The above is the earliest notice of *D. 12-punctata* as a corn insect of importance which I have seen. Unfortunately the writer does not state whether his conclusion as to the author of the injury was the result of inference, or was arrived at by carrying the larvae through their transformations. From the fact that he had not found pupae up to the time of writing, it is proper to assume that the transformations were not observed. As a possible clue to one of the original food-plants of the larva attention is directed to the fact that he found the beetles abundant on an Aster growing on cultivated ground. (From its yellow color the plant would appear to belong to some other genus.) If, as is not unlikely from an observation made by Prof. Lugger and reported farther on, the plants observed by Mr. Webster are attacked by the larvae, the fact may have an important economic bearing.

During the years 1889 and 1890 the injury from larvae to corn attracted attention over a wide area of country. To my knowledge it has been witnessed in Virginia, Alabama, Mississippi, Louisiana, Arkansas, Kentucky, Illinois, Indiana and Ohio.

My own observations began July 15, 1889, and have continued, as other work permitted, to the present time. A brief notice of the insect, its habits and stages, was printed in the Louisville Home and Farm, Sep. 1, 1889, and in November of the same year was followed by a more elaborate account of the transformations and descriptions of the stages, presented before a meeting of the Association of official economic entomologists at Washington. (See Insect life, v. 2, 179.) The latter paper is embodied in what follows, with the addition of observations made during the winter of 1889-90, and the spring of 1890.

(*To be continued.*)

THE PARTIAL PREPARATORY STAGES OF HETEROPACHA RILEYANA HARVEY.

BY G. H. FRENCH, CARBONDALE, ILL.

In 1887 I found larvae of this species feeding on the honey locust in two stages of their growth. At the time I was feeding quite a number of other larvae and did not make so full notes of these as could be desired, but what I did make are as follows:

Length, .45 inch. The body flattened beneath, the back rounded, head small, a fringe of white hairs on each side of the body. Color reddish brown with an indistinct dorsal stripe of a more distinct red, a stigmatal blackish stripe; head black, with a longitudinal fulvous line each side of the middle and a transverse line of the same about the middle of the front.

Next to last stage:—Length at moult .60 inch. Shape as in the preceding. Brownish red on the dorsum, but joints 8 and 9 gray on the sides leaving only a narrow dorsal brownish red stripe; joint 6 gray but less distinct.

the whole side gray tinged and the borders of the dorsal stripe of clear color outlined by gray touches; a dorsal line of clearer color indicated on the anterior joints; between joints 3 and 4 and between 4 and 5 on the dorsum a yellow transverse stripe that is hid when the larva is at rest; the head is less distinctly marked than at the other stage; the lateral fringe pink tinted. The dorsal stripe is more of a distinct red than the general ground color.

An interesting parasite was bred in this stage from one of these larvae, but at the time of writing it is misplaced so that I can not now say what it is. Its manner of pupation was as follows: When ready to spin its cocoon it burst open the under side of the host so that the skin of the dead Heteropacha larva formed a cover for the upper side of the cocoon. The ends of the dead larva were shrunken, but the middle where used as a cover for the cocoon was three times as broad across as the living larva had been. The pupal period of the parasite was 8 days, from May 20 to May 28.

Last stage—Length, 1.05 inches. Striped with 7 yellow stripes, a dorsal, subdorsal, suprastigmatal, and substigmatal, the first two quite dark almost orange, the other two paler and much narrower. The space between the dorsal and subdorsal black; a white patch between the joints breaks the subdorsal stripe and extends almost to the dorsal. Sides gray. Venter pale yellow, dull, a black patch to each joint. Head black, a short transverse buff streak in front; top of joint 2 black; short hair all over the body but not enough to very much obscure the colors, the hair on the upper part of the body mostly black but that along the sides above the legs gray.

The pupal period of the moth was 15 days, from May 22 to June 6. This was the period of the first one that pupated. Several others were raised but their periods were not noted. They continued to hatch to July 17, some being in the larva state when the first one emerged as an imago.

SMERINTHUS ASTYLUS.—A brood of twenty-four raised this past season, showed some variations from those of last year.

Eggs laid July 29th and 30th.
Hatched—Aug. 8th.
1st moult—Aug 16th.
2nd moult—Aug. 22d.
3rd moult—Aug. 29th.
4th moult—Sept. 5th.

Most stopped eating Sept. 14th, and pupated Sept. 18th to 30th, varying much in length of time required for this change. All these periods were shorter in 1890 than in 1889, except that between 2nd and 3rd moults. But three of the larvae kept on feeding till Oct. 15th—one dying just before that date. There was much greater variation in color in this brood. Twenty were much more marked with red than those of last year, while four had no red, even on the caudal horn! Three of these four were the three which continued feeding after the others had pupated. Every one lost the "bifid tip" of the caudal horn so that, in the last stage, no one could imagine that it had ever been bifid. *Ida M. Eliot, Caroline G. Soule.*

PROTHORACIC WINGS.—M. Charles Brongniart of Paris has just published in the Bulletin of the Société philomathique two plates representing three insects, differing considerably in structure, found in the rich carboniferous beds of Commentry, France, two of which show, besides fully developed meso-