

Draft Report of Working Group 16
on
GENERAL PROBLEMS OF INTERCALIBRATION AND STANDARDIZATION

The primary work of the group during three half day sessions was to interpret the terms of reference given to us by SCOR in a manner that will permit the efficient and productive operation of the working group in the future.

The terms of reference given to us are:

- (i) to work out a general and comprehensive plan, establishing priorities in intercalibration and standardization,

to evaluate the results of studies already made,

to propose new working groups to study other techniques,
- (iv) to organize exchange of experience gained when applying new methods and instruments,
- (v) to arrange for tests in the laboratory and at sea,

to establish tentative and recommended procedures.

Reference (ii) appears to us to be outside the competence of the working group. Indeed, if by "evaluate" is meant to make critical value judgements concerning the adequacy of studies that deal with specialized kinds of measurements, we are of the opinion that this can be done only by experts in the particular speciality involved.

The remaining reference items do form an adequate and workable framework within which we can and will operate. We propose the following as a suitable set of operations for the immediate future.

All of our considerations are concerned with the results of the measurements of chemical, physical dynamical, biological and geological properties of the ocean. Of primary concern are those measurements that are being

made by several laboratories, especially when the laboratories are in different countries. One of our immediate tasks then, is to assemble from laboratories and individuals throughout the world, by means of a questionnaire, a list of the kinds of measurements being made, together with standards being used and the results of intercalibration studies that have been, or are being performed. This information will be a part of that required for action under items (i), (iii), (iv), (v) and (vi) of our terms of reference.

In addition to the sources of information noted above, it appears from our discussions with the Chairmen of other SCOR working groups, that WG 16 will receive questions and requests from the other working groups on problems that fall outside of the competence of a particular group, but which are related to their problems. For example, WG 13, under the Chairmanship of Dr. Fraser, on Standardization of Zooplankton Methods, is concerned with plankton net design and testing, but has no member who can provide the necessary hydrodynamic expertise. WG 16 may be able to act as an intermediary in such an effort.

At the present time we see no intercalibration efforts directed towards the methods of chemical analysis for nutrients, with the exception of dissolved oxygen and phosphate, for geological measurement in general, and for some physical measurements, for example, intercalibration of current meters. Professor Kort and Dr. Joseph have supplied detailed information on some of these problems. However, we will reserve recommendations until more information has been accumulated.

The first effort of WG 16 then, will be to discover and emphasize the areas in which measurements are being made but which lack a common basis for standardization and have not been involved in intercalibration studies.

Having then pointed out the kind of measurements that lack the stabilization brought by standardization or intercalibration, we see our second line of action to be in promoting further action by SCOR to remove the deficiencies noted.

We see a third line of action to be that of co-ordinating efforts in all areas of standardization and intercalibration of oceanographic measurements. This can be by providing to all interested parties the results of studies in any field of speciality, particularly studies that are in progress or have been completed, but not published.

A comment offered several times during the meeting of WG 16 was that several intercalibration studies already planned are now foundering on the rocks of inadequate funding. WG 16 may act to stimulate additional funding

from appropriate sources. The funds required are likely to be considerable.

WG 16 heard a preliminary report by Dr. Davies on some of the activities of IBP-PM. We discussed in particular the proposal that would establish an International Calibration Centre. The group feels that the difficulties of staffing such a centre make such an action undesirable at the present time. We agree with the alternative suggestion made by IBP that the same results might be obtained initially by supporting individual scientists who desire to do intercalibration work and by providing financial support for any laboratory that will encourage such work. Because the funds required will be considerable, funding from all possible sources is desirable, for example from FAO and other international groups, as well as from national organizations.

The working group discussed the proposal dated 27 January 1965 from Captain da Silva, to establish within the Brazilian Institute of Naval Research a service for supplying South American oceanographers with prepared solutions or pre-weighed solids in ampules for chemical analyses to be performed at sea. We find no fundamental reason for discouraging such an effort, but we have no knowledge of the shelf life of such solutions. We suggest that if immediate action is contemplated, the preparation of pre-weighed solids be undertaken and that the preparation of solutions be postponed until the results of the study proposed by UNESCO (UNESCO/IOC/INF-68, p. 12, item 4(3), paragraph 1, 3 sub 4), are available. We suggest that independent checks on the suitability of the prepackaged chemicals can be made by several of the major oceanographic laboratories.

Finally, the working group is of the opinion that there may be general points concerning the experimental design of all intercalibration experiments, that should provide the broad guide line for actions and recommendations by the group. We defer conclusions about this until further study can be made.