

enthält der runde Zapfen, auf welchem sie sitzen, markbildende Zellen und Mark. Dieses Mark ist jedoch nicht in continuirlicher Verbindung mit dem Mark der Hornfaser, welcher das Büschel aufsitzt, sondern durch die Rindenschichten der alten Faser davon getrennt. Ausgewachsene Zweige zeigen aber stets einen continuirlichen Zusammenhang ihres Markes mit dem Mark des Stammes, was ein secundäres Durchbrechen der Rindenschichten der Stammfaser beweist. Ich habe auch einige Fasern beobachtet, bei denen dieses Durchbrechen eben stattfand, und sah dann deutlich, wie von der Kuppel der markbildenden Zellen aus ein Fortsatz gegen die Ursprungsstelle der Zweigfaser hin wucherte.

3. A new Species of *Branchiobdella*.

by Prof. C. O. Whitman.

Hitherto only two species of *Branchiobdella* have been distinguished on *Astacus fluviatilis*, namely, *B. astaci* Odier and *B. parasita* Henle. An examination of specimens obtained from the River Crayfish of Leipsic for purposes of comparison with species found in Japan has shown that *A. fluviatilis* agrees with *A. Japonicus* in bearing three distinct species of *Branchiobdella*. Although the Japanese species will be described elsewhere, I may here mention that there is a correspondence in size as well as in number between them and the European species, there being one comparatively long (10—15 mm) and two short species (2—4 mm) in each case.

In each of the Japanese species the two lips (dorsal and ventral) are tentaculiferous, while in the continental species the lips are entire in the new species, very faintly two-lobed in *B. astaci*, and more or less distinctly four-lobed in *B. parasita*¹.

The jaws have a characteristic form and size for each species; and the number of denticles forms an important diagnostic character. The denticles are more numerous in the Japanese species than in the European. In *B. parasita* there are seven denticles (1 large median and 3 small lateral on each side); in *B. astaci*, six (2 large lateral and 4 small intermediate). The new species has five denticles on each jaw (1 large median, 1 somewhat smaller lateral and 1 still smaller intermediate on each side, and may therefore be called *B. pentadonta*. The jaws, viewed from above or below, are triangular in *B. parasita*, and sub-crescentic in *B. astaci*.

¹ These lobes are not mentioned by Dörner, Zeitschr. f. wiss. Zool., B. XV, p. 464.

In *B. pentadonta* the jaw is about twice as wide as long, as in *B. astaci*; but the large median denticle, gives it a pentagonal form.

The larger specimens measured as follows :

Length at rest 3 mm, in extension	4.5 mm
Width of the first cephalic segment	0.2 -
- - - second - -	0.3 -
- - - first somite	0.225 -
- - - seventh (widest) somite	0.45 -
- - - disc	0.275 -
Length of the head	0.4 -



Lower jaw of
B. pentadonta
× 465.

This species is readily distinguished from *B. astaci*, with which it agrees nearly in size, by the form and structure of its head and by the form of its body. In *B. astaci* the head is composed of four segments, while in *B. pentadonta* there are only two cephalic segments, one small anterior segment and a large posterior one. In *B. pentadonta* the body is much wider near the middle than at the ends; but in *B. astaci* the width is very even. Short stout hairs may be seen along the entire margin of the body in the new species, and these are larger and more numerous along the edges of the lips. The lips are entire, and, as in other species, the upper lip is plainly longer than the lower. The oral papillae are comparatively long and slender and 14—16 in number. The receptaculum seminis is pyriform as in *B. parasita*, and the species is thus easily distinguished from *B. astaci* in which the receptaculum is cylindrical. That *B. pentadonta* is not a young stage of *B. parasita* is perfectly certain. The penis of *B. parasita* is armed with small hooks at the end and has a bulbous enlargement at the base; in *B. pentadonta* the penis is perfectly straight and smooth, showing no trace of hooks or of a bulbous enlargement. Then the jaws are quite different in form and in the number of denticles. *B. pentadonta* is found, so far as I have observed, chiefly on the anterior pair of ambulatory limbs, on the inner side of the first long joint. *B. parasita* is found on the eye-stalks, the ambulatory limbs, and the abdomen. I have found it in much greater abundance on the abdomen than elsewhere. *B. astaci* is found only on the gills.

Leipsic, Sept. 10. 1882.

4. Zur Entwicklungsgeschichte der Ausführungsgänge der Sexualdrüsen bei den Insecten.

Von Joseph N u s b a u m aus Warschau.

Von meinem hochgeschätzten Lehrer, Herrn Prof. M. S. G a n i n, angeregt, habe ich ausgedehnte Studien über die Entwicklungsge-

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