

WILLEM ON APTERYGOTA.

The recent memoir, *Recherches sur les Collemboles et les Thysanoures* (Brussels, 1900) by Victor Willem, is a work of exceptional importance. It gives an abundantly illustrated account of the anatomy of the principal genera of Collembola, supplemented by valuable morphological and phylogenetic discussions upon Apterygota.

The author sustains the view that the ectognathous forms are the more primitive. Willem agrees with Fernald that the ventral tube is supplied with an adhesive fluid by a pair of cephalic glands and defends this interpretation. The lateral eyes of most Collembola are shown to be, not ocelli, but entone constituents of aggregate eyes; in certain Poduridae, however, the eyes are simple ocelli. Grenacher's theory of the ocellar derivation of compound eyes receives strong support. The postantennal organs are perhaps olfactory in function. Abdominal appendages of Thysanura are regarded as modified limbs. The fat body is hypodermal and doubtless excretory among Collembola. Willem gives critical observations upon oogenesis and spermatogenesis.

In style, the memoir is refreshingly concise and clear, — so consistently concise, in fact, that the criticisms upon other works are often more abrupt than elegant. Although the seventeen plates are left to tell their own story as far as possible, the work is a mine of new information and is indispensable to future students of the Apterygota.

The Royal Academy of Belgium awarded Willem six hundred francs for this deserving memoir.

THE INNER COCOON OF ATTACINE MOTHS.

BY CAROLINE G. SOULE.

Promethea, angulifera, gloveri, ceanothi, and *cecropia* spin the mouth of the inner cocoon in the same way. On pulling off the outer cocoon the inner one is found to be an oval bag, firm and tough, with one end "gathered," like any bag shut by pulling a draw-string, but in the cocoon there is no drawstring. The gathers, or puckers, are not quite regular, but they bring the edge of the cocoon to a central point, closing it as much as is necessary to protect the pupa. When the moth is ready to emerge it has only to push through this end of the cocoon when the "gathers" spread out and exit is easy without any dissolving fluid or cocoon-cutters.

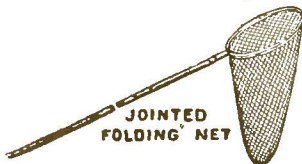
How the caterpillar gathers the end of the cocoon I have not been able to discover, nor can I see what holds the gathers in place at the same time allowing them to spread out when necessary. Of course the pressure of the moth spreads them, but how were they made to draw together, and what trick of spinning held them together without making them immovable?

However done it is a beautiful bit of work, and gives the Attacinae the easiest possible exit from their cocoons.

A. SMITH & SONS, 146-148 WILLIAM ST., New York.

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