

CLIMATIC INFLUENCES AT WORK IN THE PROVINCE
AFFECTING PLANT AND INSECT LIFE.

I may preface my remarks tonight by saying that I like to pick out my own text, and don't profess to be a literary man nor yet an universal genius who, with the pen of a ready writer, can attack any subject under the sun, or the earth, or the waters under the earth.

It is a little hard to know just exactly how to treat the subject which has been laid down for me in the programme. There are several methods of getting at it. We might, for instance, go away back into the womb of time and look at the gradual distribution of plants and insects in their struggle for existence. We might compare some of the general and even the species of this country with those of the old country. When I say this country, I mean this part of British Columbia. In some cases we find they are identical, as witness our *Droceras* and *Lentibularias*, both insectivorous plants. Where there is a difference it is generally that the individuals here are larger. Take, for instance, the Cowparsnip of the old country, *Heracleum sphondylium*, a plant seldom growing more than three feet high, and compare it with our *H. lanatum*, which I have seen over eight feet in height and with leaves inclusive of the petioles as much as $3\frac{1}{2}$ to 4 feet. Again, take the little plant belonging to the old country, *Adoxa moschatalina*, a little thing seldom more than an inch high, and compare it with its gigantic cousin the Devils Club, *Fasia horrida*, which grows in semi-tropical profusion on our mountain slopes, where the soil is rich and the copious showers of warm rain are driven in from the Pacific. Such instances as these indicate the primaeval condition of our vegetative growth where domestication and its relative diminishing effect on plant growth have not made themselves so noticeable. Let me for one instance compare our mammals here with those of the old country. Take the little roedeer and place it side by side with such gigantic herbivores as the Elk and the Moose. These instances I consider as due to climate conditions and to the factor whereby the food materials for plants still remain virginal resulting in the raising of large quantities of food for the indigeous animals which up to this stage of the world's history have not been affected to any marked degree by the hand of man.

I have said that where differences exist in this country the types here are larger; I ought to say that this does not apply so much to insects. I have not found that there is very much difference in the size of the individual, but when it comes to numbers the preponderance is vastly on the side of British Columbia. I do not necessarily mean to imply that excessive numbers of certain insects during certain years is a factor peculiar to British Columbia, because I know other parts of

the globe are at times disturbed by unusual outbreaks of annoying insects; but the point I wish to make is that the climatic temperament of B. C., while influencing the size of both plants and animals in B. C., the same factors with insects affects their numbers. Some eight years ago the waters of Esquimalt Harbour were completely covered by the adults of the Pine White, *Menapia neophasia*, and two years ago in Southern Okanagan this same insect was so common on the Bull Pines that six or seven adults could be caught by each sweep of the net in their direction.

Again, on comparing the vegetation of the coast with the so-called Dry Belt of B. C., the difference is very marked. In many cases the same species are common to both districts. Take only one instance, the Douglas Fir. It is no uncommon sight to notice a tree cut six feet on the stump on the coast, but such a thing would be unknown in the dry belt.

I am afraid the subject is too vast to bring within the scope of a paper of this kind, so instead I shall take the liberty to switch off a little and try and show the effect of distribution of some of our common insects, at the same time pointing out where this might be due to climatic influences.

If we take a map of B. C. and look at the valley of the Fraser River, from Hope down to its mouth, you will notice that we have here one of the most important farming districts in the Province. This comprises the districts of Agassiz, Harrison, Chilliwack, Dewdney, Matsqui, Langley, Surrey, Delta and Lulu Island. This part of the country is, from its climatic and soil conditions, naturally one which carries a most luxuriant plant growth, and consequently is a rich feeding ground for many species of destructive insects. The insect which has caused the most visible destruction is the Tent Caterpillar. For five years it has devastated the forests, and where timely protection has not been given the orchards have also been destroyed. Long stretches of country in the Fraser Valley may be seen where the bush has been killed, and in such numbers were they on occasion that I have known them on the C. P. R. railway line to cause the engineer considerable difficulty in starting a grade owing to the grease from these insects on the rails. On Vancouver Island the depredations of this insect have been confined to more restricted areas. These are the immediate neighbourhood, the Saanish peninsula; the neighbourhood of Duncans, from whence there is a gap of nearly ninety miles over onto the low, rich land about Alberni. Now when we examine the soil and vegetation in all of these different districts, we find a preponderance of what I think is the natural and favorite plant food of this insect, viz., the wild crab-apple. I have observed that it attacks something like this:

1. Wild crab-apple, willow, orchard-apple, cherry.
2. Birch and plum.
3. Alders and sometimes hazel.

I have also seen it strip the leaves from poplars up to 40 and 50 feet high. I have never seen it attack the pear or the maple. I have had a number of men, both white and Indian, taking observations on this point, and they will bear me out. I took a photograph of two trees growing side by side, an apple completely denuded of foliage and that of a pear untouched. I know I do not see eye to eye with some of our Entomologists in the East, but perhaps our B. C. insects have different habits from the Eastern forms.

Much has been written and preached about the Divine given instinct which teaches insects to choose for their egg-laying that plant whose leaves will afford the most suitable food for the future generation. I am afraid this insect has not profited by its teaching, as it often makes mistakes. I have observed the egg masses laid on different plants which could not by any possible chance be of any use to the young larvae. For instance, I have found them on a number of deciduous plants such as nettle stems, fireweed, *Epilobium angustifolium*, hop vines, several of the grasses, including wheat and oats, and last summer I found a nest that had hatched out on the Douglas Fir. I may say that from observations which I have made during the past summer and fall, that with the exception of a few local spots, Nature has again reasserted itself, and through the agencies of fungous and parasites we are likely to be free from any serious infestation of the Tent Caterpillar for a short time to come. So much, then, for the Tent Caterpillar.

An insect which is common both to the Coast and the Dry Belt is the Fall Webworm, which attacks all classes of deciduous trees and shrubs. It is earlier and more virulent in its operations in the dry country than it is near the coast. I have noticed it in the Dry Belt as early as July, while down on the Coast district it seldom commences work before September.

What threatens to become a menace to cherry and pear growers, more especially in the dry part of the Province, is the "slug" *Eriocampoides limacina*. I noticed this insect as early as the end of June on the wild thorn in the woods and on cherry and pear in the orchards around Salmon Arm, and all down the Okanagan country as far as Penticton. There are two, if not three, broods in the season in the Dry Belt; on the Coast seldom more than one. The Dry Belt of the interior seems conducive to the spread of this pest, and unless efforts are put forth to combat it in the early summer it will certainly weaken the tree through denuding them of their foliage.

I dare say you have read, and perhaps seen, the effects of the depredation of the Spruce Bud Worm. It has ravaged the forests of Douglas Fir and other conifers on different parts of the south end of Vancouver Island and also the islands of the Gulf lying adjacent to the east coast. This insect certainly owes its distribution and spread to climatic conditions. The prevailing winds are from the South around Victoria and the spread of the insect is from the south northward. From observations it seems to be disappearing from the neighborhood of Cowichan Bay, where it was very plentiful last year, but on the other hand it has increased its distance about four miles further north from Victoria along the line of the E. & N. Railway.

In this already too long paper I have purposely confined myself to some of the leaf-destroying insects, but I hope at some future meeting to have something to say about the aphides and others which infest our low rich alluvial lands of the Fraser Valley.

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THE LIFE HISTORY OF IXODES ANGUSTUS (BANKS)

by

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This tick is found on a variety of animals, but in British Columbia occurs principally on squirrels (*Sciurus hudsonius douglasi* and *Sciurus hudsonius vancouverensis*.)

The life history, as given below, is the result of a series of experiments made in summer and winter at room temperature. The time given of 221 days for the complete life cycle is probably very nearly what occurs in nature. It would appear that the time required for *Ixodes angustus* to go through its life cycle is shorter than in many other varieties of *Ixodes*, as squirrels have nests, and it is in these that ecdysis occurs, the process being naturally hastened by the warmth of the animal.

The squirrels from which the ticks were taken, were shot at all times of the year and had about an equal number of ticks upon them. One point to note about squirrels is that they do not seem to wander far away from their abodes, and are often seen feeding day after day in the same spot; thus, any gorged ticks which dropped off them to moult would stand a good chance of getting onto the same animal again. Another interesting feature is the fact that males were seldom