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**The Histopathology of Crepidostomum sp. Infection in the Second Intermediate Host, Sphaerium striatinum**

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The life history of *Crepidostomum cornutum* (Osborn, 1903) was originally described by Amee (1937) and later verified by Cheng (1957) who included the description of the metaceceral stage which is encysted in the cardiac region of crayfishes. In Sinking Creek, Giles County, Virginia, the crayfish intermediate host is *Cambarus bartoni sciotensis* Rhodes. During the summer of 1958 the authors, while working with other helminths known to be present in Sinking Creek, were amazed at the number of empty bivalve shells identified as *Sphaerium striatinum*, the first intermediate host of *C. cornutum*. A concerted effort resulted in the collection of over 100 living specimens of this bivalve from a 100 foot segment of the creek, under and on each side of the covered bridge on the Pembroke Road. In addition to these specimens, hundreds of empty shells were found. The other mollusces in the same area were seemingly healthy.

**Observations**

A few of the bivalves were dissected in the laboratory and all were found to be infected with first and second generation rediae of *C. cornutum*. The remaining clams were placed in distilled water and within 12 hours most were releasing cercariae. Twenty five clams which were not shedding cercariae were dissected without revealing any evidence of infection. All were gravid females. All of the males examined were heavily infected. The mother rediae were releasing cercariae.

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are located on the gills while the daughter rediae are in the hepatopancreas. No conclusive explanation can be offered at this time for the observed sex difference; perhaps there is some hormonal action in gravid females which brings about a resistance to further infection.

Infected clams were sectioned at 10 microns and stained with Mallory's Triple Connective Tissue Stain. The hepatic mass was almost completely filled with second generation rediae in varying degrees of maturity. Some enclosed active cercariae while others included germ balls at various stages of metamorphosis (Cheng and James, In Press). The diameters of the daughter rediae were from 1.5 mm. to 4 mm. and the average hepatic mass enclosed 35 to 45 individual rediae in addition to cercariae which had escaped from ruptured rediae. The liver cells had practically all disappeared, but a few isolated cells were seen. Traces of bile ducts are visible in a few specimens. The collagenous fibers which surround the hepatopancreas remained almost completely intact as did the single layer of epithelium external to the collagenic tissue. In order to determine whether the daughter rediae actually ingest liver cells, a few additional infected clams were dissected and living rediae examined with phase-contrast. Liver cells were seen in the blind-sac caec of several daughter rediae.

DISCUSSION

The destruction of the liver cells is attributed to their being ingested by the daughter rediae since liver cells were seen within the caeca of several living daughter rediae. Apparently the destruction of the clam's hepatopancreas by the parasite was the cause of their death. It is suspected that the destruction of the bivalves' hepatopancreas and the death of the bivalves are results of repeated infections since such gross destruction of the hepatic mass was not observed by the senior author during his earlier experiences with laboratory-infected clams when the degree of infection was much less and reinfections were not possible. Whether the parasite is actually capable of digesting the host's cells is not known, however, Hsi and Li (1940) suggested that blood, tissue cells, tissue exudates and food particles can be utilized as food by adult intestinal trematodes, and Müller (1923) stated that the liver fluke, Fasciola hepatica, feeds primarily on bile duct epithelium, although Stephenson (1947) stated that this liver fluke subsists on blood. Since trematodes apparently have been observed to thrive on whole cells, it is quite possible that the second generation rediae of C. cornutum may utilize the liver cells of Spærri/m striatinivm as nutrient.

LITERATURE CITED