

ponds. Mr. Schwarz further asked whether any one had ever seen one of these bugs rise again after falling to the pavement, and whether any one had noticed them in the morning in the same numbers in which they occurred at night. In other words, what becomes of those individuals which fall to the pavement? Dr. Gill said he had noticed the insects most abundant at the lights nearest the fish ponds and gradually diminishing about lights further away. Mr. Schwarz said that in his experience electric lights are much less attractive to insects now than when they were first introduced. He believes that the insects are gradually becoming accustomed to the lights. Prof. Riley said that this statement, if true, is of extreme interest, as it involves the question of the heredity of the knowledge that it is injurious to the species to fly to the light. In reference to the flight, it was extraordinary only because of the size of the species, since all the Heteroptera use their hemelytra in flight.

—Prof. Riley also read the following paper :

THE EGGS OF CERESA BUBALUS Fab. AND THOSE OF C. TAURINA Fitch.

BY C. V. RILEY.

In the fifth report on the insects of Missouri, page 121, I have described and figured the eggs and egg-punctures of what was then considered to be the Buffalo Tree-hopper, *Ceresa bubalus* Fab. The egg-punctures there described consisted of a row of more or less straight, slightly raised slits in the bark, in each of which is an oval, dark-colored egg. I described and figured various stages of the insect which was reared from these eggs, and which was determined from the only bred and somewhat undeveloped individual as belonging to this species. Of late years the eggs of this species have been described and referred to by several Western writers, especially by our fellow-member, Mr. Marlatt, who published a full and illustrated account of them as observed by him in Kansas, and calls attention to the error in my own account above referred to (Trans. Kans. Ac. Sc., Vol. x, pp. 84-5, 1885-6). The eggs and egg-punctures as there figured are quite different from those which I illustrated and described, and agree with others which I have been familiar with for many years but never reared. An explanation of this discrepancy is, therefore, very desirable.

Careful comparison of my bred material with the material in

the Museum, in connection with Fitch's own types, and some examinations of the last ventral segment that have been made for me by Mr. Ashmead, explain the apparent discrepancies, and

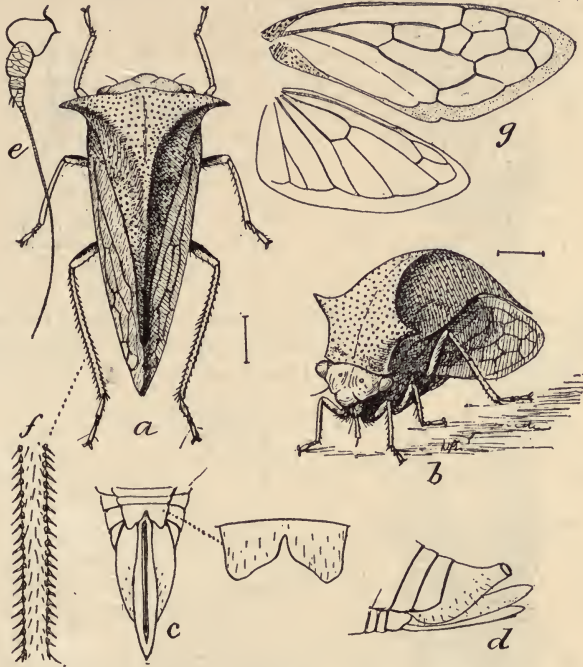


FIG. 6.—*Ceresa taurina* Fitch: *a*, adult female, dorsal view; *b*, one-half lateral view of same; *c*, ventral view of tip of female abdomen with last ventral arc still more enlarged at side; *d*, lateral view of same; *e*, antenna; *f*, portion of hind tibia—all enlarged—from *Insect Life*.

the insect which I reared is in reality Fitch's *taurina* and not the typical *bubalus*. The latter is a larger insect, with broader body and especially with broader prothoracic parts and more



FIG. 7.—*Ceresa taurina* Fitch: *a*, single egg-puncture enlarged; *b*, row of punctures in twig, natural size (after Riley).

prominent prothoracic horns. The last ventral segment has a distinct, simple, median, rather acute notch, and is very little longer than the two preceding segments united, the

emargination rather acutely triangular and extending about half way or a little more than half way, to the base of the segment; the posterior margin obliquely truncate to the rounded hind angle, not sinuate; the valves shorter than the middle tibiae.

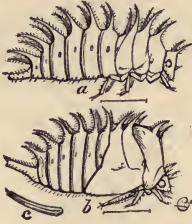


FIG. 8.—*Ceresia taurina* Fitch: *a*, larva; *b*, nymph, (after Riley).



FIG. 9.—*Ceresia taurina* Fitch: dorsal and lateral views of adult, natural size (after Riley).

In *taurina* the prothoracic horns are less prominent, the last ventral segment is a little longer than the three preceding segments united, the emargination extending to the basal one-fifth and very

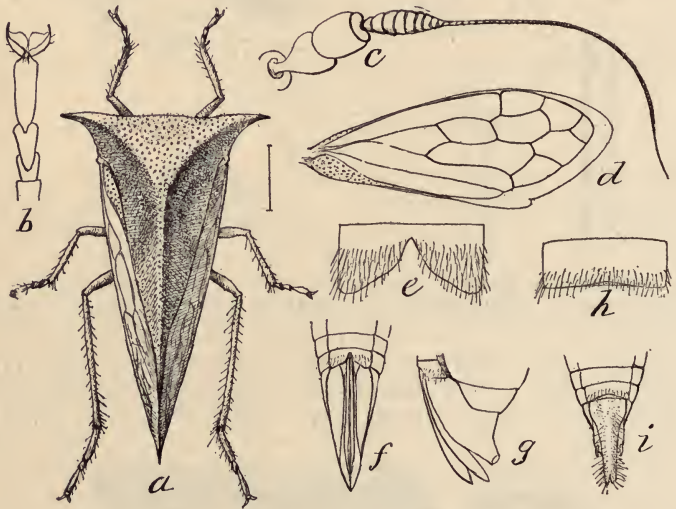


FIG. 10.—*Ceresia bubalus* Fab.: *a*, female; *b*, enlargement of anterior foot of same; *c*, do. of antenna; *d*, do. of wing; *e*, last ventral segment of female; *f*, ventral view of tip of abdomen of female, showing terminal segments and ovipositor; *g*, do. lateral view; *h*, penultimate ventral segment of male; *i*, ventral view of tip of abdomen of male—all enlarged—from *Insect Life*.

narrow at its origin. The hind margin from here is rather deeply and broadly sinuate, with the hind angles well rounded. The differences between some of the smaller specimens of *bubalus* and

the larger specimens of *taurina* are not very noticeable at first. The slits of this *Ceresa taurina* Fitch were mistaken by him for the crescent cuts of the Plum Curculio, while he very strangely describes the eggs of what we know now belong to *Æcanthus niveus*, or the Snowy Tree-cricket, as of the *Ceresa bubalus*. I am familiar with various other kinds of small egg-punctures in the twigs of various plants, undoubtedly of species belonging to the Membracidæ or Fulgoridæ, but have reared and identified the parent only in the case of *Pæciloptera* [*Orminis*] *pruinosa* Say and *Enchenopa binotata* Say, the punctures of this last being hidden with a white, waxy, ribbed covering, which, as already pointed out (*Am. Nat.*, xv, p. 574, July, 1881), was referred by Fitch, in his collections, to *Dorthisia*.

On referring to my scrap-books and notes, it seems that the first record of the oviposition of *C. bubalus* was in a short reply to a correspondent published by Prof. Cyrus Thomas in the *Prairie Farmer* of February 5, 1876, in which a brief description is given of the nature of the egg-punctures of an insect which was identified as belonging to the same family as *C. bubalus*, if not to the same genus, but supposed to be distinct on account of their difference from the punctures of *bubalus* as wrongly determined by me. At the time I had several notes of earlier date on similar punctures, and having submitted the drawings of them

to Prof. Thomas, he recognized his punctures as identical with those now known to be of *bubalus*. My first specimens of these were received Nov. 12, 1875, from Uriah McCall, Manchester, O., who found them on Apple, Pear, and Quince. My notes describe the punctures as follows: "Ordinarily there is a pair of simple slits, the adjacent parts slightly swollen, each slit leading to a row of, on an average, 10 eggs just under the bark, the anterior or outer ends converging toward the middle. The individual eggs are 1.3 mm. long by one-fourth as wide, pale

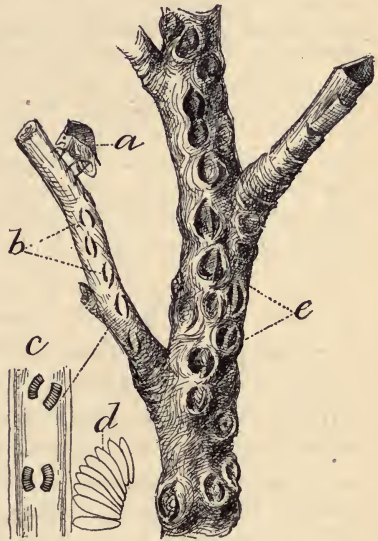


FIG. 11.—*Ceresa bubalus* Fab.: Twig of apple showing: *a*, female at work; *b*, recent egg-punctures; *c*, bark reversed with eggs in position, slightly enlarged; *d*, single row of eggs still more enlarged; *e*, wounds of two or three years' standing on older limbs (after Marlatt).

amber colored, with the anterior end somewhat more opaque. The wood around the eggs, as usual, is discolored. Sometimes there is but a single slit, sometimes but a single egg, in cases where the parent had evidently been disturbed. Sometimes a double pair are found close together." I received similar punctures also from Dr. Lintner, from Pennsylvania, March 29, 1877, and have also described in my notes punctures similar to the above, which, however, are confined to a single crescent, differ in the number and size of the eggs; and undoubtedly are deposited by some closely allied but distinct species. I introduce for comparison Mr. Marlatt's figure of the eggs and punctures which accompanied his first careful description of these, and his original identification of the author of the slits. I also reproduce figures of *C. taurina* and *C. bubalus* to bring out the imaginal differences between the two species which are so easily overlooked.* *C. taurina* is now to be associated with the egg-punctures which have previously been assigned to *bubalus* by most writers on this insect, following my reference to it in the Missouri report. I also here reproduce my original figures of the egg-punctures, preliminary stages, and adults, which illustrated my original article.

—Professor Riley, under the head of "Notes from 'Sunbury,'" showed a young sycamore tree transplanted on his grounds in a perfectly healthy condition last spring. In the course of the summer this tree was girdled by *Chrysobothris femorata*, the eggs of which must have been laid in the summer. The pupæ were all formed and the beetles will issue next spring. He also showed a yearling shoot of ash which had sprung up from an old stump that had been cut down the present season. It was oviposited upon by *Trochilium syringæ* the present summer and the adults began to issue the first of October. Both of these species, then, are sometimes shorter-lived in the larva state than is usually supposed.

Mr. Schwarz stated that he had noticed the adults of *Trochilium*

* Subsequently to the reading of this paper these two figures, the first of which was in preparation while I was yet in charge of the Division of Entomology, have appeared in *Insect Life*, Volume VII, No. 1, pp. 8-14, and are here reproduced by the courtesy of the Honorable Assistant Secretary of Agriculture.