SOME OBSERVATIONS ON THE HYMENOPTERA OF THE OKANAGAN.

BY E. P. VENABLES, VERNON.

In speaking upon this group of insects, I should state at the outset that I have done little active work in the order for some years now. But as I have brought together a fair collection, comprising representatives of most of the families, it may be of interest to give the notes that I have of the various species.

This district is undoubtedly a favoured spot as regards the Hymenoptera, and careful work among any of the families would bring to light many new and interesting forms. During the coming season I propose to work at the sawflies, and shall hope to get some notes of interest. The Hymenoptera include some of the most beneficial and at the same time the most interesting insects known. We have only to consider the vast number of parasitic forms to be found in the superfamilies Ichneumonoidea and Chalcidoidea, without the intervention of which most species of leaf-eating caterpillars would soon devastate all plants, both wild and cultivated. We find in the former group a great assemblage of parasitic forms ranging in size from some 2 inches in length down to others of quite microscopical dimensions. As to numbers, it is enough to state that Ashmead, who worked at the genera of the world, recognized 1,140 distinct genera of these strictly beneficial insects. The Chalcidoidea is considered to be probably the largest in numbers of species of any of the Hymenopterous groups; only a few of these have so far been described. They are with few exceptions parasitic in habit, some of the species being found as egg parasites within the eggs of other insects, a few producing certain plant-galls.

The ants, bees, and wasps are undoubtedly the most interesting as well as the most highly developed of all insects exhibiting that complicated but orderly communal life such as is found in every ant-hill or bees' nest, the study of which reveals some almost astounding facts, both as regards division of labour and also, as among ants, symbiosis of a highly complicated nature.

There are many hundreds of different species of insects found inhabiting the tunnels and galleries of ants' nests in different parts of the world, some of which are able to furnish the ants with certain secretions from glands situated in different parts of the body, as is the case with the larvæ of certain Lycæna, butterflies which are found attended by ants, for the purpose of feeding upon the excretions of honeydew which is extruded by the Lycæna larva from a specialized gland situated on the dorsal surface of the abdomen. We have also the case well known to all who have paid any attention at all to insects of the consociation of ants and aphides. This well-known phase of ant behaviour has not been acquired by all ants, for although many species have developed the habit and have in the course of time learnt to take great pains to secure the excretion of the aphides, some species, in fact, building roofs over the colonies of these insects to protect them, others, as exampled by certain carnivorous groups, care nothing for the plant-lice and never, so far as is known, feed upon their excretion. It is not uncommon to find in early spring, on opening an ants' nest, numbers of aphis-eggs which have been taken in for protection by the ants in the autumn. When these eggs hatch the ants remove the young aphides to their natural food-plant near the nest, and so ensure a supply of honeydew for the summer months. There are many other insects found to inhabit ants' nests. Many Coleoptera, Homoptera, and scale-insects may be found. These latter furnish excretion for the ants and are protected by their hosts.

The beetle *Cremastocheilus pilosicollis* I have found frequently in the galleries of nests beneath stones, etc. Wheeler states that the ants employ themselves gnawing the anterior thoracic angles of these beetles. I might state, to show the intricacy of the phase of the subject, that there have been enumerated by Wassmann no less than 1,246 species of various small animals, "not only insects, but certain spiders and crustacea, known to inhabit ants' nests either as true guests, or tolerated scavengers, or as persecuted intruders."

Volumes might be written upon this most interesting group of insects, and any one proposing to work upon the ants would do well to examine some of Professor Wheeler's papers upon the group.

Before leaving the subject of ants, I should like to mention those most interesting species, the fungus-ants. These interesting creatures, first carefully observed by Belt in Nicaragua, have developed the extraordinary faculty of cultivating for food a certain species of fungus which is grown by the ants upon decaying leaves that are brought to the nest for that purpose. This fungus is only known to be produced in the nest of ants of tropical and sub-tropical America. The tribe to which they belong, the "Attii," consists of about 100 species, all of which are known to be cultivators and eaters of this peculiar fungous growth.

It had constantly been remarked by travellers in the tropics that vast numbers of ants were found engaged in carrying into their nests quantities of freshly cut leaves; that these leaves served as food was for a long time taken as the explanation of the phenomenon. But careful observation led to the discovery that the leaves were used as a manure for raising the crops of fungous plants for the food of the ant colony. It is grown within certain large chambers of the nest and is fed upon by the larvæ and adult Attii. When a colony is disturbed the ants remove every particle of the fungous masses to a new site, and again in forming a new colony a supply is carried along by the ants with which to stock their new quarters.

We might dilate upon the many other strange facts of ant behaviour which have in the last few years been made known by various careful workers, but I think that enough has been given to show the intense interest of the study. I will now give you a short list of the species of the Hymenoptera that I have found in my somewhat desultory collecting, but I hope it may be the nucleus of a far more comprehensive and complete list in the future for this country compiled by the co-operation of many of our members.

Among the earliest and most noticeable of the Hymenoptera are the various species of Bombidæ, of which I have representatives of some sixteen species in my collection. In their relation to the cross-fertilization of plants, the insects of this group are of the greatest importance and benefit to agriculture, for without their presence many of the most valuable plants would never set their seed.

In the Okanagan we have the following species:—

Bombus melanopygus (the most showy species of the genus and the first to appear in the spring).
Bombus rufocinctus.
Bombus appositus.
Bombus nearcticus.
Bombus juxtus.
Bombus couperi.
Bombus nevadensis (the largest species).
Bombus fervidus.
Bombus occidentalis.
Bombus vancouverensis.
Bombus edwardsii (Vanc.).
Bombus vagans.
Bombus pennsylvanicus.

Psityrus insularis, a parasitic form in the Andrenidæ or short-tongued bees, I have the following species, viz.:—

Andrena illinoiensis.
Andrena nigrocoerula.
Halictus ligatus.
Halictus montanus.
Halictus lerouxii.
Halictus pacificus.
Synalonia nevadensis.
Synalonia edwardsii.
Megachile frigida.
Cœlioxus rufitarsus.

The following wasps are to be found commonly:—

Vespa diabolica (also from Vancouver).
Vespa fernaldi.
Vespa maculata.
Vespa marginata.
Vespa occidentalis.
Polistes bellicosus.
Polistes aurifer.
Polistes pallipes.
Polybia flavitarsus.
Trachytes pepticus.
Psamophila robusta.
Sphex ichneumonea.

I also have thirty-two species of Tenthredinidæ, as follows:—

Cimbex americana.
Tenthredo nigrocostata.
Tenthredo varipictus.
Tenthredo variegatus.
Tenthredo mellina.
Tenthredo morosa.
Tenthredo evansii.
Urocerus cyaneus.
Urocerus albicornis.
Sirex flavicornis.
Sirex abdominalis.
Dolerus bicolor.
Dolerus aprilis.
Monohadmus rubi.
Monohadmus medius.
Monostegia rosæ.
Lophyrus abiatis.
Steonlyogaster fidus.
Haplocampa spissipes.
Hylotoma clavicornis.
Hylotoma abdominalis.
Hylotoma mcleayi.
Monophadnus tibiæ.
Macrophya tibiator.
Macrophya fumator.
Pachynematus extensicornis.
Pachynematus clypeatus.
Poecilosoma maculata.
Trichiocampus gregarius.
Haplocampa montana.
Ubia americana.

I also have some unnamed species in this group, and would feel it a favour to exchange with any of the members, either in this family or any other in which they are interested. In the early days of our Society we had, if I remember rightly, a considerable list of insects compiled by the different members, and if this list is still preserved it would no doubt be of value to draw up a catalogue of British Columbia entomology, or perhaps a copy might be made and utilized in the forthcoming list at present being worked up by our parent Society on Canadian insects.

I regret I am unable to be present at this meeting, but the distance is somewhat great. I regret also not having been able to attend the Vernon meeting during last summer, but nevertheless the Society has my best wishes and continued support.

REPORT OF THE FIFTIETH ANNUAL (JUBILEE) MEETING OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

BY R. C. TREHERNE, EXPERIMENTAL FARM, AGASSIZ.

On August 27th, 28th, and 29th, 1913, at the Ontario Agricultural College, Guelph, Ontario, a special meeting of the Ontario Entomological Society took place, in commemoration of the fact that the Society had been in existence and active for exactly fifty years. The meeting was not to be missed, as it was of historic interest to all interested in the science of entomology in Canada. Through the courtesy of Dr. C. Gordon Hewitt, Dominion Entomologist, I was permitted to suspend my operations at Agassiz for a period of three weeks to attend this meeting at Guelph, and to transact other business of a personal as well as official character.

As we are out here an integral unit in the entomological work of the Dominion of Canada, and a branch of the parent Society in Ontario, apart from the interest this Jubilee meeting will arouse in our members, I believe it well to record in our annals the origin, formation, and growth of this Ontario Society, which, as I will show in a few moments, was and is the Entomological Society of Canada. I do not believe I could do better than to quote word for word the synopsis that was printed as an introduction to the programme arranged for the occasion:—

"The first meeting of entomologists in Canada was held in September, 1862. It was then decided to form an entomological society, whose chief objects were the formation of a collection of Canadian insects, the interchange of duplicate material, and the holding of meetings with the object of advancing the science. Accordingly, in April, 1863, the Entomological Society of Canada was organized, the original membership being twenty-five. The publication of a series of valuable papers was begun, and it is a matter of great gratification to know that we shall have with us at our Jubilee meeting the contributors of the first two papers, and two of the founders of the Society, Dr. Bethune and Dr. Wm. Saunders, C.M.G. The activity