yellow band near tip; base of tarsi slightly lighter; coxae and trochanters yellowish or pinkish. Thorax beneath pinkish; venter reddish. First segment of beak brownish yellow, remainder blackish.

Male, about 5 mm. in length; similar to female.

PROTHETELY IN THE ELATERID GENUS MELANOTUS.

BY J. A. HYSLOP,
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Two papers on the abnormal phenomenon termed prothetely appeared last year in Psyche. In one of these papers six bibliographical references were given on the subject and in the other paper a seventh was added to this list. Dr. Adam Boving brought another interesting paper on the same subject, published in 1914, to my attention, and in looking over the literature two more papers were located.

The present paper deals with a very striking case observed at the United States Entomological Laboratory in Hagerstown. The subject was Melanotus communis Gyll.

On May 18, 1915, Mr. J. J. Davis sent the writer fifty-eight living larvae of Melanotus communis Gyll., collected near Cincinnati, Ohio, with the note that they were found damaging corn on river bottom land. These larvae were shipped in salve boxes filled with moist Sphagnum moss, and when received were isolated in similar boxes partly filled with moist earth and fed seed corn. The boxes were all placed in galvanized iron trays and the contents examined, cast skins removed, soil moistened when necessary, and new food supplied, weekly.

Strickland suggested as an explanation of the phenomenon of prothetely that it "is usually caused by keeping the larvae at an abnormally high temperature." The temperature to which this particular larva was subjected could not have varied to any appre-

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4 Tragardh, I., 1922, Fauna och Flora, pp. 245-255.
6 The writer was ably assisted in this work by Messrs. H. L. Parker and W. E. Pennington of the Station staff.

ciable extent from that of the fifty-seven other larvae of the same series in the same trays. Up to the date of writing, September 23, 1915, three adults have emerged from this material, all of which appear to be perfectly normal, only seven of the larvae have died and the remainder are moulting normally and feeding freely. In this same type of cage and in the same insectary, we have been carrying on experiments with about 2,000 Elaterid larvae from all parts of the United States and the West Indies.

However, this is the only instance of prothetely that we have ever observed. The soil with which these cages are filled is all taken from one potting bench. The amount and kind of food, I believe, can be eliminated as a factor in this particular instance as our larvae are always supplied with an excess of food. The lids of the boxes, which we use as cages, fit with varying degrees of tightness and the rate of evaporation is, therefore, very inconstant in any given series of cages. On account of this, the cages are only watered when, in the judgment of the examiner, it is necessary. This introduces a large personal factor and could easily result in a cage becoming much more dry or moist than the other cages of the same series. As this seems to be the only variable, I am inclined
ormal and prothetelous larva and normal pupa of *Melanotus communis.* Fig. 1, dorsum of normal larva. Fig. 2, ventron of pupa. Fig. 3, dorsum of prothetelous larva. Fig. 4, ventron of prothetelous larva. Fig. 5, lateral aspect of prothetelous larva.
*Melanotus communis* normal and prothetelous larva. Fig. 1, dorsum of the head of prothetelous larva. Fig. 2, prosternum of normal larva. Fig. 3, 9th and 10th abdominal segments of prothetelous larva. Fig. 4, dorsum of head of normal larva. Fig. 5, prosternum of prothetelous larva.
to believe that an abnormal humidity factor at or shortly before
the time of pupation is the causative stimulus of this phenomenon.

The accompanying plotted curve (Fig. 1) indicates the period
in the activity of the series, when the individual in question
transformed to the abnormality herein described. The cages
had all been examined on September 3. In examining the cages
September 8, the prothetelous larva was discovered. This was
a period of minimum moulting immediately preceding a very
abrupt and extensive moulting period. The moulted skin of this
larva was perfectly normal in every respect and, by careful com-
parative measurements, was found to be very nearly identical with
the last larval skin; that is, the skin shed when a pupa is formed
under normal conditions. The table (Fig. 2) shows the measure-
ments of this cast skin as compared with a larval skin from the ulti-
mate and penultimate instar.

This prothetelous larva is (Plate II, Figs. 3, 4, and 5) predomi-
nantly larviform. The abdomen is typically so and normally
chitinized, with the exception of a pair of membranous papilliform
areas on the posterior margin of each sternite except the ninth
(Plate III, Fig. 3). The thoracic sterna are membranous except a
triangular area on the prosternum (Plate III, Fig. 5), which is nor-
mally chitinized. The membranous areas are decidedly protuberant.
The coxae and trochanters are larviform with typical pupiform
femora, tibiae and tarsi. The ventral part of the protergite is
membranous and very much expanded posteriorly. A pair of
anterior and a pair of posterior papillæ are borne on the spiracular

<table>
<thead>
<tr>
<th></th>
<th>Penultimate Instar</th>
<th>Ultimate Instar</th>
<th>Larval Skin of Prothetelous Larva</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of dorsum of 9th abdominal segment</td>
<td>2.782</td>
<td>3.103</td>
<td>3.156</td>
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<tr>
<td>Width of dorsum of 9th abdominal segment</td>
<td>1.979</td>
<td>2.193</td>
<td>2.193</td>
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<tr>
<td>Length of dorsum of 1st thoracic segment</td>
<td>1.498</td>
<td>1.819</td>
<td>1.712</td>
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</tbody>
</table>