A CONTINUOUS-DRIP METHOD FOR THE CULTURING OF ALGAE

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A branching filamentous Chaetophoracean alga, *Chlorotylium cataractarum* Kutz., was collected from Lake Okoboji, Iowa, by the senior author and cultured in a mixture of "Chu number 10" solution (Chu, 1942) and dilute soil water medium (Bold, 1942) for several generations. Filaments of the alga adhered to solid objects in the medium. Zoospores were produced only in fresh medium. It was not possible to observe zoospores in formation, zoospore release, or filament development using standard microbiological techniques, such as hanging drop cultures.

Sterile microscope slides were suspended in newly inoculated culture medium and filaments of the alga developed on the surfaces. A special unit was designed to protect the microscope stage from water while permitting microscopic observation of the development of algal structures over a long period of time. The unit was constructed by placing a three-by five-inch lantern slide on a five-by seven-inch sheet of aluminum foil in which a hole, about one-inch square, had been cut from the central region. The margin of the foil was folded upward to form a ridge around the slide and the space between the ridge and the glass was sealed with petroleum-gel. A microscope slide covered with the alga was taken from the culture medium. One surface was wiped clean and the slide was placed on the glass surface of the water-proof unit so that the algal structures on the upper surface could be viewed. The unit and slide together were placed on the microscope stage so that the light would pass through the hole in the aluminum foil and illuminate the alga. The water-proof unit and microscope slide were held in place with rubber bands. The microscope stage was tilted slightly and a small aluminum foil trough was inserted under a lower corner of the water proof unit in such a way as to permit the nutrient solution to run off into a beaker. A separatory funnel containing sterile nutrient solution was placed above the stage so that a drop of the solution would fall on the surface of the microscope slide every six to ten seconds. This method provided light and nutrients and prevented desiccation. The nutrient solutions were collected and recycled through the separatory funnel for short-term studies. During extended studies new sterile medium was substituted every eight hours.

The method was used by Monoson (1960) to study, measure, draw, and photograph various stages of the life cycle of *Chlorotylium cataractarum*,

including zoospore production, release and morphology: development of filaments from zoospores: and development of colonies of filaments.

This method may be applied to studies of the influence of various physiological factors such as light, nutrients, and hormones, on morphogenesis and reproduction.

Literature Cited

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