

—Mr. Busek also presented a recent work by Dr. C. Wesenberg Lund of Denmark,¹ which he strongly commended to the members' attention as an excellent biological study. Mr. Busek referred in detail to some of the subjects in the article and passed around the interesting plates of the egg-laying habits of this group of insects.

NOTES ON A WOOD-BORING SYRPHID.

BY H. S. BARBER, *Bureau of Entomology.*

A hickory log in early stages of decay, which was found in the vicinity of Washington, had lost its bark, and the weather beaten surface of the wood showed numerous holes, with caked damp sawdust that had been thrust out. This work was mistaken for the borings of the larvæ of the Lymexylonid, *Melittomma sericeum* Harris, but when chopped into, the log disclosed numerous short cylindrical grubs of a form that the speaker had never seen before. These were shown to numerous entomological friends, but no one could place them with any certainty. Specimens were caged for breeding and the log was frequently examined for changes in the larvæ. At last a pupa was found and this latter disclosed a Syrphid fly (*Temnostoma bombylans*) the larva of which appears to have been previously unknown. Before this was bred, however, larvæ were shown to Mr. A. B. Champlain, who on his return to Harrisburg, Pennsylvania, found similar larvæ boring abundantly in very soft rotten willow wood. He also bred the flies, and has forwarded his material to Mr. W. R. Walton. Dr. Boeving and Mr. Shannon also found similar larvæ on the Virginia shore opposite Washington. Comparison of the larvæ, however, shows great differences in the armature of the spiracles. From this it becomes evident that more than one species is involved in the colonies. Adults bred from these different colonies corroborate this idea, and are more or less different, so that it appears to the speaker that about four species are involved in America under the name *Temnostoma bombylans*. This name was originally applied to a European form. There are, however, a number of names available for American forms that have been sunk as synonyms of *bombylans*, but it is not known to what forms these refer.

In the first log found, the wood was very hard and brittle but showed signs of ferment, and contained much moisture. The galleries were cylindrical, clean-bored holes, and all boring dust was extruded at the surface of the log. Under these conditions the larvæ need strong protection against predatory enemies. This is

¹Biologische Studien über Dytisciden (Footnote: Published in Internationale Revue der Gesamten Hydrobiologie und Hydrographie, Leipzig, 1912.)

supplied in the extremely hard chitinization of the anal segment, and furthermore by the development of spiny processes around the elevated spiracles. To determine the utility of this apparatus, a specimen was placed in a glass tube the size of its original burrow, and from time to time disturbed by thrusting a bristle down the tube beside it. Immediately upon being touched this horny armature was thrown violently against the side of the tube pinching the bristle firmly. The fate of any Clerid or other predatory larva that should attempt to reach the soft forward part of its intended victim, can only be surmised, but this defensive organ appears perfectly effective. In two beetle larvæ a peculiar anal armature has been observed which appears to be more or less effective in the same manner, the first simply for defense, the second both defensive and offensive. The first is *Melitomma (Lymexylon) sericeum* in which the anal segment is very heavily chitinized, obliquely truncate, and strongly concave, the margin furnished with short stout teeth. This can be used to completely plug the gallery against an intruder, and by crawling backward to slowly force it out of the gallery. The other species is *Hylocætus lugubris* a member of the same family, in which the first stage larva has an anal segment very similar to the last mentioned species, but which in later stages develops into a long horny process armed on the dorsal side with sharp teeth. These, it is believed, would be fatal to any soft bodied enemy that should try to crawl past. The syrphid larvæ from the softer, more decayed logs however, were of a different type of anal armature in which only the spiracle prominence is chitinized. These also do not seem to make definite galleries, and are equally available to their enemies from all sides. As before stated they are believed to be a distinct species. A single specimen of *T. æqualis* was bred by Mr. Champlain amongst many *T. bombylans* so-called.

At first sight the larvæ of *Tennostoma* appear to be furnished with powerful out-turned mandibles comparable to those in the larvæ of the Eucnemidæ, and certain Hymenoptera, but these are probably only plates of the head that have become functional for boring, the real mandibles being internal within the mouth, which is well on the under side of the head. The speaker exhibited photographs and sketches of the specimens and their work.

MEETING OF OCTOBER 2, 1913.

The 270th meeting of the Entomological Society of Washington was entertained by Mr. E. A. Schwarz in the Sangerbund Hall. There were present Messrs. Baker, Banks, Barber, Boeving,

Busek, Cory, Craighead, Cushman, Duckett, Ely, Gahan, Greene, Heinrich, Hopkins, Howard, Kirk, Knab, McAtee, Middleton, McIndoo, Quaintance, Sanford, Schwarz, Shannon, Snyder, Walton, and Wood, members, and Messrs. Frederick Karl, Chas. Menagh and Drs. W. A. Hooker and Martini, visitors. Mr. Schwarz reported that the next number of the Proceedings had been printed and would be mailed to the members in a few days. The name of Dr. Martini was proposed by President Busek for corresponding membership and that of Mr. W. S. Abbott by Mr. Cushman for active membership.

Mr. Busek remarked on the difficulty experienced by the Secretary in securing notes given at the meetings. He also read a letter from Mr. Caudell, addressed from Copenhagen.

The following papers were presented.

BIOLOGICAL NOTES ON A FEW RARE OR LITTLE KNOWN PARASITIC HYMENOPTERA.

BY R. A. CUSHMAN, *Bureau of Entomology.*

The observations brought together here are presented with the consent and partly at the suggestion of Dr. L. O. Howard, Chief of the Bureau of Entomology.

PERILITUS AMERICANUS Riley.

This Braconid parasite of lady-beetles was very abundant in the region of Vienna, Virginia, during the fall of 1912, invariably, so far as the observations of the writer go, parasitic on *Megilla maculata*. This coccinellid, following its habit of congregating in large numbers in the fall in some protected place, used as shelter the burlap bands put around apple trees for trapping codling moth larvæ. Large numbers of these were parasitized by *Perilitus*. During the past spring the abundance of *Perilitus* was again noted, many lady-beetles astride of the parasite cocoons having been taken from low herbage, especially clover infested by *Macrosiphum pisi*. Although a number of other species of Coccinellidæ, encouraged by the unusual abundance of aphids, were fully as abundant as *Megilla*, none but the latter and a single specimen of *Hippodamia convergens* were found to have been parasitized.

Adult specimens of the parasite reared in the fall of 1912 when placed with various species of coccinellids attacked the different species apparently indiscriminately but no progeny resulted.