

as a cover-cell, at least I imagine not, as the slice in which it occurs is of extreme thinness and the section passes through the very middle of the spermatoblast cluster.

In later stages also one observes spermatoblasts in which the outer wall has been reduced almost to invisibility, forming an outer layer to those less advanced which lie in the interior, and finally one can trace the filaments or tails of nearly mature spermatozoa radiating outwards from the cluster, while the inner spermatoblasts remain in a state corresponding to that of the preceding stage. The nearly mature spermatozoa just mentioned consist of an oval head 0.002 mm. long, with the pale margin still surrounding the nucleus, and a tail which can be measured for 0.012 mm. in length. The excurrent canals in the neighbourhood of the sperm-bearing regions are partly filled with a finely granular stained material which consists of discharged spermatozoa.

*Skeleton.*—Surrounding the strongyles one observes a thin layer of material of somewhat higher refractive index than that of the sarcenchyma, and in places at irregular intervals this bulges out into oval nuclei, about 0.006 mm. in length, and containing a small spherical nucleolus. The nuclei are flattened against the spicule, and their appearance is suggestive of the existence of a layer of cells surrounding it. It is possible that an irregular film of spongin is associated with the spicules and that the nuclei are those of sponginoblasts.

The strongyles vary considerably in the nature of their terminations, on the one hand pointing towards an oxeate origin, and on the other indicating a tendency to a more pronounced strongylate type. Thus in the average form a slight attenuation occurs as a preliminary to rounding off, and in many cases this becomes so marked that the spicule would be better described as an oxea with a rounded point; in other cases, on the contrary, the strongylation is abrupt and a typical strongyle results. In one or two cases tylostrongyles were observed, the terminal accumulation of silica which we may infer to have converted the oxea into a strongyle having proceeded a step further and rendered the strongyle tylote at one end.

The strongyles are disposed in spicular fibres, which near the cortex are directed towards it at right angles, but away from it they appear to wander without rule, a general tendency to run parallel to the walls of the canals being, however, observable. The orthotriænes appear only at the cortical ends of the fibres, lying with their cladi extended in the fibrous layer of the cortex; hence their rarity in mountings of the separated spicules.

The possibility of the formation of large asters by an overgrowth of small ones is suggested by the occasional occurrence of abnormally large globules (Pl. XXVII. figs. 7-9), which sometimes occur singly, sometimes united together, two or three at a time. These show concentric rings of growth surrounding a central core of substance of the same character as the axial fibre of actinal spicules. The spherules may be frequently observed within the granular cells of the mesodermal sarcenchyma (Pl. XXVII. figs. 16, 22).