

coating, which is attached by radial fibrous bands to the cephalic musculature. The rhynchodæum is thus suspended in the cephalic blood-space, as was formerly (IX) described by me in *Carinella*.

The histological difference between the vacuolated cells of the rhynchodæum of *Carinina* and the cells of the outer integument, is less than that between the former and the epithelium of the proboscis proper.

A comparison between figs. 3, 4 of Pl. III., fig. 1 of Pl. IV., and figs. 1-3 of Pl. VI. will sufficiently demonstrate this, vacuolated cells playing a very prominent part in the outer strata of the integument in *Carinina*. Still the three epithelia (external, rhynchodæal, and proboscidian) are immediately contiguous, the passage from the one to the other being gradual and only in the latter case relatively abrupt.

In the rhynchodæum of the Schizonemertea and Hoplonemertea the cellular and ciliated layer of the rhynchodæum of the earliest Palæonemertea has been relegated to the background, and the whole has become more a muscular sheath, in which the muscles have, however, a different arrangement in the first and in the second group. The increase in muscularity is in the Schizonemertea more a regular thickening of the fibrous investment, whereas in the Hoplonemertea it is much more massive in one region than in the other. In this way an annular and massive muscular sphincter (as it may be adequately termed) arises in the posterior part of the rhynchodæum (Pl. X. fig. 3, *Sp. Pr.*).

In this muscular sphincter longitudinal and circular fibres are very intimately interwoven, more or less in basket fashion, as indicated in the figure. Moreover, the connection with the general musculature of the head is again brought about by radial bundles, also visible in the figure.

Of the Schizonemertean rhynchodæum no special figure is given; it answers to the short description which was given above, it can be well observed in several figures in M'Intosh's monograph, and, like the rhynchodæum of the other groups, it reaches backwards just as far as the implantation of the proboscis in the musculature of the head. The epithelium of the rhynchodæum is in most cases distinctly ciliated.

The proboscis itself has been the subject of so detailed study and so elaborate description by M'Intosh and other investigators, that I must necessarily restrict myself to those few points on which the Challenger material furnishes certain deviations or additions.

The inner epithelium of the proboscis of *Carinina* shows considerable differences according to the region under observation. In front there are papillæ of a more or less arborescent shape, on which a coating of fairly large cells, with distinct nuclei, and partly vacuolated, is present. Posteriorly the cells are lower and more closely set (Pl. III. figs. 1, 2, *Pe*). This may be partially the result of a different state of contraction, by which the anterior portion is thrown more into folds.

The difference is, on the other hand, further accentuated by the presence of a con-