

advanced stages of development were more common than germ balls or germinal masses in the lumen of these sporocysts. The connective tissue between the sporocysts was necrotic, and resembled the connective tissue of the visceral mass of moderately-heavily and heavily infected oysters apart from being more sparse and containing fewer phagocytes. Epithelium of the interribs was distorted through stretching, but remained intact, and gill filaments retained their normal appearance.

No specific deterioration of shell in infected oysters was observed. Brittleness of the shell in the visceral mass region of *O. lutaria* was found to be common in both infected and uninfected specimens.

The smallest infected oysters examined during this study measured approximately 5cms in length. This measurement was made on the flat valve being the farthest distance from the hinge to the end of the valve.

The results of mortality experiments are summarised in Table III. For the purposes of statistical analysis, the results have been pooled (similar trends are evident in each experiment). The % of oysters that died that were infected has been compared with the % of oysters that remained alive that were infected using the comparison of two observed %'s test (Dowdeswell, 1959). The difference between these %'s is highly significant. (Combined S.E. = 8.1).

TABLE III.—Mortality Experiments.

Experiment and No. of specimens	Number that died		Number that remained alive		Length of time in laboratory
	infec.	uninfec.	infec.	uninfec.	
1-46	13	7	5	21	4 months
2-50	12	6	5	27	4 months
3-24	7	5	1	11	4 months
120	32 (64%)	18	11 (16%)	59	

#### DISCUSSION:

An analysis of the observations of Lacaze-Duthiers (1854), McCrady (1874), Huet (1889), Tennent (1906), Cary (1907), Woodhead (1930), Roughley (1933), Andreu (1949), Kniskern (1952), and Menzel and Hopkins (1955), suggests that a general rule is applicable to the course that bucephalid infections of bivalve molluscs take. The gonad is gradually replaced by sporocysts and, after parasitic castration has occurred, the infection may spread to other organs. This latter phenomenon is especially true of *Bucephalus margaritae* described by Ozaki and Ishibashi (1934), *B. cuculus* described by Tennent (1906), and Menzel and Hopkins (1955). However, an exception to this rule is provided by the observations of Cheng and Burton (1965), who found that the initial site of infection of *Crassostrea virginica* by "*Bucephalus sp.*" was the pyloric caeca, and spread to the gonad occurred later.

The infection of *O. lutaria* follows a similar course to that outlined above, with gradual replacement of the gonad starting from the dorsal region of the visceral mass, and later spreading at least to the pyloric caeca and pericardium. Sampling between November and February would probably give more details concerning further spread of the infection to other organs. Contrary to the observations of Cheng and Burton (1965), infection of *O. lutaria* by *B. longicornutus* is accompanied by an increase in the number of phagocytes in damaged tissues.