REPORT ON SCOR WORKING GROUP 33
PHYTOPLANKTON METHODS

The Working Group was established at the SCOR Executive Meeting in Mexico City (29 - 31 January 1969) and is concerned with quantitative phytoplankton methods exclusive of chemical determinations. After considerable preparatory correspondence, the group met on 1 - 3 December 1970, at the University of Rhode Island, Kingston, Rhode Island, USA, where members primarily reviewed the methods now used for quantitative phytoplankton studies, and discussed the desirability of a manual on phytoplankton methods (Items 1 and 4 of the Terms of Reference). There was unanimity on many procedural points, as well as agreement that several questions cannot be answered without extended work.

On the basis of the meeting, a draft of the review of methods was prepared and circulated among the members. Before selecting the most satisfactory methods (Item 3 of the Terms of Reference), however, the working group wants to compare some commonly used methods. Presently, plankton samples of known composition (made up from algal cultures) are being mailed from Seattle. They are to be counted by members with the methods the members themselves use regularly. The result may permit ranking of methods. Drafts for a few standard procedures (Item 3 of the Terms of Reference) have also been prepared.

The need for a manual on methods for phytoplankton research that emphasizes the distribution of phytoplankton in space and time, i.e., the measurement of concentrations rather than rates, is endorsed. In the opinion of WG members, the manual should contain chapters on: goals of investigating the distribution of phytoplankton; sampling design; instrumentation and methods for the field and the laboratory; evaluation of observations; and an annotated bibliography to serve as a guide to the literature on identification. A biological oceanographer (ecologist) would seem preferable to a taxonomist for the position of managing editor responsible for cohesiveness among chapters in this manual. The working group has not yet agreed on names of possible contributors.

Discussion continues about the advisability of reprinting ten to twenty classical papers on methods in a bound volume as an interim measure to facilitate access to these publications.

During the meeting in Kingston, considerable discussion was devoted to fixing and preserving of nanoplankton. Buffered formalin is still believed to be the most satisfactory chemical, but there is remarkably wide disagreement on the most suitable concentrations; the experts' opinions range from 0.5 to 10% formalin (0.2 to 5% of aldehyde). Two recommendations formulated during the meeting ask for work by an interested biochemist or histologist on satisfactory fixatives and/or preservatives, and for studies on the best buffering agent for formalin. A third recommendation suggests work on long-term storage of diatoms in aqueous solutions (i.e., of preserved original samples of nanoplankton); a fourth urges studies on permanent mounts that maintain the quantitative character of the original samples. Beyond the concern with the conventional aims of plankton work, monitoring of the oceans was on the mind of WG members in this context.

Other recommendations include phytoplankton courses for experienced participants, catalogues of computer programs, and deposition of raw data in national data centers, all of which will require some funds for implementation. The full recommendations and reasoning will be presented in the final report. A further meeting is not planned at present.

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