REPORT OF THE ENTOMOLOGICAL BRANCH, 1901.

The leaders of the Entomological Branch are glad to be able to report that a satisfactory amount of work has been done by the members during the last two years. Accidentally, no report was submitted to the Club last year, although a considerable amount of work was done. A gratifying interest in the study of insects has been shown by some of the younger members of the Club, as as well as by the students of the Public Schools, and particularly by those attending the Normal School.

Mr. Harrington continues his studies on the distribution of the various orders of our local insects, and is preparing local lists for publication. His last contribution to the Fauna Ottawaensis "Hymenoptera, Superfamily 2, Sphegoidea," appeared in the OTTAWA NATURALIST for January last.

Mr. C. H. Young continues active work, particularly among the Lepidoptera. He has added many interesting species to the Ottawa list. One of these a very beautiful Agrotid has been named *Semiophora Youngii* in his honour by Prof. J. B. Smith, our highly esteemed Corresponding Member

Mr. Young and Mr. Arthur Gibson have added largely to their collections of inflated larvæ during the present season.

Dr. Fletcher and Mr. Gibson have been vigorously prosecuting the interesting work of rearing insects from the egg through all their stages, and much valuable original work has been done not only upon our local species of Lepidoptera but upon many others, the eggs of which have been sent to them from a distance by mail. The value of learning the preparatory stages of insects cannot be overestimated, and forms one of the most necessary factors in devising remedies for injurious species.

A most important addition to the works upon Entomology, which has recently appeared, is Dr. Howard's "Insect Book," a work of the same nature as Dr. Holland's "Butterfly Book," but of much wider scope. With Dr. Howard's and Dr. Holland's books it is now possible for beginners to take up the delightful study of insects and learn something at any rate about almost any insect they may come across ; for all the orders are now treated of with the exception of the Moths and Beetles, upon which there is

already a great deal of published matter available to students. Until the present time this was almost impossible, and a great many boys and girls were deterred from studying insects by the lack of available literature. Among helps of a general nature available to the local members of our Club, mention must be made of the collection of insects now being built up at the Experimental Farm. The fine collection in the Geological Survey Museum consists mostly of Lepidoptera, although there are a few specimens in other orders. The collection at the Experimental Farm is a general one, and great pains have been taken to have the preliminary stages represented. Dr. Fletcher and his assistants are always pleased to welcome visitors and exhibit the collections to any who wish to see them. They are also particularly anxious to help any beginners who may apply to them. This is likewise the case, of course, with all the Leaders who have private collections and are always willing to show them, or to help others in identifying their specimens.

Many rare or interesting species have been reared or collected during the past year. Several of our members living at points distant from Ottawa have helped materially in this work. Rare species of Hymenoptera and Coleoptera have been sent from Vancouver Island, by the Rev. G. W. Taylor, and from Kaslo, in the Rocky Mountains, by Mr. J. W. Cockle. Similar help has been received from Mr. W. McIntosh, in St. John, N B. Eggs of Arctians, which have been reared to the perfect moths, were received from Mr. A. Kwiat, of Chicago, and some of the stem-boring larvæ of the genus *Hydræcia*, were sent from Rye, N.Y., by Mr. Henry Bird. Mention is made of this merely to draw attention to the fact that every member may do good work, whether interested in Entomology or not, by sending living specimens of insects by mail to the Leaders at Ottawa. Living insects, if packed in close tin boxes, without "holes for them to breathe through," with some of the food plant, may be sent by mail from all parts of Canada within a reasonable distance of railways, and will travel in perfect safety.

The two most noticeable injurious insects of the year in this district were: (1) The Small White Cabbage Butterfly, *Pieris rapæ*, which did much harm in cabbage, turnip and rape fields

This outbreak, however, was terminated suddenly late in August and in September by a bacterial disease of a very virulent nature. (2) The Birch-tree Skeletonizer (*Bucculatrix Canadensisella*, Chambers). This is a minute moth, the caterpillars of which sometimes occur in vast numbers and attack the foliage of all kinds of Birches. Last summer there was an excessive outbreak of this insect, and Birches throughout the Province of Ontario were much disfigured by having their leaves skeletonized by the tiny caterpillars. The insect is of considerable interest to the Entomologist, from the peculiar habit of the caterpillars, unusual among larvæ, of spinning on the leaves small circular flat shelters called pseudo-cocoons, inside of which they moult their skins. The true cocoons are beautiful little brown objects of an entirely different appearance, resembling a tiny clinker-built boat turned upside down. When full-grown the caterpillars let themselves down to the ground and, after wandering to some distance in search of a suitable place to pass the winter, spin these elegant cocoons. The work of construction is a most interesting one to watch; three-fourths of the cocoon is spun from one end, the caterpillar then crawls inside and closes up the other end. Sometimes many of these cocoons may be found beneath a convenient slab of rock, at other times they are spun on fallen leaves, or on stems of plants close to the ground.

Among the most interesting insects reared during the summer was a family of the minute hymenopterous parasite *Bæus niger*, of which Mr. Harrington reared four males and 20 females from a single cluster of spiders' eggs. This is one of the smallest insects we have, and the females are wingless, while the exceedingly rare males are winged.

Some of our members have made collections of insects in various parts of the Dominion. Mr. J. D. Evans has done good work at Trenton, Ont. Mr. J. M. Macoun, Naturalist of the International Boundary Commission, brought back some choice specimens from the Cheam Mountains, in British Columbia, a locality also visited by Dr. Fletcher with good results.

Of equal value with the work done in working out the life histories of rare insects is a great increase to our knowledge of the preparatory stages of many of our common species, which has been

made by some members of the Club. This is a field of useful work where, with little trouble, if care be taken in observing and recording accurately, many, even with small knowledge and experience, may do good useful work. What is wanted more in every branch of natural history, is a few earnest students who will content themselves with doing a little, but doing that little as well as possible.

Pityophthorus coniperda, Schwarz, a scolytid, or small bark-boring beetle, mentioned in previous reports as infesting the cones of red pines at Aylmer, was observed on May 26th last, by Mr. Harrington to be seriously infesting the cones of white pine in a grove near the top of the long hill between Ironsides and Chelsea, Que.

Anthophylax attenuatus, Hald. A perfect specimen of this rare species was taken at Chelsea, Que., by Mr. Young, on June 1st. At the same time several specimens of the more beautiful *A. malachiticus*, Hald., were secured.

Homohadena badistriga, Grote. For several years the caterpillar of this moth has been troublesome on the Experimental Farm upon honeysuckles. When very small they attack the clusters of flower buds and do much harm.

Sphinx canadensis, Bdv. Two specimens of this rare moth were taken at electric light by Mr. Gibson in June.

Achatodes zeæ, Harris. Several specimens of this species were reared from larvæ found by Mr. J. W. Hart at Kingston, Ont. They were boring in the young shoots of Elder (*Sambucus Canadensis*) causing them to wither and die. About the same time several specimens were collected at Ottawa, by Dr. Fletcher, in shoots of *Sambucus pubens*.

Anarta cordigera, Thun. A fine specimen of this attractive little moth was taken on the Mer Bleue, on May 30th, by Mr. C. H. Young. It is rare at Ottawa, one specimen only having been previously taken. This was in the same locality, on May 17th, 1898. In Europe, the caterpillar which "is reddish ochreous, with a lighter lateral line and several larger and smaller dots on each segment," is said to feed on *Vaccinium*. It should be looked for by our members on Blueberry bushes in summer and autumn.

Heterocampa marthesia, Cram. A fine specimen of this very beautiful moth was reared from a larva collected in Clarke's bush, in September, 1900.

Heterocampa biundata, Walker. A remarkably fine specimen was taken at light in June.

Some interesting butterflies were taken during the season :—

Chionobas jutta, Hbn. At Mer Bleue on 31st May, and *Lycæna comyntas*, Gdt. (the second Ottawa record), at Aylmer, Que.; both by Mr. Gibson.

Lycæna lucia, Kirby. Was seen by Dr. Fletcher to lay 3 eggs on the young forming berries of *Vaccinium Canadense*, a new food plant, and the larvæ were fed to maturity on the flowers and green berries of *Cornus*.

Debis portlandia, Fab. Some specimens of this interesting satyrid were collected near Beechwood Cemetery, in 1900 and 1901, by Mr. A E. Richard. This species is very uncommon at Ottawa.

Pieris protodice, Bd.-Lec. Never before taken at Ottawa, was collected at the Experimental Farm on September 21st. On the same day a few specimens of *Colias eurytheme*, Bdv., were also collected.

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REVIEW.

HUMAN FOOD INVESTIGATIONS. By Harry Snyder. (Univ. of Minnesota, Bull. No. 74).

The value of the foods used in these experiments was determined by feeding to men weighed quantities of food of a known composition and then carefully determining the amount of food which had been digested and made available for the body. In the part of the work published are discussed : the dairy products (butter, cheese and milk), oleomargarine, the comparative nutritive value of graham, entire wheat, and standard patent roller-process flour milled from the same lot of wheat, the digestibility of toast and bread; and also oatmeal and beans, as types of cereal and leguminous foods. The effects of different methods of cooking have also been considered, as well as the influence of combinations of foods upon digestibility.

One of the interesting results of this work may be mentioned. The addition of milk to a ration, with bread, butter, beans, eggs and potatoes, rendered a larger percentage of these foods digestible. Thus, milk is valuable, not only for the nutrients which it contains, but also because the soluble ferments which are present make the foods with which it is combined more completely digestible.