

An attempt was made to transfer the mites from diseased to healthy fruit. Though negative results were obtained in most cases, the typical mite-blisters were produced in a few instances and the mites again recovered from the inoculated fruit. From this it would seem that these mites are probably responsible for the foregoing symptoms on apples, apricots, and plums.

From inquiries which we have received, and from notes taken regarding the distribution and destructiveness of the "apple-blotch mite," there seems to be no doubt that this pest is one to be reckoned with by fruit-growers in all parts of the Province.

A number of correspondents claim to have exhausted every means of control without effect. A careful study should undoubtedly be made of the life-history of the mite, and experiments conducted with a view of obtaining some satisfactory method of control.

ANTS AS FRUIT-TREE PESTS.

BY W. H. BRITAIN, B.S.A., PROVINCIAL ENTOMOLOGIST.

I first noticed the work of these ants, which were determined by Dr. Wheeler as *Formica rufa*, Linn., subs. *obscuripes*, upon peach-blossoms at Penticton on May 3rd, 1912. The ants were boring into the nectaries of the blossoms, destroying the pistil and feeding upon the nectar. In some cases small round holes were eaten in the petals, and in a few instances the young tender foliage was injured in a similar manner.

In an orchard at Summerland on May 10th, 1913, I noticed a Morello cherry-tree in which 75 per cent. of the blossoms were destroyed by these ants, which swarmed over the tree and ate out the pistil of the flower to get at the nectar.

At Kelowna on May 12th, 1912, Mr. Lionel Taylor, of the Bankhead Orchards, called my attention to apple-blossoms injured in the same manner as above.

In no case where I have seen this injury has there been any aphides present on the trees. It is conceivable that herein lies the explanation for this strange behaviour of the ants. In a German paper (Vosseler J. Verhinderung des Fruchtan-satzes bei Cobaea durch Ameisen, Zeitschr. Wiss. Insectenbiol. 11, 1906, pp. 204-206) mention is made of an ant boring into the blossoms of *Cobaea scandens* to get at the nectar.

Though this species is an abundant one everywhere in the North-west, little seems to be known of its habits and life-history. I have only one note on the habits of the species, taken at Vernon on June 15th, 1913. A large number of the ants were swarming around the base of the apple-tree, busily engaged in destroying and carrying off the cutworms which were abundant in the soil of the orchard. Though the insect is a very small one, it seemed capable of handling a cutworm considerably larger than itself.

PRESIDENT'S ADDRESS.

(G. O. DAY, F.E.S.)

Gentlemen.—When I was casting about in my mind for a subject for an address this evening, it appeared to me that a review of the study of entomology in the Province would be suitable and useful and perhaps acceptable to our members, especially to those who have joined our Society in recent years. On mentioning the matter to our Secretary, Mr. Treherne, I found that he had already written a paper covering much the same ground that I had intended to deal with, and supplementing the information contained in Mr. Tom Wilson's address in 1911.

I urged Mr. Treherne to read the paper himself, and I would content myself with a few general remarks on other matters. However, with great generosity he placed the results of his labours at my disposal. So you must please understand that the following is a joint production. I feel extremely reluctant to appropriate another man's work for my address to-day, but as Mr. Treherne was down on the programme to read another paper, and also because I am confident that the notes he has gathered

together will form an interesting record for future reference, I have put my hesitation at using them on one side.

All records point to one man, the late Rev. George W. Taylor, F.R.S.C., F.Z.S., as the first active entomologist in this Province. He settled on Vancouver Island in about the year 1877 and studied for the ministry. In 1881 he was made a Fellow of the Royal Society of Canada, obtaining this honour largely through his interest in entomology. During the next few years Mr. Taylor proved himself an active collector and a keen student in the order. At the annual meeting of the Entomological Society of Ontario, held in London, Ontario, October 15th, 1884, he presented the Society with a collection of Diurnal Lepidoptera through the medium of Mr. James Fletcher.

In 1885 a record is found on the "Entomology of Vancouver Island; Notes on Seventy-six Species of Cicindelidae and Carabidae collected near Victoria, Vancouver Island," by George W. Taylor, Victoria, B.C. In the remarks on this paper, Mr. Taylor says: "The beetles enumerated were all taken by myself in the neighbourhood of Victoria during the past few seasons. . . . A large number (40) of those I now record are new to the Canadian fauna, that is as far as my knowledge of the same goes, and some of these additions are very interesting ones." Mr. Taylor adds further in the same paper: "I have added to the list two species taken on the Mainland of British Columbia by Mr. James Fletcher (of Ottawa) in 1883 and very generously given to me."

A demand for entomological knowledge was evidently beginning to be felt within the Province at this time, for in 1887 Mr. Taylor was appointed Honorary Provincial Entomologist for British Columbia.

The next evidence of activity is in 1893, when in a bulletin of the Natural History Society of British Columbia, which was printed under the auspices of the Government, we find a "Report on the Entomology of British Columbia," prepared by Messrs. W. H. Danby and C. De Blois Green. In the text of this report we receive light on the status of entomology at the time. A "Preliminary Check List of Lepidoptera collected in British Columbia" is included therein. This list contains the names of ninety species of Diurnals and seventy-one species of Heterocera, all, with the exception of one species of butterfly, given on the authority of the two authors, Messrs. Danby and Green. There is also included a plate illustrating seven new species, viz., *Eumelia danbyi*, *Xylomiges candida*, *Rancora strigata*, *Pteroma apposita*, *Xylomiges putchella*, *Xylomiges cognata*, and *Taeniocampa ferrigera*.

Working Lepidopterists here this evening will form a judgment from this list of species recorded as new in 1893 how little collecting had been done before that date, for, with the exception of the last two of the species mentioned, the rest are now known to be more or less common. The list does not include any of the Geometridae nor any of the Microlepidoptera. In explanation of the omission, the following note is recorded: "The names of species belonging to the Geometrina cannot be included in this report, for the reason that to get them named by competent authorities takes considerable time, in consequence of the great care necessary to avoid mistakes." The report further states: "No great work was done (in 1892) in collecting Coleoptera, with perhaps the exception of capturing that rare beetle *Ulochates leoninus*, which is one of the few short-winged species of this family in our fauna, a single specimen being taken at Alert Bay, and a few other rare species being collected in Victoria, names of which have yet to be recorded. Many Diptera were collected, names unknown, with the exception of *Anisopogon ludius*, n. sp. nam. ed., by Mr. D. W. Coquillett, Los Angeles, Cal., which was captured at Goldstream on Mount Austen. Amongst the Arachnida very little was achieved, the species taken being collected more for friends than for study. However, a few specimens were kindly named by Dr. Nathan Banks, of Washington, D.C., amongst them being new species of *Pardora* and *Coriaractine*, also a variety of *Epeira insularis*, Hentz."

No entomological work of importance seems to have been done in the Province between the date of this bulletin (1893) and 1901, the year in which the British

Columbia Entomological Society was inaugurated. Before dealing with the formation of the Society, it would perhaps be well to touch upon the literature applying to the insects of the Province available to students prior to 1901, and also noticing some of the works published since.

At that time it is doubtful if local collectors had access to any illustrated books of any great use to them on any orders other than Lepidoptera. Most of the material had to be sent away to specialists for identification and naming. I may remark, in passing, that this necessity still exists, unfortunately, though to a lesser extent. Comstock's "Manual for the Study of Insects" was published in 1895. But this book, excellent though it is, so far as it goes, comprises all the orders of insects, and of necessity cannot treat the separate orders more than in a brief manner within the space of a single volume.

When our branch of the Entomological Society of Ontario was formed, the Smithsonian Institute of Washington, D.C., presented it with a number of works relating respectively to most of the orders of insects. A list of these books is given in the British Columbia Entomological Society's Bulletin No. 5, and the works are still in our library.

British Columbia collectors laboured under a further disadvantage, because most of these publications related to United States insects, and it was only in cases where the same insects occurred in both countries that our entomologists could obtain from books the information they wanted.

On Lepidoptera the most generally accepted work was the "List of the Lepidoptera of Boreal America," by John B. Smith, Sc.D., and others, published in 1891. This list was merely a list, and, moreover, did not contain a good many of the British Columbia species, but it was the only foundation students had to work upon at that time. It is therefore little wonder that the study made slow progress. A more ambitious and more comprehensive work on the same lines was published by the Smithsonian Institution, Washington, in 1902. The title of this is "A List of North American Lepidoptera and Key to the Literature of this Order of Insects," by Harrison G. Dyar, Ph.D. This catalogue, which found greater favour than Smith's, was in general use in the Province in 1903, and without doubt gave a great impetus to the systematic recording of moths and butterflies by our local entomologists.

Other works which were, and still are, of great service to collectors in British Columbia are Mr. W. J. Holland's "Butterfly Book," published in 1898, and the same author's "Moth Book," published in 1903. These two volumes contain coloured illustrations of most of the better-known species of Lepidoptera found in America north of the Rio Grande of Texas, and include many British Columbia insects. The price of these two books is within the reach of most of us. A more expensive work on the butterflies had previously been published, for in a preface to his "Butterfly Book" Mr. Holland states: "A few years ago the preparation of such a work as this at the low price at which it is sold would have been an utter impossibility. 'The Butterflies of North America,' by W. H. Edwards, published in three volumes, is sold at \$150, and, as I know, is sold even at this price, below the cost of manufacture."

Another book useful to British Columbia collectors, but covering much the same ground as Holland's, is W. G. Wright's "Butterflies of the West Coast of the United States," published in 1905.

In 1904 Mr. August Busck, of the United States Department of Agriculture, published an account of the "Tineid Moths from British Columbia, with Descriptions of New Species." In the preface to this work the author honours, among others, Messrs. J. W. Cockle, of Kaslo, B.C., and Theodore Bryant, of Wellington, B.C., for assistance rendered in the work.

In 1904 Dr. Harrison G. Dyar again publishes a valuable work on the "Lepidoptera of the Kootenai District of British Columbia." In this work again the experience of Mr. J. W. Cockle is often referred to.

In 1904, again, largely resultant from the impetus given the science of entomology in the Province by Dr. Dyar's "List of Lepidoptera," and founded directly on that list, Mr. Francis Kermode, Curator of the Provincial Museum, Victoria, assisted by Mr. E. M. Anderson, also of the Museum, published a "Catalogue of British Columbia Lepidoptera" from cabinet specimens in the Museum.

This list was revised and enlarged in 1906 by the officers and other members of the British Columbia Entomological Society, and published by the authority of the Legislative Assembly from the Provincial Department of Agriculture.

I will now go back to the point where I broke off to speak about the literature available to students in the Province.

In 1901 we read of the formation of the British Columbia Entomological Society, of which the Rev. George W. Taylor naturally became the first President. The following account records the initiation proceedings, and the subsequent occurrences relative to the Society, in the words of Mr. Tom Wilson when Vice-President in 1911: "In 1901 the late Dr. Fletcher had occasion to visit British Columbia in connection with the work of his Department. During his stay in Vancouver I had the opportunity of introducing him to Mr. R. V. Harvey, of the city, who was then Principal of Queen's School. In discussing matters in connection with the entomological work in British Columbia, the idea was suggested to form a Society whose special object was to unify the work of those particularly interested in the study of insects in the Province. The idea came to maturity and the Society was formed. For two years we had a live Society here in Vancouver, with such members as Messrs. G. W. Taylor, Sherman, Bush, Dashwood-Jones, Ed. Wilson, Draper, Marrion, Bryant, L. D. Taylor, Hanham, and myself in more or less regular attendance. . . . Regular meetings were held in Vancouver and reports were issued semi-monthly on matters of interest. These reports took the form of letters which were forwarded from one member to the other by the members themselves."

The first meeting of this Society was called on March 13th, 1902, in Queen's School, Vancouver. Biannual meetings appear to have been held from this date until February 6th, 1905. The records of such meetings are preserved in a minute-book, no attempt being made to print them for permanent distribution and record.

Great credit is due R. V. Harvey, M.A., for his earnest endeavours in maintaining and recording the minutes and transactions of the Society. These same are being retained on the shelves of the Society to-day, and as they contain many notices of important captures and worthy resolutions, they will long be referred to by students in entomology. In fact, next to the late Rev. G. W. Taylor, I think we are mostly indebted to Mr. Harvey for the continuance of the Society as a Society from the commencement in 1901 until 1908, during which period he acted as Secretary, for when he gave up active interest in entomology, principally, no doubt, on account of increased professional responsibilities, not only were the bulletins (to be mentioned) dropped, but the meetings of the members ceased temporarily.

This is not to be wondered at when it is remembered that most of the articles appearing in the bulletins were from Mr. Harvey's pen. The bulletins contain much interesting reading and I cordially recommend them to your attention. Copies are to be found in the library of the Society.

The first quarterly bulletin was published in March, 1906. In the opening paragraphs we find the following words: "Ever since our Society was formed we have laboured under a difficulty which has severely handicapped our work—namely, the distance which separates individual members. . . . Attempts have been made to meet this difficulty by sending round MS. notes, but here the neglect of one member has thrown the whole system out of gear. . . . Last December the Secretary approached the Provincial Department of Agriculture to obtain aid in printing a regular bulletin of our proceedings and work. This assistance has been promised for one year, and it rests with us to prove to the Department the value of our work. The bulletin will be published in March, June, September, and December, and a copy will be sent to each member."

These bulletins contain reports of annual meetings, articles on breeding, collecting, etc.; on the "Distribution of Insects in British Columbia"; on the "Captures and Lists of British Columbia Insects"; besides much other readable matter. It is refreshing to see that it is not only the order Lepidoptera that is dealt with, but that there is much information on other orders, especially Diptera and Coleoptera. The whole series of notes contained in these pamphlets represent good basal work for students in the Province for the future.

The bulletins, ten in number, continued to be issued until June, 1908, when, in the final number, the last record of an annual meeting of the Society, which took place at Duncan at the residence of Mr. G. O. Day on Thursday, April 16th, 1908, is found.

Thus for so long—from March 13th, 1902, until April 16th, 1908—the Society was active and strong, but after this date no further regular meetings appear to have been held, until the Society was resuscitated later, on December 9th, 1911. In the words of Mr. Tom Wilson, Vice-President of the Society: "Interest gradually waned—not, let it be understood, in entomological work, but rather as a Society."

On March 29th, 1905, a circular letter was sent out by the Secretary, Mr. Harvey, duly authorized by the Society, stating that the British Columbia Entomological Society had been duly affiliated as a branch of the Entomological Society of Ontario, and that the subscriptions of members, \$1 per annum, would cover all the privileges attaching to both Societies—namely, the receipt of the *Canadian Entomologist* monthly and the monthly list of records circulated among the local members. This arrangement has been carried out ever since that date, with the exception that the monthly list of records ceased.

In addition to the literature already mentioned and the lists, notes, etc., in the quarterly bulletins, the *Canadian Entomologist*, issued monthly, contains from time to time many notes and records for the Province of British Columbia.

I will not deal with the review of the economic phase of the subject, as I am leaving this to Mr. Treherne, but before closing I would like to say a few words to bring the history of the Society up to date.

It is no doubt in the recollection of all of you that it is entirely owing to the energy and enterprise of Mr. Treherne that the Society has been made active again. He called a meeting in December, 1911, at Aberdeen School, Vancouver, at which seventeen regular members were in attendance and various papers read.

The next meeting did not take place until January, 1913. This was held in the Botanical Room, Parliament Buildings, Victoria, kindly placed at our use by courtesy of the Minister of Agriculture, and the attendance of members was very satisfactory.

A new departure was made by a proposal to hold a special summer meeting at Vernon, B.C. The meeting was duly held on July 18th and 19th, when between fifty and sixty persons were present at the various sessions. The papers read were, by a generally accepted arrangement, chiefly devoted to such subjects as injurious insects and spraying. The meeting proved most successful, the papers presented being instructive and valuable contributions to the science of economic entomology in connection with fruit-growing.

Owing to the liberality of the Minister of Agriculture, the Honourable Price Ellison, the Society has been enabled to print and publish full reports of all the papers given, and by the energy of our Secretary copies have been widely distributed throughout Canada.

Looking back upon the work of the past year, I think we have every reason to feel satisfied at the activities and progress of our Society, and be greatly encouraged to look forward to further usefulness and a continuance of interest in our particular study.

Speaking for myself, I would like to say that I have felt much honoured in holding the office of President for the past year. Besides being an honour, it has

been a great pleasure to me to help forward the subject of entomology in the Province, and incidentally to meet so many men interested in the realm of insects injurious or otherwise.

On completing my year of office as President, I wish to thank you most cordially for your attendance and support and for all the time you have devoted to the study of entomology.

May I be permitted to express the hope that your interest will not be allowed to wane, and that our Society may continue to show its vitality by giving evidence of good work accomplished, and may further justify its existence by fostering a feeling of mutual help, encouragement, and incentive among the members, and that as individuals we may each derive benefit from our association and co-operation as a body.

Before I sit down, there is another matter I wish to mention, and that is the aid and recognition the Society has received and is receiving from the Government through the Department of Agriculture, of which the Honourable Mr. Ellison is the head. I, for one, fully realize the importance and value of the support given, and I think it is our bounden duty to pass a formal resolution at this meeting, which can be done in its proper place later in the session, expressing our thanks and appreciation of the assistance rendered by grant of money and by the printing of our Report, and, not least, of the encouragement and personal interest in the Society by the Honourable Mr. Ellison himself.

NOTES ON SOME OF THE VARIABLE SPECIES OF THE GENUS *HYDRIOMENA* AND ITS ALLIES OCCURRING ON VANCOUVER ISLAND.

By E. H. BLACKMORE, VICTORIA.

As I have been giving special attention to the genus *Hydriomena* and its allies during the past season, and in addition have had my material determined by a well-known specialist, I thought that a short note on a few species and varieties of this group would be of some use to the science of entomology in the Province. This winter while classifying and rearranging the species belonging to the *Hydriomena*, collected during the past season, I was struck by the remarkable variations occurring in some of the species, and in some instances the constancy of the variations was particularly noticeable. As many of these forms were new to me, I compared them with several local collections, and was surprised to find them listed under one or the other of two names. However, I was convinced that they were different species, or at least good varieties. I separated them into as many series as their variations would allow and submitted the whole to L. W. Swett, of Boston, Mass. He has been to a great deal of trouble to get some of them determined, necessitating several trips for comparison with large collections in the New York and Cambridge Museums, and I am greatly indebted to him for his determinations and also for a great deal of information given me in his replies.

The first species I wish to take up is the one listed as *Mesoleuca truncata*, Hufnagel, in Dyar's List No. 3379. In the catalogue of British Columbia Lepidoptera issued in 1904 it is listed under that name, with the words "very variable" after it, and in the Check List of British Columbia Lepidoptera, published two years later, *Mesoleuca immanata* is listed in addition to *truncata*, which is No. 3380 in Dyar's List. Now, *M. truncata* and *M. immanata* were very badly mixed up until Mr. L. B. Prout, of England, worked them out, giving the synonymy and varieties in the "Transactions of the City of London Entomological Society" in 1908. He showed that *truncata* is strictly European, and though closely allied to our form here is not the same. The form we get in North America is *citrata*, Linn., and described by him in 1761 from a specimen taken in Scandinavia, and is quite different from *truncata*. The chief difference lies in the extra diskal band beneath the hind-wing; in *truncata* it is rounded all the way, whereas in *citrata* it ends in a sharp angle as it reaches the base. On the primaries above, the projections in *truncata* are more