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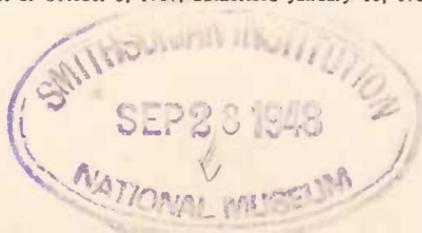
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Contributions to the Knowledge of Chinese Coccinellidae. IX. On a New Serphid Parasite of the Larva of *Epilachna admirabilis* in Kunming¹

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The first specimen of this new parasite to come under observation emerged from a second or early third instar larva of *Epilachna admirabilis* Crotch fifteen days after its collection on August 23, 1941, in the environs of Kunming (Wang Chia Chiao, a village northwest of the city). The extraordinary position assumed by the parasite in relation to its host at once attracted attention, and subsequent search was made over a number of years for additional specimens. These are not rare if the collecting of parasitized hosts is made at the right season. When specimens were sent to Dr. C. F. W. Muesebeck for identification, the writer was informed that the parasite represented a new species of an apparently undescribed genus. Upon the request of the writer, Dr. Muesebeck kindly consented to prepare a description of the species to be published at a later date.

A parasitized host may be readily recognized by a slight bulge near the middle of the posterior half of the venter. This prominence continues to enlarge until the host integument is ruptured to let through the head and thorax of the parasite pupa. The protruding pupa is so oriented to the host that the dorsum of its abdomen is in contact with the interior of the dorsal integument of the host, while the exposed cephalothoracic region has its ventral side lying against the exterior of the host venter. The cephalothoracic portion is bent at an angle with the abdomen at the junction of these regions, so that the parasite head is directed toward that of its host. With further development, when the greater part of the parasite abdomen becomes exposed, its head may be directly over the hypognathous mouthparts of

¹ Paper No. 33 of the Division of Entomology.

the host. The long slender antennae extend in a graceful curve from the head along the sides to the posterior margin of the third abdominal segment. When the imago effects its departure, its pupal skin is left more or less intact within the emptied host.

The exceptional position assumed by this species, during its pupal development, in relation to its host is extraordinary but not unique, for other serphids (e.g., *Exallonyx philonthiphagous* Williams in Hawaii) have been observed to adopt a similar posture. In the present case, at least, a probable explanation of this situation is forthcoming from the fact that the parasite, in spite of its size which would lead one to expect a delay in its pupal transformation until the host larva has attained maturity, prefers the third instar and even, in some cases, the second. The slight differential between the size of the parasite and that of its host makes necessary the rupturing of the host integument to permit of further development. Also the fact that the mature larva directs its head caudad of the host may be viewed as an adaptation which obviates possible injury by the host mandibles and legs while the protruded pupa is still soft and vulnerable.

Slender and graceful, the adult parasite is very agile after eclosion from its pupal skin. It may be kept alive on a diet of honey and water, and in one case it lived from October 7 to November 24, 1945, a total of forty-eight days. It may be noted that in this particular case the sugar content of its food was considerably increased after October 21 when other adults began to show signs of not surviving November, which was also the experience in 1941.

Such is their oviposition urge that two parasites were observed to attempt oviposition in their dead hosts. So when several parasites had issued, experimental oviposition was tried with the view to working out the life history. Unfortunately *E. admirabilis* does not readily lend itself to laboratory rearing, and, as a consequence, four collected larvae were used. From these three parasites developed, but of course the possibility of previous oviposition was not excluded. Later seventeen laboratory bred larvae of *Epilachna vigintioctopunctata* F. (ten third

and seven fourth instars) were exposed. In no case did any parasite develop, although one parasite was seen to insert her ovipositor for over ten minutes into a fourth instar larva and another followed with a brief stab into the same host. On the same food plant, *Clematis Petrae* H.-M., lives another species, *Epilachna hauseri* Mader, but from it no parasite of this species has been reared. This probably indicates a high specificity of this parasite, which may, in turn, account for its rather infrequent occurrence. It may be added that so far as our experience indicates, Wang Chia Chiao seems to be the only fruitful collecting ground, although a few have also been recovered from hosts collected from the village Luh Liang Hsiang.

The host shows first signs of parasitization by a considerable period of fasting, followed by a general darkening and shriveling of the body. At this time the bulge on its venter becomes discernible and soon the integument is ruptured by the protruding pupa. The host invariably dies and the solitary parasite issues in time. Since the beetle feeds on a plant of some slight value as a medicinal herb, this parasite may be considered beneficial from that point of view. The interesting point, however, is that this is one of the rarer cases in which the serphid attacks a phytophagous host.

Although the adult parasite was found to have emerged on February 5, 1945, our repeated experience definitely indicates that the wasps appear much later in the season. Emergence records both for the field and laboratory, covering a period from September 1 to October 23, show a maximum issuance during the forty days shared between these months. Although the epilachnine beetle can be collected throughout the year, a third instar larva was found in January, mating occurred in February and eggs were laid in March, the larvae are abundant only during the months of July to October. This may have something to do with the late appearance of the parasite. But whether it tides over the intervening period by utilizing an alternate host or is it able to locate the very scarce winter larvae must await future elucidation, as the present note must be concluded with the impending departure of the writer from Kunming.