

excretory canals forming the foramina secundaria which appear in tangential sections as circular openings in a homogeneous matrix. Since these course through the cuticle quite obliquely, they give the latter the appearance of being pierced with holes at different levels. Two of them are shown in Fig. 7, one having reached the outside while the other has not yet passed the basement-membrane.

In many cases a splitting of the outer layer of the cuticle into processes takes place evidently along the lighter striations. It is quite conceivable that the cuticular processes, if not "cilia", described for many *Bothriocephalids* may arise in this manner in young scolices.

The cuticle covering the scolex is, on the whole, somewhat thinner than that on the posterior proglottides. This statement is also applicable to that on the inside of the auricular appendages of the scolex and foremost joints. The other modification of the cuticle, referred to above, is best seen in young scolices where the minute spines have not been worn away. It will be seen, by reference to Fig. 8, that the latter are developed as a thickening in the outer layer followed by a breaking up of the material into stout spine-like processes. These minute spines are restricted to a very narrow line running along the edge of the auricle, and are all directed towards the inner concave surface of the latter, that is, towards the central longitudinal axis of the worm. They gradually disappear with the appendages posteriorly. Since these spines appear in great numbers, and, since the appendages are provided with well-developed sets of muscles (v.i.), obviously arranged to activate them, they must be of actual service to the worm in obtaining a hold on the smooth mucous lining of the host's intestine.

SUBCUTICULA.

The subcuticular cells (Fig. 7) are not clearly defined as to boundaries but are fused together to form a syncytium the extent of which is indicated chiefly by the nuclei. There are, however, condensations of protoplasm around the latter in ripe proglottides, giving the appearance of columnar cells which have been described for many *Bothriocephalids*. These may even be more or less distinct towards the centre of the proglottis, yet they are directly continuous with processes from the cells of the parenchymatous tissue beneath, the whole forming in many places a meshwork of protoplasmic strand surrounding vacuoles, as shown in the left of the figure. The nuclei are comparatively large structures with well-defined walls, non-uniform in thickness, and clear contents, excepting for the deeply-staining "nucleoli". The thickness of the subcuticula varies in different regions, especially since its inner boundaries are rather indefinite, averaging about 25μ . Numerous processes proceed towards