

tory are known to such an extent that any one desiring to work with them could get any stage from ripe egg to fully grown adults during a summer at Mt. Desert.

Many very rich collecting grounds were found and sampled. Rich beds of the large razor clam; new beds of brachiopods in deeper water; and the large, branched-arm ophiuran, *Gorgonocephalus*, was found for the first time by the writer in fair numbers.

Studies pursued on the fresh water bryozoa finally resulted in the discovery of a new species and genus, belonging to the family *Cristatellidae*. This the writer will soon publish an account of in another journal and name it *Lophodella Nealii*, the specific name in honor of Dr. H. V. Neal, the present Director of the Laboratory who first brought specimens to the writer in a collection of material from Witches Hole and Lake Wood, on Mt. Desert Island, Maine.

## 2. THE BEHAVIOR OF THE CERCARIAE OF BUCEPHULUS ELEGANS WITH SPECIAL REFERENCE TO THE EFFECT OF LIGHT AND TEMPERATURE

By GERRIT BEVELANDER, *The Johns Hopkins University*

Although the effect of light and temperature on many organisms is well known, little attention has been paid to the behavior of larval trematodes, generally known as cercariae. This investigation was designed to throw some light on the behavior of the larval trematode, *Bucephalus elegans*.

The life history of *Bucephalus elegans* is complicated. According to Woodhead ('29) the egg develops into a miracidium, the miracidium into a cercaria, and the cercaria into an adult, thus completing the life cycle.

### EXPERIMENTAL RESULTS

#### A. Response To Temperature Changes.

The most striking effect on cercariae of a change in temperature, is the change produced in the rate of its rhythmical swimming movements. Between 0° and 27.5° a rise in temperature is almost immediately followed by an increase in the rate of rhythmical movement of the tails, and a decrease in temperature by a decrease in the rate. The relation between this change in rate and change in temperature is fairly accurately expressed by the Arrhenius equation. Between 27.5° and 40° the rate of movement decreases with a rise in temperature and

becomes zero at about 40°. At temperatures above 40° the tails contract, and become opaque, the epithelial cells on the surface of the body tend to detach, and recovery does not take place even if the temperature is decreased.

B. The Effect of Temperature on Photoc Reaction Time.

The effect of temperature on photoc reaction time was determined for five different temperatures; viz., 10°, 12.5°, 15°, 20°, 25°. The results show that when the reaction time is plotted against temperature, the resulting curve simulates an hyperbola. We may conclude from these results that the reaction time varies inversely with the temperature, i.e., the lower the temperature, the longer the reaction time.

### 3. REPORT ON THE COOPERATIVE OCEANOLOGICAL INVESTIGATIONS

By CHARLES J. FISH, *Buffalo Museum of Science*

The oceanological investigations begun in 1929 were continued during the season of 1930 under the auspices of the following cooperating institutions: Mount Desert Island Biological Laboratory, Buffalo Museum of Science, and Brown University. In order to avoid duplication of effort the resources of the three institutions were pooled in order that the staff might function as a unit.

The staff consisted of the following members:

Dr. Chas. J. Fish, Director, and Zooplanktonologist, Buffalo Museum of Science

Dr. Norris W. Rakestraw, Chemist, Brown University.

Dr. Chas. B. Wilson, Zoologist, Mt. Desert Island Biological Lab.

Dr. Paul R. Burkholder, Phytoplanktonologist, Buffalo Museum of Science

Mr. H. Richard Seiwel, Hydrographer, Buffalo Museum of Science

Mrs. Marie P. Fish, Ichthyologist, Buffalo Museum of Science

Mr. Vernon S. L. Pate, Artist, N. Y. State Conservation Dept.

Mr. Ralph F. Shropshire, Hydrographer, (part time), Byrd Antarctic Expedition

Mrs. Gladys Eddy Seiwel, Scientific Asst., Mt. Desert Is. Biol. Lab.

Mrs. Lillian M. Burkholder, Scientific Asst., Buffalo Museum of Science

Mr. Frank Lutz, Jr., Field and Lab. Asst., Mt. Desert Is. Biol. Lab.

The field work consisted of sixteen cruises in Frenchman's Bay between June 24 and August 20, and one in Penobscot Bay. As results of the previous season's investigations indicated that conditions in neighboring bays vary widely it was decided that the 1930 studies should