eastern insects (some much to be dreaded) may, in travelling westward, appear on the Mainland first. Besides this, there is a very marked difference between the insect forms of the Island and Mainland, and it is essential that I should be acquainted with the latter, for the Mainland is naturally the most

important section of the Province, agriculturally. I hope, also, to be able to visit the important settlements at Comox and Alberni.

I have kept up a constant correspondence with my friend James Fletcher, F. R. S. C., F. L. S., etc., who is at present Entomologist to the Dominion of Canada, and he has aided me in every possible way. Information concerning some of our native insects will be found in his current report, which is now, I believe, in the press.

In conclusion, I cordially invite all into whose hands this report may come, and who feel any interest whatever in the subject, to communicate with me, and I feel convinced, as I have said before, that such a correspondence will be for our mutual benefit.

I have the honour to be, Sir,

Your obedient servant,

GEO. W. TAYLOR,

Honorary Provincial Entomologist.

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