

species also seem to be more numerous on plants growing in swamps than on those growing on dry land. The wide geographical range of this beetle was also pointed out, as well as the fact that in the more northern climates it is remarkably constant in coloration, but quite variable in more southern latitudes.

Mr. H. W. Turner stated that he had seen in California a Coccinellid, probably *Megilla vittigera*, which likewise congregates in enormous numbers.

Mr. Howard said that Mr. C. D. Walcott at a recent meeting of the Biological Society of Washington had called attention to the congregation in large numbers of a lady bird (probably *Hippodamia convergens*) on rocks just at the snow line in the Rocky mountains. Mr. Schwarz replied that this should not be considered as a voluntary congregation; the beetles were carried upwards by ascending currents of air along the slope of the mountain and falling upon the snow fields either perished from cold or managed to reach rocks or other objects projecting from the snow. While in Colorado he had seen at an altitude of about 12,000 feet the snow fields thickly covered with such multitudes of *Phyllotreta pusilla* and *Hippodamia convergens* that the glare from the snow, otherwise so trying to the eyes, was perceptibly diminished.

Mr. Mann said that he had not been able to get *Coccinella bipunctata* to feed indoors in winter-time on Aphides, and that this species did not occur very abundantly in houses.

Prof. Riley's second paper was as follows:

ON THE LARVA AND SOME PECULIARITIES OF THE COCOON OF SPHECIUS SPECIOSUS.

BY C. V. RILEY.

In elaboration of some former remarks on the life-history of *Sphécus speciosus* made at the meeting for September 4, 1890, I wish to submit a more detailed description of the larva, and at the same time to draw attention to a remarkable peculiarity of the cocoon. The larva in form, color and general appearance resembles the typical larvæ of the fossorial wasps, so far as we already know them. It possesses great extensile and contractile power, the anterior segments, more particularly,

having great power of elongation, so that in life and when feeding it reminds one of some great Syrphid larva. When at rest, with the head bent over on the breast, it measures at full growth about one and one-eighth inches to two inches. The skin is nearly smooth, but with a slight rugosity and flecked more or less with whitish spots, especially between the segments. There are ten pairs of reddish-brown spiracles, one for each segment from the first to the tenth. The head is resinous in color, and the mouth-parts are remarkably well-developed as compared with other aculeate hymenopterous larvæ. The clypeus, labrum, mandibles, maxillæ and labium are quite as prominent and perfect as in many Coleopterous larvæ. The mandibles are very strong, somewhat obtusely pointed, and have, a short distance below the apex, a prominent tooth. They are dark brown, almost black at tip, paler at the base. The maxillæ are large, fleshy organs, terminating in two brownish horny processes, one of which doubtless represents the maxillary palpus. The labium is also a fleshy organ and bears two horny processes representing the lingula. It has also a spinneret. The antennæ are very rudimentary and are represented by two minute whitish elevations on the front.

The cocoon is constructed very rapidly, not more than two days being required for this purpose. Irregular threads are first thrown out and attached to whatever they may touch—both the Cicada and the surrounding wall of the cell. The cocoon, which at first consists of an open cylinder, is constructed of silk, with enough earth incorporated to make a rather dense pod, and is of an irregular elongate-ovoid form, tapering somewhat toward the posterior end, and varying in length from one and one-half to three-quarters inches. The interior is loosely lined with a coarse yellow silk, except for an area in the middle, covering from one-half to two-thirds of its inner circumference, where it is densely covered with a fine white silk. In this light area, and covered by the silk, are to be seen from eight to twenty dark-brown slightly elevated spots. These spots are caused by a resin-like substance employed to cap certain very anomalous hollow tubercles which project from and open on the exterior of the cocoon. These tubercles are constructed of the same resin-like brownish substance, and in their perfect form and size greatly resemble spiracles. They are capped, as described, evidently after the completion of the cocoon. These curious little tubes I have not noticed in the cocoons of any other sand or fossorial wasp, and their purpose is somewhat problematical. My first impression was that they were little pellets of excrement, being the last fæces excreted by the larva about the time of completing its cocoon, and that, having viscid and solvent qualities, they had

penetrated the walls of the cocoon and from the inside had been covered up with a new lining of silk by the larva in order to prevent moulding or the access of moisture from the surrounding earth. But a more careful examination shows them to be too perfectly tubular and too uniform to fully justify this explanation, and I am forced to the conclusion that they are made purposely by the larva, doubtless by the labium, and that they are intended for some special purpose, possible of ventilation and respiration. This hypothesis brings up the interesting general question, so far as it relates to insects, of the need of ventilation in the cocoons or other protective retreats in which they hibernate and undergo their transformations. It is a most interesting question, which I cannot discuss at length in this connection.

Mr. Mann stated in the discussion of this paper that Trouvelot had tried the experiment of shellacking the cocoon of Bombycids without any difficulty in breeding therefrom. General discussion followed on the breathing of larvæ and pupæ especially in the case of sub-aquatic Coleoptera.

Mr. Fernow presented a paper on *Psilura monacha*, of which he has furnished the following abstract :

THE RAVAGES OF LIPARIS (PSILURA) MONACHA IN
GERMANY AND MEANS OF DEFENSE.*

BY B. E. FERNOW.

[AUTHOR'S ABSTRACT.]

Mr. Fernow spoke of the alarming increase of *Liparis monacha* in Germany, and especially Bavaria, during the last year, and the anticipations of still greater damage in 1892, and hence the diligent search after effectual remedies. He pointed out that such ravages in German pine and spruce forests meant not only many thousands of dollars loss in depreciation of wood values, but also most inconvenient disarrangement of working plans, which are necessarily laid for 100 or more years in advance. He brought forward further statistics to show the significance of the pest, and then described such life habits as

*See *Insect Life*, Vol. III, pp. 379-82, for full author's abstract of this article.