layer which is described by Sharp as alveolar, but which in my material exhibited the same staining reactions as the inner boundary layer of the ectoplasm. This layer could be followed into the folds that comprise the various outer and inner lips and furrows at the anterior end of the body. It is also thicker here than in the posterior end of the body. In a number of places it is reflected back upon itself for considerable distances especially in the area where Sharp describes the motorium. In fact, in the thin and well-destained sections a fold of this layer resembled in size, shape and position the motorium figured by Sharp, and no other tissue could be differentiated which could be made to answer for this body. Sharp's drawings are all semidiagrammatic, made by superimposing camera lucida sketches of several sections. It is, therefore, difficult to compare them with sections on slides. From my point of view his microphotographs of hematoxylin preparations indicate that his slides were not sufficiently destained. For example, his Fig. 15, plate 6, shows in addition to the motorium another mass equally dense on the ventral side of the cytostome and still another in the dorsal membranelle zone. This author states that the inner boundary layer of the ectoplasm stains very deeply. The writer has noted repeatedly that in sections of three microns the hematoxylin stain disappears from this layer after treatment for from three to five minutes with 2 per cent. iron alum, whereas the nuclei, the pellicle with its underlying ectoplasmic layer, the myonemes and the basal granules of the cilia remain black or bluish black for nearly an hour. The mass which appears to correspond to the motorium is completely destained in all my hematoxylin preparations, though, as Sharp reported, it usually retains the acid fuchsin of Mallory's stain as does also the inner boundary layer of the ectoplasm and the micronucleus. On the basis of my interpretation the motorium is a fold of an ectoplasmic layer which forms a cylinder surrounding the esophagus and also underlies the ciliary rootlets of the membranelles because it extends into all the lips and furrows at the anterior end of the body. It is obvious that sections through this layer would appear as strands. The conditions set forth by Sharp for a coordinating nervous mechanism do not, therefore, appear to be fulfilled in the structure that the writer finds in this ciliate.

OBSERVATIONS CONCERNING THE DIET OF *Diplodinium ecaudatum*

According to Sharp this ciliate lives solely upon bacteria, but my observations indicate that it ingests much larger food particles. Individuals taken from a steer that had been feeding on green grass appeared to have eaten some of this material. One case of cannibalism was noted. The smaller ingested ciliate was not crushed by passing through the esophagus of its captor; digestive processes had not at the time of fixation progressed sufficiently to interfere with the staining reactions. The wall of the esophagus of *Diplodinium* appears to be folded into longitudinally extending accordion-like pleats which permit marked distention. Sharp's figures indicate this folding but he makes no comment. It is difficult to conceive how the passage of the ingested ciliate through the esophagus of its captor could have occurred without breaking the esophageal ring as Sharp figures this structure.

COMMENT AND CONCLUSIONS

My interest was directed to the observations herein reported by the fact that disruptions of certain intestinal ciliates in unfavorable environments occurred by an outflow of the endoplasm through the cytostome. The digestive systems of the Protozoa, unlike those of the Metazoa, are characterized by a break of the layers. The pellicle and ectoplasm which line the mouth and esophagus are broken through at the distal end of the latter organelle. What prevents under normal conditions the outflow of the fluid endoplasm? This question led to the development of the above-mentioned method of sectioning individual Protozoa in the same way that embryos are sectioned. It is obvious also that the presence or absence of nerve-like fibers will have a bearing on the answer to the question. The writer realizes fully the responsibility for the stand that is here maintained because Sharp's researches led the way to a number of successful investigations of neuromotor systems of various ciliates from widely separated groups.

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