

MORPHOLOGY OF THE PALEOZOIC ORDER PALAEODICTYOPTERA

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In the course of a revisional study of the Palaeozoic order *Palaeodictyoptera*, based on Carboniferous material from the Commeny shales of France, the author has noted additional morphological features not previously reported or fully understood. The following is a summary of the body structure of these insects as it is now known. The head was small but extended to form a long, prominent beak, which included four stylets, apparently forming a sucking apparatus. One pair of palpi, probably the maxillary pair, were normally developed. The clypeus was large and swollen, resembling that of the *Homoptera*, with transverse ridges. In all probability the cibarium was developed much as in the true bugs. The antennae were of moderate length and included numerous segments. The prothorax possessed paranota which were usually in the form of rounded lobes and which were not rigidly fused with the notum to form a prothoracic shield. The pronotum was margined laterally, at the junction with the paranota, with a distinct cuticular ridge. In most cases the paranotal lobes contained cuticular thickenings resembling a venation, which was perhaps homologous with that of the wings of the pterothorax; in a few species the paranota were irregular in form and otherwise modified. Both fore and hind wings had a short basal vein between the costa and subcosta, apparently comparable to the costal brace of Paleozoic *Ephemeroptera*; in some species the costa is bordered anteriorly by a thin strip of wing membrane for its half length and in others there is a prominent precostal area basally. An oblique cuticular ridge, extending across the basal parts of the anal veins is present in some fore and hind wings, though its significance is not clear. The legs of the *Palaeodictyoptera* were usually short and spiny and adapted for walking or possibly climbing. The tarsi were five-segmented and the pretarsus included a pair of claws and an arolium. The tibiae in specimens which have been studied show what appears to be a small segment adjoining the femur. The abdominal segments are little-known but in *Stenodictya* and related genera the segments were strongly sclerotized with lateral extensions of the tergites, which possessed oblique furrows. A distinct ovipositor, either short or long, but usually curved was consistently present, it was apparently composed of valves similar to those found in some of the *Odonata*. The male of *Stenodictya* had lateral, segmented claspers.

In spite of the presence of a prominent beak, the *Palaeodictyoptera* possessed some features suggestive of the *Ephemeroptera*. However, their nymphal forms are not known. The adults, however, so far as known, indicate that the order was a very diverse one, with specializations and adaptations related to many types of environments.

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MODALITES DE LA RÉDUCTION ALAIRE CHEZ LES BLATTARIA

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Les organes alaires caractérisent l'état imaginal de la grande majorité des Insectes ptérygotes actuels. Néanmoins ces ailes peuvent être réduites ou non développées chez certaines espèces; en effet, une évolution plus ou moins marquée qualifiée de régressive a conduit à la manifestation d'un polymorphisme alaire soit sexuel, soit spécifique, soit ordinal. Le constat de cette morphologie imaginaire différente selon les sexes, les espèces et les genres à l'intérieur d'un même ordre pose le problème général de l'évolution qui, partant d'insectes ailés aboutit à des formes aptères. La morphogenèse, considérée souvent comme un rappel des grandes étapes de la phylogenèse, permet d'analyser les processus qui ont présidé, chez les *Blattaria*, à l'établissement d'un tel polymorphisme alaire. Les modalités par lesquelles on arrive à des ailes imaginaires plus ou moins développées semblent y atteindre le maximum de complexité jamais décrit chez les Insectes. On doit à ce point de vue distinguer deux grands groupes de *Blattaria*.

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