

DECEMBER 2, 1886.

Six persons present. President Howard in the chair.

Mr. J. D. Sherman, Jr., of Peekskill, N. Y., was elected a member of the Society.

Dr. Riley made some remarks on the larvæ and larviform females of *Phengodes* and *Zarhipis*, of which he furnished the following abstract:

NOTES ON PHENGODES AND ZARHIPIS.

I read with some interest, while in Europe last July, the account in *Science* for July 9th of Dr. Horn's remarks on the larviform female of *Ph. laticollis* and *Zarhipis Riversii*. I have been familiar, since 1869, with the luminous larva which was then, following Osten Sacken, referred with a question to *Melanactes*. I exhibit alcoholic specimens of the form found by myself and others in Missouri, and which was first figured by me in LeBaron's 4th Rep. Ins. of Ills. (1874); of another series corresponding with *Zarhipis* received in 1883 and 1884, from Mrs. A. E. Bush, of San Jose, Cal.; one received from Henry T. Thomas in 1869, of Franklin, Mo.; one (*Phengodes*) received from Mr. J. W. A. Wright, Greensborough, Ala., June, 1886; two (apparently *Phengodes*) received in 1875 from Mr. B. P. Mann, Cambridge, Mass.; others received from L. R. Alexander, Piocha, Nev., in September, 1883; and, finally, one (*Phengodes*) from Mr. O. Lugger, found near Baltimore, Md., in 1876.

The structure in all these larvæ is essentially identical, but they are divisible into three groups doubtless corresponding to as many genera. In the first group (*Phengodes*) the most common form is pale or yellowish in general color, with a medio-dorsal series of small, paler, double spots near the hind margin of each joint; the mandibles sharp and sickle-shaped and the prothoracic joint elongate and narrowed anteriorly. Another colorational form in this group—the one originally described by Osten Sacken—has the horny parts much darker, almost black, with a series of pale brown or fulvous dorsal spots, two to each joint. In the second group (*Zarhipis*) the color is equally variable, some of the specimens being pale brown and showing the small, geminate, medio-dorsal paler spots at base of each joint, but most of them being much darker, almost black dorsally with no lighter markings. The surface is rather more noticeably shagreened and the medio-dorsal depressed line more marked in this group than in the first, from which it is at once distinguished by the broader, more transverse head; but particularly by the broader, more transverse prothoracic joint, not narrowed anteriorly. With these exceptions the structure in these two groups is essentially the same. In both, the larvæ possess a large ocellus at base of antennæ, and in both they exhibit a remarkable peculiarity hitherto not noticed, viz., a pair of small spiracular or spiracle-

like apertures on the dorsal sutures between joints 4-11, and normally quite hidden by the telescoping of the joints. The nature of these openings can only be speculated upon, as no dissections have yet been made; they may be olfactory organs.

In the paper, "Zur Biologie der Käfergattung *Phengodes* Ill.," by Dr. Erich Haase, published in *Isis* for 1885 (pp. 10-11), the author, without referring to Osten Sacken's paper, cites the observations of Dr. Hieronymus, of Cordoba, which first established the relation of the male *Phengodes* with this larva as the female. From a larva received from Missouri in 1883, and which was kept for some weeks in a glass jar where it could be seen until it reached the pupa state, I had, with Mr. Schwarz, already at that time decided that the larva must be referred to *Phengodes*, though there had been no occasion to publish the conclusion, because the specimen had unfortunately disappeared during one of my absences, and probably flown out as a beetle. The third group consists of the smaller larva from Nevada, which may eventually prove to be the young of one of the larger forms, though more probably it will prove to belong to some other genus. It is less narrowed in front, the head is broader, and the whole body is sparsely beset with spinous hair. The color is pale, and the ocellus very conspicuous each side, looking almost like a compound eye by virtue of its being placed on an irregular black patch. No dorsal spiracular orifices are noticeable.

So far as the specimens justify any conclusion, the only difference observable between the perfect female and the larva is in the more feeble mandibles and tarsi of the former.

A long discussion on various topics connected with this *Phengodes* matter followed the reading of Dr. Riley's paper. Mr. Smith related his experience with one of the luminous larvæ found at Britain, Conn., and which was kept in captivity for a number of weeks; but it finally died. Mr. Mann spoke on the numerous luminous larvæ which he found in and around Cambridge, Mass. Among them he had observed two forms, one with blunt, the other with pointed mandibles. A third form, of jet-black color, could extinguish their light at will, and there were also differences in the anal segment. All were kept in captivity for a considerable length of time, but none transformed. Mr. Schwarz gave a review of the geographical distribution of the North American *Phengodini*, and related that on one occasion he had found in Florida, during daytime, 4 or 5 male specimens of *Phengodes plumosa* on one spot among the roots of grasses.

Mr. Schwarz exhibited samples of small, square rods of naphthaline which, in this form, is known in commerce as "white carbon," and used for intensifying the flames of gas-light. The