

It might be mentioned that on the basis of certain points of similarity between the alimentary canals of *F. auricularia* and some Phasmids, Bordas (1897) grouped the Dermaptera and the Phasmida (ranked by him as the families Forficulidae and Phasmidae, respectively) into the same suborder, the Acolotasia, within the Orthoptera *s. lat.* These points of resemblance include the division of the alimentary canal into six distinct parts, the complete absence of enteric caeca, the fairly well developed salivary glands, the relatively numerous malpighian tubules and the small gizzard. However, these features are insignificant beside the tremendous weight of evidence provided by the exoskeleton which places the Dermaptera and the Phasmida in separate orders of the Orthopteroidea, and fairly widely separated as well (Giles, 1963).

Technique

The gut was examined in 1% saline and dissections carried out on material hardened in 70% alcohol. For histology, Eltringham's Fixative B (Eltringham, 1930) gave good results, followed by impregnation using the technique of Awati (1914) for whole insects. Erlich's haematoxylin counterstained with van Gieson proved satisfactory.

For electron microscopy the peritrophic membrane was dissected out of the alimentary canal in pieces and as much debris as possible cleaned away. A suspension of the membrane in water was subjected to 10 to 15 seconds' ultrasonic cleaning and disintegration in an M.S.E. head with a Mullard amplifier. Droplets of the suspension were then transferred to a grid, dried and shadowed with gold-palladium. Examination was by means of Siemens Elmiskop I and II microscopes.

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OUTLINE OF THE STRUCTURE OF THE ALIMENTARY CANAL

The gut, which is almost straight, except for a slight flexure in the oesophagus and a single coil in the anterior intestine, is generally similar to that of an Orthopteroid insect (Fig. 1). The slit-like preoral cavity is marked off from the stomodaeum by the paired oral arms of the suspensory apparatus of the hypopharynx. The pharynx passes upward and backward from the mouth to the middle of the head. The oesophagus is only slightly wider than the pharynx and passes back through the neck into the prothorax where it dilates into the large pyriform crop which extends back to the first or second abdominal segment. The proventriculus is seen as little more than a very narrow ring, the remainder of the organ being almost obscured by the crop and the midgut.