

S.E.M. observations on plerocercus larvae of *Floriceps saccatus* Cuvier, 1817 and *Molicola horridus* (Goodsir, 1841) (Cestoda; Trypanorhyncha) from sunfish (*Mola mola*).

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A topographic description of the plerocercus larva of *Floriceps saccatus* is given. The larva was found to be covered by palmate or paw-like microtriches, not only on the adherent surface of the bothridia as earlier described from adult trypanorhynch cestodes, but all over the plerocercus down to the region of pars proliferus. In the latter region 'normal' cestode microtriches were observed. On the surface of the plerocercus larva of *Molicola horridus*, however, no structure or microtriches were observed due to a true invagination of the scolex part of the larva.

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INTRODUCTION

Studies done by S.E.M. on the surface topography of adult cestodes belonging to the order Trypanorhyncha are rare (Whittaker & Carvajal 1980, Whittaker *et al.* 1982, McCullough & Fairweather 1983). S.E.M. observations on larval forms of these cestodes do, to the best of my knowledge, not exist. Palmate or paw-like microtriches are earlier described from the adherent surface of the bothridia of some adult Trypanorhynch species (Halton & McKerr 1979, Whittaker *et al.* 1982, McCullough & Fairweather 1983, Whittaker 1985). Whittaker *et al.*, 1982 point out that it would be of interest to examine metacestodes as well as other adult Trypanorhynch species to determine if differences or similarities in microtrich morphology exist. According to Dollfus (1942) who described the morphology of the Trypanorhynch plerocercus larva, a true invagination of the scolex does not exist among Trypanorhynchs. Where such seems to be the case, it is not a true invagination but a sinking-in, as it were, of the bothridial and metabothridial regions into a depression of the blastocyst surface (see Wardle & McLeod, 1952, figs 159 and 160).

MATERIAL AND METHODS

The specimens examined were found in two sunfish *Mola mola* (L.) caught in nets in the Oslofjord on two different occasions; one in september 1981 and the other in October 1982. The plerocercus larva of *Floriceps saccatus* Cuvier, 1817 was found in small roundish capsules on the inside of the body-wall while *Molicola horridus* (Goodsir, 1841) was found in the liver. The larvae were fixed in 4% formaldehyde and then kept in 80% alcohol.

For serial sectioning the worms were embedded in paraffin wax, cut at 7 μ m and then stained with Azan or acetocarmine. The procedure for S.E.M. observations was as follows: the worms were dehydrated in an ascending series of alcohol and ether and air dried. They were then positioned on metal stubs, rotary coated with gold-palladium and examined with a Jeol 35-C Stereoscan at 10—20 KV.

RESULTS AND DISCUSSION

Plerocercus larvae of *F. saccatus* were found in small roundish capsules. In each capsule there was one plerocercus larva, the holdfast was withdrawn within the receptaculum of

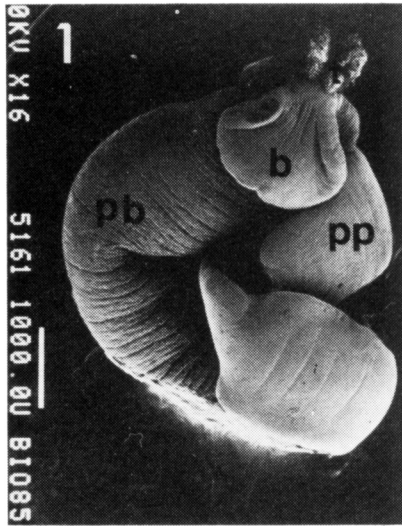


Fig. 1. *F. saccatus* removed from the blastocyst, tentacles mostly withdrawn.
 b = bothridia
 p.b. = bulbosal region
 p.p. = region of pars proliferus (growth zone)
 t = tentacles



Fig. 2. *F. saccatus* removed from the blastocyst, tentacles extruded.
 b = bothridia
 t = tentacles

the blastocyst. When removed from the blastocysts (Figs. 1 and 2) the scolex and bothridia were visible, some had their tentacles withdrawn while others had them extruded (Figs 1 and 2).

Studied at high magnification in S.E.M. (Fig. 4 a, b) the plerocercus larva was found

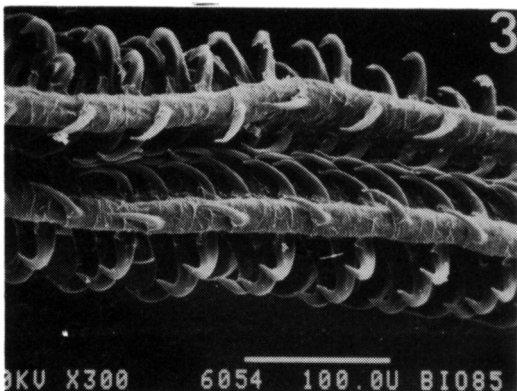


Fig. 3. Armature on tentacles of *F. saccatus*.

to be covered with typical palmate or paw-like microtriches. These microtriches were, however, not as earlier described from adults (Halton & Kerr 1979, McCullough & Fairweather 1983) only found on the adherent surface of the bothridia, but all over the anterior part of the larva down to the region of pars proliferus. In the latter region nearly 'normal' cestode microtriches were observed (Fig. 5). Figure 6 shows a longitudinal section of a larva showing the posterior part of pars bothridialis with two bulbs and the anterior part of the pars proliferus.

The plerocercus larva of *Molicola horridus* is very characteristic (Fig. 7). This plerocercus is not incapsulated by the host. The scolex part of the larva is invaginated into an anterior vesicle (blastocyst) with an extremely long tail. True invagination of the scolex part is not supposed to occur among Trypanorhynch larvae (Dollfus 1942). However, when the scolex part of *M. horridus* was removed from this anterior vesicle (Fig. 8) it

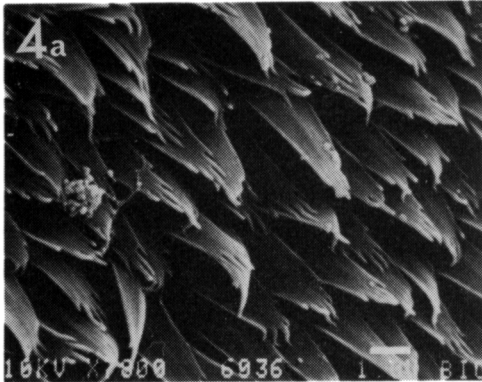
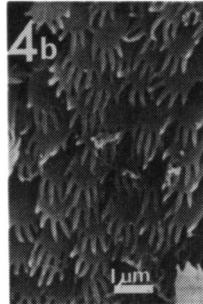


Fig. 4 a and b. *F. saccatus*.
a — Palmate microtriches from bulbosal region.



b — Palmate microtriches from adherent surface of bothridia. bar = 1 μm

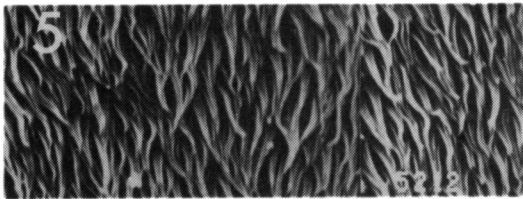


Fig. 5. *F. saccatus*. 'Normal' microtriches from the region of pars proliferus. bar = 1 μm

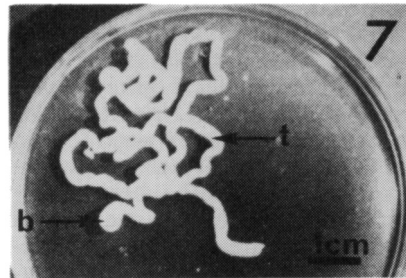


Fig. 7. Plerocercus larva of *Molicola horridus*.
b = anterior vesicle of blastocyst
t = tail

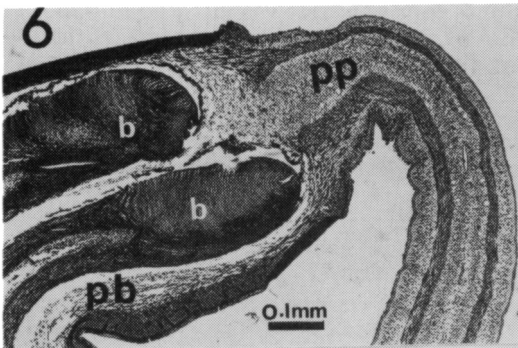


Fig. 6. Longitudinal section of *F. saccatus*.
b = bulb
p.b. = bulbosal region
p.p. = region of pars proliferus



Fig. 8. Scolex part of *M. horridus* removed from vesicle.
b = bulb

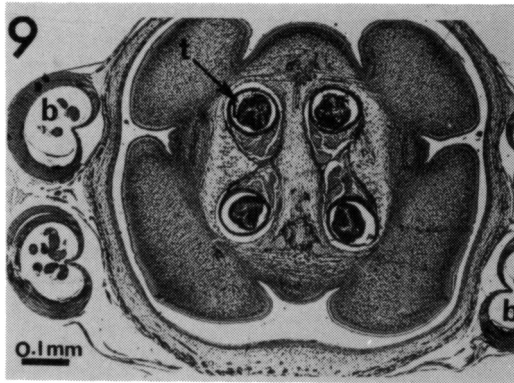


Fig. 9. Horizontal section of scolex part of *M. horridus* removed from vesicle.

b = bulb

t = tentacles

looked very different from other Trypanorhynch larva. It was covered by a thin 'wall' and no clear structures and no microtriches could be traced. In sections of this scolex part (Fig. 9) the 4 bulbs were located on the outside of the 'scolex'. This is only possible if the scolex is truly in invaginated.

In Trypanorhynch systematics much of the classification and identification is based on the armature on the tentacles. Figure 3 shows the tentacles of *F. saccatus*. This illustrates that S.E.M. seems to be a very good tool to examine and describe the armature on Trypanorhynch tentacles. To the best of my knowledge, no such studies do yet exist. All descriptions only include drawings of different qualities of the tentacles and their armature.

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