

yellowish hairs and almost identical in form with those of *y-inversus* (Fig. 7, *b*, *c*).

Of this species I have seen but a single male, taken in 1884, by Mr. Morrison, in Colorado. In general appearance, as well as in the genital characters, it seems to be quite closely related to *P. y-inversus*.

Prodoxus sordidus, n. sp.—IMAGO.—♂. Expanse, 8-10 mm.; ♀, 11-13 mm. General color, creamy-yellow, the females showing the most white. A more or less distinct dusky or blackish posterior margin to the secondaries, the dark color broadening toward the apex. The undersurfaces have a tendency to metallic reflection and the darker color of the hind border of the secondaries is repeated. Abdomen grayish-brown dorsally, with iridescent reflection. Anal segment of ♀ reddish-brown, obliquely truncate from above, the tip rounded. Ovipositor yellowish-brown, slender and finely denticulate along the upper edge. Male claspers similar in shape to those of *decipiens* but more slender, the base comparatively broader and the apex more abruptly rounded; the basal side piece narrower and pointed at tip; the posterior edge with from 3 to 5 small slender teeth.

Described from 5 males and 5 females.

I first found this species in the flowers of *Yucca brevifolia* on the same occasion of the discovery of *Pronuba synthetica*, while other specimens were subsequently obtained by Mr. Koebele. In general appearance the species seems nearest related to *P. cinereus*, being, however, much paler, with the greater portion of the hind wings white.

COLEOPTEROUS LARVÆ WITH SO-CALLED DORSAL PROLEGS.

BY C. V. RILEY.

I have recently received from Mr. D. W. Coquillett, of Los Angeles, California, the larva of *Mordellistena pustulata*, which he found in the dry stalks, apparently of the previous year's growth, of *Xanthium strumarium*, and as they exhibit a peculiarity, viz., the possession of dorsal fleshy processes having the appearance of prolegs which belongs generally to the larvæ of this genus, I have thought it well to exhibit them to the Society, as also some other larvæ which possess similar characteristics. Many of the members will remember that at the 1890 (Indianapolis) meeting of the A. A. A. S., at which I was not present, Prof. H. Osborn read a note (published in the *Canadian Entomologist*, Vol. XXII, 1890, pp.

217-218), on a peculiar form of Coleopterous larva in which a striking peculiarity is mentioned in two larvæ, one found boring in the pith of a small ash twig, and the other in the stems of Helianthus. He was unable to breed the perfect insects or to identify the larvæ. The peculiarity of these two larvæ as described by Prof. Osborn was "a pair of prolegs similar to those often found on many caterpillars, but, strange to say, these are arranged on the dorsal surface" of the first six abdominal segments. It is more than probable that the specimen from Helianthus which Prof. Osborn stated to have a striking resemblance to a Languria larva was a larva of Mordellistena. That from ash twigs may also possibly belong to the same genus or even to some species of Cerambycid, especially of the groups Saperdini or Phytæciini. These "dorsal prolegs" have been described and figured by Edouard Perris in his *Larves de Coleoptères* in *Mordellistena pumila* and *M. perrisii* (pp. 331-335, Plate IX, Fig. 359) and in Cerambycids of various species—Saperda, Agapanthia, Phytæcia, etc (pp. 495-514, Plate XIII, Fig. 518). They are described by Perris as *ampoules ambulatoires*, which are greatly prominent, retractile, and divided into two lobes by a median depression, beset with little hairs, and covered with extremely minute spiniform setæ.

Similar organs are also very well developed in the genera Nacerdes and Asclera of the family CEdemeridæ as described and figured by Schiödte (Naturh. Tidskr. 12, 1883, pp. 540-546, tab. XVI, Figs. 2 and 12). The larvæ of both genera resemble each other greatly, and, when viewed from the side, are provided with 6 abruptly prominent "dorsal legs," one on each of the thoracic segments and one on each of the first three abdominal segments. When viewed from above each of these ambulatorial tubercles is seen to be divided into two "areæ scansoriæ" by a deep sulcus. In addition to these organs, and in addition to the well-developed though rather short, regular legs, these larvæ have ventral false legs greatly resembling those of Lepidopterous larvæ. In Asclera there are three pairs of such ventral legs, one on each of the first three abdominal segments, while in Nacerdes there are only two pairs situated on the third and fourth abdominal segment. Both larvæ are known to live in decaying wood.

In the same stalks in which Mr. Coquillett found his larva of *Mordellistena pustulata* he also found the legless larva of a Curculionid beetle, *Copturus adspersus*, and the 16-legged larva of a species of Pædisca belonging to the Tortricina. He conjectured that the Mordellistena larva was carnivorous, and proved it by finding that it fed upon the Pædisca larva, the empty skins of which he had frequently found in the very stems inhabited by the Mordellistena. The fact that Prof. Osborn found that one of his larvæ fed voraciously upon Dipterous larvæ found in the same

stems would confirm the carnivorous habit of at least some of the species of this genus in the larva state.

It is an interesting fact, however, in this connection, that all the larvæ of *Mordellistena* have not the carnivorous habit nor the dorsal tubercles so prominently developed, and I exhibit samples of four other species by way of illustration. In *Mordellistena unicolor* which I found July 13, 1874, in the stems of *Ambrosia artemisiæfolia*, and which was subsequently obtained by Mr. H. G. Hubbard from the stems of an undetermined plant at Detroit, Michigan, the dorsal tubercles are somewhat less developed than in those of *pustulata*, but still quite prominent.

A single larva from the stems of the tall grass *Triodia cuprea* was found April 8, 1888, the larva commencing work near the flower and gradually working down to the roots. At from one to two inches above the ground the stem is almost cut through so that it is frequently broken off by the wind. August 9th the perfect beetle issued and Chalcidid parasites were also bred from the same stem. The species appears to be *M. nubila* Lec.; but the species of the genus are difficult to determine, and Prof. J. B. Smith's paper has not helped to make the determinations easier. This larva has the tubercles least developed, but they are faintly discernible on the same joints as in the other species. This larva also differs from the others in the more rudimentary thoracic legs and comes much nearer in characteristics to the typical larva of *Mordella*.

A single larva, without number, from the stems of *Amarantus* also shows the dorsal tubercles but faintly developed.

In *Mordellistena floridensis* (Fig. 22), of which I exhibit good

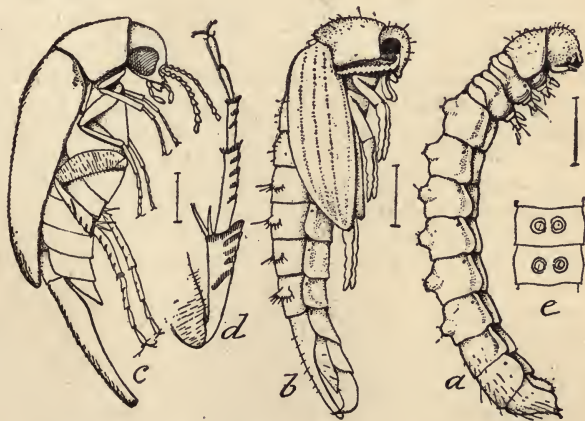


Fig. 22.—*Mordellistena floridensis*: a, larva; b, pupa; c, imago; d, hind leg of same; e, dorsal tubercles of larva seen from above (original).

biologic material, viz., 3 larvæ, 3 pupæ, and 2 bred adults, the dorsal tubercles are quite distinct on the first six abdominal joints. The larva was taken in the stems of *Uniola paniculata* by Mr. Schwarz at Lake Worth, Fla., in June, 1887, and he has referred to it in his paper in our Proceedings (Vol. I, No. 2, pp. 106-7) on insects found on *Uniola paniculata* in southeastern Florida, without particularly referring to the tubercles, and under the name *M. splendens*. Mr. Schwarz tells me that there can be no doubt as to its phytophagic habit.

Perris has remarked that the larvæ with ambulatorial tubercles preferably inhabit the stems of such annual plants as are hollow, as for instance grasses, and further that they always live singly, in contradistinction to the larvæ without such tubercles, which live always in company and affect more pithy plants without natural channels, and do not hollow out long open galleries. This is a perfectly legitimate inference, as these tubercles facilitate climbing in hollow stems and permit the larva to rapidly move about and ascend or descend in the burrows; but I suspect that another deduction is justifiable from the facts, namely, that the tubercles will be found most strongly developed in *Mordellistena* larvæ which are essentially carnivorous and which, as a consequence, do not make burrows themselves, but are well-fitted for using the burrows made by their victim and of thus moving freely about in them.

In general characteristics the larva of *Mordellistena* resembles somewhat that of *Mordella*. The body is, however, more curved, the thoracic legs longer, and the anal spinose tip more slender and less developed, so that the *Mordella* larva makes up for its lack of dorsal tubercles by the much stouter anal segment and the stouter spines connected with it. I have figured the early stages of *Mordella 8-punctata* in Le Baron's 4th Report on the Noxious and Beneficial Insects of Illinois, Figure 50, and I exhibit the original specimens of this species, and also the larva and pupa of *Mordella inflammata*, reared by Mr. Hubbard in Florida, and taken from rotten oak logs. In the pupa of *Mordellistena* the dorsal tubercles of the larva on the 3d, 4th, 5th, and 6th abdominal joints persist, and are, in fact, more strongly hirsute at tip, the development increasing from the 3d to the 6th, and in the pupa of *Mordella* there are some similar but less marked hirsute lateral tubercles.

I also exhibit old drawings (Fig. 23) taken from my early notes, made in 1867, of the larva and pupa of *Oberea schaumii* (my No. 118) reared, with a transcription from the notes showing that the larva was found in May and June, 1867, in the branches of small cottonwoods in North Chicago. The figures in the notes indicate the very deep insections and the tubercular or ridged appearance of the segments, especially on the dorsum. This char-

acter is also well shown in an unbred larva of *Oberea* from apple twigs, which is also exhibited. The development of these dorsal ridges or tubercles in the Cerambycid larvæ, so as to become aids

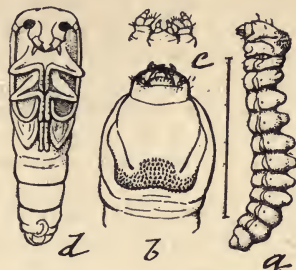


FIG. 23.—*Oberea schaumii*: *a*, larva; *b*, head of larva from above; *c*, labium and maxillæ of larva; *d*, pupa (original).

to locomotion, within hollow stems or burrows, is easily understood, because the larvæ of the whole family are characterized by having a series of dorsal plates more or less distinctly armed with hairs or spines and medio-dorsally divided, which aid in the movements within their burrows. It is evidently incorrect to call these abnormally developed tubercles prolegs, as they have none of the structures which distinguish the true prolegs from the various bulgings or tubercles which occur, whether ventrally, laterally, or dorsally, in sundry Coleopterous larvæ, and which, in some cases, as I have shown in the larva of *Colaspis*, become specialized appendages.

[*Transcript from Note-book.*]

NO. 118—CERAMBYCID LARVA IN COTTONWOOD STEMS (*Oberea schaumii* Lec.)

Found May 26th, 1867. Length 0.76. Color deep butter-yellow. Head slightly darker and jaws and mouth-parts black. Stigmata brown. Perfectly cylindrical and of the same diameter throughout, with the exception of first and last segments. Insections broad and deep. Head and mouth-parts protrude considerably forward and are characteristic. Makes a very smooth, cylindrical burrow, straight and lengthwise of the limb, the castings being of a deep reddish brown. Found in branches of small cottonwoods on north side of the city (Chicago).

June 6th.—Found more of them to-day, mostly in the pupa state. They probably live two years in the tree, as I found two sizes, the smaller measuring about .33 inch, otherwise being the exact counterpart of the mature worm. At the entrance where the larva was first hatched a rough, knotty incision is always found, and during the first year of its growth the larva does not enter the centre of the tree, but keeps on one side, just within the

sap-wood. Its burrow is at this time kept clean, with but a few grains of *white* excrement clinging to the sides, though afterwards it fills it full of brown excrement, or at least it becomes brown by the moisture. The white, chip-like pieces which I supposed to be pieces of the wood plucked off and the nutriment sucked out of them are really excrement, as I saw it passing from the larva. The pupa is of the usual color and is well represented in figure accompanying, its principal characteristic feature being the manner in which the antennæ are curled around the legs.

June 15th.—Difficult to breed to the imago, and, after losing dozens, with the best of care, I was rewarded at last with a single perfect specimen. It is the *Oberca schaumii*.

March 15th, 1868.—I found larvæ still in the trees, and that they live in the tree two years is more than ever evident from the fact that there are always two sizes.

Nov. 12th, 1871.—Find a larva indistinguishable boring the stem of *Salix longifolia*.

In discussing the note on tegulæ and patagia, Mr. Howard said that he had correctly defined these terms in the Century Dictionary, giving the Kirby and Spence signification to the word patagium as a pronotal sclerite. He also said that Comstock could hardly be said to have fallen into error in reference to these sclerites, since he correctly defines the tegulæ and simply adds (what is certainly true) that in descriptive works by lepidopterists these structures are called patagia.

Mr. Schwarz gave the reason why he was led to refer the Mordellistena from the stems of *Uniola paniculata* to *M. splendens* instead of *M. floridensis*. He stated that he had experienced some trouble in getting at the name of this species. By a clerical or typographical error in the table of Mr. J. B. Smith's synopsis of Mordellidæ no structural differences (number of tarsal ridges) were given between *M. splendens* and *M. floridensis*, but he found that the species from *Uniola paniculata* agreed perfectly with the type specimen of *M. splendens* in the Smith collection now preserved at the National Museum. Subsequently, however, he was informed by Dr. Horn that the second typical specimen of *M. splendens* in the Le Conte cabinet was specifically different from the Floridian species, and that the latter had to be referred to *M. floridensis*. Mr. Schwarz added that upon examination of many specimens of this Mordellistena he found that there was considerable variation in the number and extent of the ridges on