

PRELIMINARY NOTE ON THE PRODUCTION OF MOTILE CELLS IN *BASICLADIA**

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Specimens of green algae growing on the shell of a snapping turtle, *Chelydra serpentina*, were collected November 5, at Crystal Lake near Norman, Oklahoma, and were identified as *Basycladia crassa*, Hoffman and Tilden.

Basycladia is a genus of the Cladophoraceae, a family of the Chlorophyta and is found growing only on the backs of freshwater turtles. It was first described by Collins (1906) from plants found in Michigan but was thought to belong to the genus *Chaetomorpha*. Collins (1909) found the same genus in Massachusetts, and Tiffany (1915) reported it from Iowa. From 1923 to 1930 specimens from Minnesota were studied by Hoffman and Tilden (1930) who discovered a regular occurrence of branching on the basal holdfast cell of the filament. This was not characteristic of *Chaetomorpha*, so a new genus was described.

According to Hoffman and Tilden there are two species in the new genus, *Basycladia*, the difference between them being in cell diameter. Filaments of *Basycladia crassa*, the larger of the species, are described as ranging from 30 μ to 64 μ in diameter, and the coenocytic cells of the filament vary from 65 μ to 3875 μ in length. The smaller species *B. Chelonum* has filaments less than 35 μ in diameter, and the coenocytes are from 35 μ to 1750 μ in length. *B. Chelonum* is identical with Collins' *Chaetomorpha chelonum*, but *Basycladia crassa* is entirely new and reported only from Minnesota.

In discussing the genus in his *Freshwater Algae of the United States*, Smith (1933) states that "Motile reproductive cells have not been observed as yet, but the frequent occurrence of empty cells with a small lateral pore indicates this alga forms either zoospores or gametes."

Specimens collected on Saturday, November 5, were taken to the University laboratory and left in lake water. Motile cells were seen escaping from the filaments through lateral pores the following Monday, November 7.

Additional material was collected on November 9, from an injured turtle. Some of the horn was removed from the carapace along with the algae. The same treatment in the laboratory produced the same result, and there were more motile cells to study. Collection and the same treatment were repeated on November 12, the turtle having been placed in shallow water so it would be easily available but still in its normal habitat. On November 19, specimens brought to the laboratory formed the motile cells immediately. These cells were biflagellate, with lobed chloroplasts and linear eyespots (Fig. 4). The average size was 13 μ x 7 μ . The average length of the flagella was 17 μ . Studies are in progress to determine whether the motile cells are zoospores or gametes.

Cells in all parts of a filament, except the basal coenocyte were observed to produce motile cells (Fig. 3). No basipetal nor acropetal succession was observed.

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Stages in the progressive cleavage of cells into uninucleate protoplasts were studied (Fig. 3). Cytological study was repeated on material stained with Delafield's haemotoxylin and fast green.

In most genera of the *Cladophoraceae* there is difficulty in culturing portions of thalli which become detached. Since *Basycladia* has been found growing only on the backs of turtles, the problem of laboratory culture is still more acute. Tiffany (1926) records that his observations were made from specimens growing on the back of a live turtle kept in an aquarium. The writer has found that *Basycladia* soon dies when removed from the turtle and placed in water. Specimens are being grown successfully, however, on pieces of horn cut from the carapace of a turtle and kept in laboratory aquaria.

SUMMARY

Specimens of *Basycladia crassa* collected from the shell of a snapping turtle formed motile cells which escaped through lateral pores in cells of filaments. ---

Study of living and stained material showed stages in the progressive cleavage of coenocytes into uninucleate protoplasts.

The motile cells were found to be biflagellate, with lobed chloroplasts and linear eyespots.

Basycladia crassa can be cultured on pieces of horn cut from carapace of a turtle and placed in aquaria at room temperature.

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DESCRIPTION OF FIGURES

Figs. 1-4. *Basycladia crassa*, Hoffmann and Tilden.

Fig. 1. Basal coenocyte, showing branches. x 100

Fig. 2. Stage in progressive cleavage of cell into uninucleate protoplasts. x 430

Fig. 3. Motile cells escaping through pore. x 430

Fig. 4. Motile cells showing flagella and eyespots. x 1000