information paper

intergovernmental oceanographic commission

17

UNESCO/NS/IOC/INF - 104

FOREWORD

Since the publication of issue No. 16 of this Information Paper in April 1966, the Office of Oceanography has gathered additional information - which is now incorporated in the present issue - on the following subjects: the preparation of atlases; the collection and publication of data; and the plans of observations in the Indian Ocean.

Readers may find that the acquisition of IIOE data by the World Data Centres is in arrear of the schedule which was agreed upon at the last meeting of the IIOE International Co-ordination Group in January 1964. The centre of international co-ordination has shifted towards co-operative effort in the preparation of atlases resulting from the Expedition and the collection of data by the World Data Centres is a pre-requisite for this work. National Co-ordinators and scientists concerned are therefore invited to observe the dead-line which was set forth by the International Co-ordination Group for the submission of data - i.e. that all data from IIOE cruises be submitted by the end of 1966.

unesco

Unesco Office of Oceanography
Paris, July 1966

WS/0866.66-AVS

IIOE INFORMATION PAPER NO.17

1. Recent action taken by IOC

1.1 The Bureau and Consultative Council had its sixth meeting at UNESCO House, Paris, from 16 to 18 May 1966.

The new proposal by Dr. Panikkar for a plankton atlas was discussed at some length. It was generally agreed that, because of the important rôle played by the Indian Ocean Biological Centre during the IIOE and the importance of India's contribution to the IOBC's work, this atlas might best be prepared in India. It was felt, however, that contributions from other sources would be needed to make the atlas as complete as possible.

The Bureau accepted with gratitude the offer by Dr. Panikkar and the Council of Scientific and Industrial Research of India to prepare the plankton atlas of the IIOE, but made the following detailed recommendations:-

1. To divide the project into two parts -

   i. the bulk of the data at the International Collection at IOBC, collected in a standard manner and sorted or to be sorted there into large systematic groups following the recommendations made by the Consultative Committee for the IOBC

   ii. distribution of species and genera of plankton organisms to be analysed by many specialists working on the International Collection and on national collections.

2. To deal at present only with the first part of the atlas and to postpone until later any decisions with regard to the preparation of the second part (see '6' below).

3. To appoint Dr. N. K. Panikkar, Director of IOBC, and Dr. E. Brinton, International Curator at IOBC, as co-editors of the first part of the atlas, with the understanding that Dr. Panikkar be General Director of the project. Preparation of the atlas will be carried out by the staff of the IOBC.

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4. Additional emphasis should be put on the mapping of the main groups of fish larvae. Further subsorting, as suggested by the Consultative Committee for IOBC, therefore seems advisable.

5. The co-editors will ensure close contact with editors of other atlases on the IIOE to facilitate the juxtaposition of the plankton distribution and physical and chemical data.

6. The Consultative Committee for IOBC will consider whether feasible plans for the second part, i.e. a detailed atlas on the planktonic organisms of the IIOE, can be developed. Plans might be discussed and submitted to IOC by a group of specialists meeting in 1968 or 1969.

1.2 Third Meeting of the Working Group on Data Exchange

The Group met from 31 March to 2 April, 1966, at Charlottenlund Castle, Denmark. Among the topics discussed at the meeting, 'Exchange of Biological Data' and 'Revision of the Manual on International Oceanographic Data Exchange' would have had particular relevance to investigations of IIOE. The Bureau and Consultative Council accepted the report of the Group and took the necessary steps to obtain the approval of Member States and international bodies concerned, so that a revised edition of the Manual could be published by early 1967.

2. Indian Ocean Biological Centre

2.1 Fourth Meeting of the Consultative Committee

The meeting was held in New Delhi and Ernakulam during the period 22 February to 2 March 1966. Extracts from the report of the meeting appear as Annex I of this issue.

2.2 New membership of the Consultative Committee

Professor J. Krey (Federal Republic of Germany) has been the Chairman of the Committee since 1 July 1966, as a successor to Mr. R. S. Glover (United Kingdom). SCOR recommended the appointment of Dr. Fleminger (U.S.A.) and Dr. Anraku (Japan) as new members. Dr. M. Vinogradov and Dr. J. McGowan will retire from the Committee on 31 October 1966.

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3. FAO Fisheries Data Centre

The FAO Advisory Committee on Marine Resources Research (ACMRR) discussed further, at its third session (1 to 8 March 1965) the FAO Fisheries Data Centre, of which the establishment was recommended at a previous session of the Committee. The Commission had studied this at its third session and a resolution had been adopted accordingly (see Annex I of IIOE Information Paper No. 9).

A pertinent part of the summary report of the ACMRR third session is reproduced below.

'Fisheries Division Programme of Work for 1966/67 and following biennia in the field of marine resources research and management:

Development and Assistance in Stock Assessment

FAO Fisheries Data Centre (Agenda Item 4.4)

The Committee was informed that FAO had acceded to the request of the IOC that it should provide a clearing house for fisheries data coming from the International Indian Ocean Expedition (IIOE). The Secretariat explained that its concept of this responsibility, which might be extended to cover data from certain other international projects, especially from those sponsored by the IOC, was to provide essentially a data registry, maintaining an inventory of existing data and relevant publications, and assisting exchange in various ways. Development and maintenance of the Fisheries Data Centre would, within the proposed Fisheries Resources and Exploitation Division, be a responsibility of the Fish Stock Evaluation Branch, and this work would therefore be closely associated with the bibliographic and documentation activities on the one hand and the stock assessment activities on the other. In this connection the Branch would also maintain, as a part of the development of the World Programme of Marine Resources Research, an inventory of the biological statistics on exploited stocks being collected and compiled by national research agencies and by regional fisheries bodies.'

'Matters on which the Intergovernmental Oceanographic Commission has requested advice (Agenda Item 6):

International Oceanographic Programmes

International Indian Ocean Expedition - IIOE (Agenda Item 6.2)

Urge participating nations, agencies, and laboratories involved in the IIOE to file their hydrographic, meteorological and biological data in World Data Centre with all due speed so that these analyses of data for fishery developmental purposes

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in the Indian Ocean countries can proceed as expeditiously and competently as possible.'

4. Exchange of Data

4.1 Circular Letter from WDC-A, Oceanography, to IIOE Co-ordinators

Dr. W. C. Jacobs, Director of the WDC-A, Oceanography, has circulated a letter, dated 4 May 1966, and a copy of this has been received by the Secretariat. The letter requested the IIOE Co-ordinators to transmit data under their responsibility within the time limit set forth at the first meeting of the International Co-ordination Group for IIOE. The scientists and institutions concerned are invited to note this circular letter and to collaborate with the Co-ordinator, so that all exchangeable IIOE data will reach the WDCs within the time limit; the letter is reproduced below.

"Dear Sir:

This Center is receiving an increasing number of requests for the biological, physical-chemical and other marine data resulting from the IIOE. Therefore, as a reminder, the following statement is quoted from the IOC-IIOE Information Paper 12 (UNESCO/NS/IOC/INF-69, Paris, April 1965):

'Urge participating nations, agencies and laboratories involved in the IIOE to file their hydrographic, meteorological and biological data in the World Data Centers with all due speed so that these analyses of data for fishery developmental purposes in the Indian Ocean countries can proceed as expeditiously and competently as possible.'

We also quote from IOC-IIOE Information Paper 6 (UNESCO/NS/INF-49, Paris, April 1964):

'The following time limits for submission of exchangeable data to WDCs have been introduced:

(a) for data resulting from cruises completed by the end of 1963: by the end of 1964

(b) for data resulting from cruises taking place during 1964 and 1965: by the end of 1966."

To inform IIOE Co-ordinators of the status of IIOE data exchange, the Catalogue of Data in World Data Center A, Oceanography, Supplement No. 4, March 1966, contains a special index of IIOE cruises from which data have been received by WDC-A, Oceanography, up to 31 December 1965. All National Co-ordinators for the IIOE are requested to review this index and take the steps necessary to transmit data within their responsibility which have not yet been sent to the World Data Centers, especially those falling within the time limits of item 4(a) of enclosure, that are missing from the Catalogue of Data.

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IIOE Co-ordinators are also requested to ensure that all data falling within the time limits of item 4(b) of enclosure reach the World Data Centers by the prescribed date of 31 December 1966. World Data Center A, Oceanography, plans to issue a special Catalogue of IIOE Data and it is desirable that the information in the Catalogue be as complete as possible for release early in 1967.

If any IIOE Co-ordinator has not received a full set of the Catalogue of data in World Data Center A, Oceanography, including Supplements Nos. 1-4, please so inform this Center, and a set will be sent to you immediately.

Sincerely yours,

sgd/ W. C. JACOBS
Director
WDC-A, Oceanography

4.2 IIOE Data received by the WDC-A

The World Data Center A, Oceanography, has published 'Catalogue of Data in World Data Center A, Oceanography, Supplement No. 4', which contains a 'Special index of IIOE data received' and data received during the period 1 July to 31 December 1965. The special index is reproduced as Annex II and the IIOE data which appear in this Supplement are in Annex III, which is composed of additions and corrections to 'IIOE Data received by the WDC-A', this being given previously as Annex III of issues Nos. 9, 12 and 16 of this Information Paper.

4.3 Note from the Permanent Service for Mean Sea Level

The Secretariat has received a note, dated 4 April 1966, from Dr. J. R. Rossiter, Director of the Permanent Service for Mean Sea Level, concerning mean sea level stations and data; this note is reproduced below.

'International Indian Ocean Expedition - Mean Sea Level Stations and Data.

In co-operation with the UNESCO Office of Oceanography, the Permanent Service has attempted to ascertain the present situation regarding the existence of permanent tide gauge stations in the Indian Ocean.

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For the purpose of the International Indian Ocean Expedition many national authorities proposed the installation of many new gauges, but it has been extremely difficult to determine which proposals have been put into effect. In a circular sent to the appropriate national authorities, in November 1965, the Permanent Service requested the summary of the most recent situation. Of the fifteen authorities approached, only four have so far replied.

The attached list (Annex IV), therefore, can only be considered provisional.'

National Co-ordinators and scientists concerned are reminded that, according to the 'Provisional Guide for Exchange of Oceanographic Data, IOC Technical Series No.1, 1965', the Permanent Service of Mean Sea Level is a specialised centre for mean sea level data; The Provisional Guide further indicates that 'observational data from shore and fixed stations should be despatched without delay, preferably not more than one to two months after the period of observations'.

5. Recent Publications on IIOE of limited distribution

5.1 Bathymetric, Magnetic and Gravity Investigations, H.M.S. Owen, 1962 - 1963, Admiralty Marine Science Publication No. 9, Hydrographic Department, Ministry of Defence, London, February 1966

A number of copies of the subject publication has been received by the Secretariat. The publication consists of two volumes, Part 1-Text and Part 2-Profiles. The Secretariat has transmitted the publication to National Co-ordinators and to the institutes listed in Annex V of No. 8 of this Information Paper (List of Persons participating in, working up materials from, or otherwise directly interested in, the geological-geophysical-bathymetric investigations carried out by IIOE). No further copies are available from this Office and therefore any scientist interested in this publication is invited to contact directly with the publishers.

5.2 Data of Oceanographic Observations and Exploratory Fishings, No.1, Shimonoseki University of Fisheries, November 1965

This publication contains the data obtained by the 'KOYO MARU' during her participation in the IIOE in 1962-63 and 63-64. Methods of observations and analysis, data of echo-soundings, meteorological, physical and chemical, planktological, bacteriologicaal observations, measurements on primary production, eye observations and fisheries oceanography are included. Interested scientists might contact the Shimonoseki University of Fisheries, Yoshimi, Shimonoseki-shi, Japan.

A summary of 'KOYO MARU's cruises appears in No. 8 of this Information Paper.

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6. Summary of IIOE Cruise Reports (corrections)

After publishing this summary in the last issue of this Information Paper, a clearance was received from the National Co-ordinator of Japan, with some corrections and additions - these appearing as Annex V of this issue.

7. Cruises in the Indian Ocean after the closure of IIOE ship operations

At the second meeting of the International Co-ordination Group, it was agreed that observations in the Indian Ocean, particularly measurements at Reference Stations, should be continued after the closure of IIOE ship operations, and resolved that information on observations in the Ocean be announced through the IIOE Information Paper. To date, the following cruises have been notified to the Secretariat through the National Co-ordinator.

Australia

H.M.A.S. DIAMANTINA, Cruise Dm 1/66; 3.3.66-21.3.66

Area and Objectives: Similar to Cruise Dm 3/65 (IIOE Inf. Pap. No.16)

Reference Station: SCOR-UNESCO Ref. St. No. 1 is to be occupied

H.M.A.S. DIAMANTINA, Cruise Dm 2/66; 12.4.66-29.4.66

Area and Objectives: Similar to Cruise G 5/65 (IIOE Inf. Pap. No.13)

Reference Station: No Reference Station exists in the area

H.M.A.S. DIAMANTINA, Cruise Dm 3/66; 9.5.66-20.6.66

Area: Western equatorial and south western Indian Ocean; Fremantle-Christmas Island-Singapore-Sunda Strait-Cocos Keeling Islands-Penang-Fremantle

Objectives: To measure dissolved organic matter produced by phytoplankton during photosynthesis.

To study the relation of phytoplankton photosynthesis to light intensity and colour.

To collect data on the extent and characteristics of the Banda Intermediate Water between 15°S. and 5°S. during the early winter.

To collect crayfish larvae across the gyral off the West Australian coast south of 20°S.

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Reference Station: SCOR-UNESCO Ref. St. No.1 and No.2 are to be occupied

8. Geophysical studies off the west coast of India

The Secretary of IOC received a letter, dated 5 May 1966, from the IIOE National Co-ordinator of the United Kingdom, concerning the subject studies which are being planned, and was requested to supply pertinent information. An extract from the letter is reproduced below. It would be appreciated if all relevant information could be sent to the Imperial College of Science and Technology, University of London.

'A group of scientists from Imperial College of Science and Technology of the University of London are planning to undertake some geophysical studies off the west coast of India and have asked me if I can find out whether any other countries have plans for geophysical work in this area of the Indian Ocean.

I am afraid I have been unable to extract the relevant information from International Marine Science and wonder whether any proposals have been notified to your office. It might also be useful to inform Imperial College scientists of any current activity in that area which has not been reported yet in the IIOE Information Paper.'

ANNEX I

EXTRACTS FROM THE REPORT OF THE FOURTH MEETING OF THE CONSULTATIVE COMMITTEE FOR THE INDIAN OCEAN BIOLOGICAL CENTRE

Participants

The fourth meeting of the Consultative Committee was held in New Delhi and Ernakulam during the period 22 February to 2 March 1966 and was attended by five members of the Committee, under the chairmanship of Mr. R. S. Glover, by Dr. Panikkar and Dr. Brinton, together with staff members from IOBC, and by several scientists from other Indian institutions and from Unesco.

The participants were welcomed by Dr. D. N. Wadia, F.R.S., Chairman of the Indian National Council for Oceanic Research and of the Advisory Board for the IOBC.

In accordance with the usual practice, members of the Consultative Committee, Professor Ganapati and Dr. Hempel gave lectures and participated in seminars with the staff of the IOBC.

SUMMARY OF DISCUSSIONS

1. Membership of the Committee

The Office of Oceanography, in consultation with SCOR, has appointed Professor J. Krey (Institut für Meereskunde, Kiel, Germany) to the vacant place on the Committee. Professor S. Motoda, having attended three meetings of the Committee, had completed his term of office and had been replaced by Mr. D. L. Tranter (C.S.I.R.O., Cronulla).

2. The future of the International Collection and the IOBC after the end of the International Indian Ocean Expedition

The IIOE ended in 1965, but the basic sorting of the plankton collections at the IOBC cannot be finished until the end of 1967. This must be followed by further sub-sorting and years of specialist research on the sorted material.

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Biogeographical assessments of the Indian Ocean were, and remain, the major objective in assembling the International Collection. The Committee wishes to assert, in the strongest terms, that international co-operation must be continued to ensure full use of the International Collection. Scientific co-ordination, during the coming years, should be directed towards the synthesis of the specialist analyses.

Therefore the Committee welcomes the incorporation of the IOBC as a permanent division of the new Indian National Institute of Oceanography, to be devoted to the International Collection. This action by the Indian CSIR will ensure the continued provision of a laboratory, staff and associated facilities for the sorting and local management of the Collection.

The Committee recommends most strongly that the co-ordination of sorting and specialist analysis, as well as the development of research programmes, should continue to be in the hands of a planktologist of high international standing, directly responsible to the Consultative Committee for the International Collection. The Committee believes therefore that the office of the International Curator must be continued at least until the sorting and allocation of samples to experts has been completed.

The Committee believes that the IOBC has an important part to play in the training of scientists from India and elsewhere in methods of sorting and taxonomy. The staff of IOBC, as well as visiting experts, should collaborate in these training activities, which should include organised courses as well as individual tuition. It is emphasised that the sorting staff includes experienced specialists with important skills which they could pass on to members of other laboratories proposing to engage in similar activities.

The Committee urges national institutions, as well as UNESCO and other international agencies, to contribute to the travel and other expenses of experts and trainees working on the International Collection. The Committee draws the attention of countries which have deposited samples in the care of IOBC and the International Curator to the need for continued support (through funds, equipment and participation in the research activities) if the potentialities of the International Collection are to be exploited fully.

During a discussion of the kind of research activities which might be developed at the IOBC, it was proposed by Indian scientists that the present scope of the work should be extended to include studies of the phytoplankton. The Committee suggested that new research projects should be confined to those which are likely to advance the primary objective of a biogeographical assessment of the plankton of the Indian Ocean.

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3. Buildings and Equipment

The IOBC is housed in accommodation made available through the generosity of the University of Kerala. The Committee wishes to record its appreciation for this assistance, without which the IOBC could not have made such an admirable start.

The further development of the work at the Centre will require additional accommodation and facilities. Although the Centre is well equipped for basic sorting, additional research rooms and equipment will be needed before visiting workers can be satisfactorily accommodated. The Committee made some detailed recommendations to UNESCO and the Director of IOBC for further improvements of equipment and of accommodation for visiting workers.

The Committee hopes that it will be possible to start soon the building of a new laboratory in Ernakulam to house the former IBP laboratory, the Physical Oceanography Laboratory and the IOBC (as proposed to the previous meeting of the Consultative Committee). There would be many advantages in the sharing of facilities and the mutual development of common interests in these three laboratories which are now constituted as divisions of the new National Institute of Oceanography.

4. Staff of the Centre

Demand with regard to manpower and scientific competence of staff will increase in the near future in consequence of (a) need to carry out extensive sub-sorting of some groups, (b) collaboration with visiting workers and (c) leave of absence for training and teaching.

Therefore, the Committee emphasises again that the staff of sorters should be increased, with research fellowships in addition.

5. Library and Identification Keys

The Committee acknowledges the contributions to the library through purchases by CSIR, as well as donations by institutions and individuals.

With the commencement of detailed taxonomic studies and the visits of specialists to the Centre, it will be necessary to augment the library, especially in the fields of morphology and taxonomy.

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At the meeting of the IIOE Co-ordination Group in Paris, June 1965, it was recommended that librarians and individuals should be asked to contribute duplicates and photo-copies to the Centre. A first draft for a basic bibliography (prepared by the Consultative Committee during the meeting) will be revised by the curator and Dr. Prasad, in consultation with selected specialists. A list of requirements for the library of IOBC will then be compiled and circulated widely. The Office of Oceanography of UNESCO is asked to publicise the request for donations which will be held at the disposal of those working on the International Collection at IOBC. It was agreed that a special effort should be made to obtain copies of identification keys.

6. Receipt of Material for Sorting

The Curator reported that the following samples had been received and sorted up to mid February 1966:-

	Received	Sorted
Australia	206	190
Germany	122	122
India	436	268
Japan	180	48
Pakistan	22	0
South Africa	360	0
U.K.	206	205
U.S.A.	457	441
USSR	79	6
TOTAL	2,068	1,280

Material received during recent months has reduced the gaps in the sampling coverage but the Committee repeats the request for additional material, especially from the central oceanic regions to the south of the equator. The Committee welcomes plans for the collection of further samples by Indian research vessels, using the Indian Ocean Standard Net, for deposition and processing along the lines established for the International Collection.

7. Sorting Methods

No changes are proposed in the basic sorting technique, but the Committee asked that an immediate assessment should be made of displacement volume of all samples received.

Additional sub-sorting will be necessary in those groups which are too big to be distributed to specialists. A member of the sorting staff has started to divide the category of fish larvae into five major orders. Other categories which require sub-sorting include: Copepoda, Decapoda, Pteropoda, Amphipoda, Euphausiacea, Foraminifera, Radioloria and Anthozoa.

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The Committee recommends that an early start should be made on the sub-sorting of some of these groups. First priority should be given to the fish larvae and to those groups (such as Pteropoda and Foraminifera) which are difficult to preserve in formalin over a long period of time.

Another category which merits special attention is the "residue" which contains a wide range of small organisms, presumably including many of the young stages or organisms in the other categories. It is recommended that a small number of residue samples should be analysed in detail in order to make a provisional assessment of the overlap between this group and the other categories.

The Committee wishes to draw the attention of SCOR to the need for a general assessment of the problems of fixing and preserving samples of plankton. It is suggested that the co-operation of chemists might be sought in a search for new methods. A guide handbook would find many users. It is thought that these tasks might be allocated to a SCOR working group.

8. Allocation of Material to Specialists

The Committee believes that preference in the allocation of material should be given to those institutions whose experts can work at the IOBC for some period of time before the samples are despatched to the borrower. Preference should be given also to those specialists who are willing to analyse material on a broad geographical basis.

The curator should encourage collaboration between specialists with overlapping interests. It was recognised that, after material has been sent to a selected institution, further division of the material may be necessary on regional or taxonomic grounds. In such cases, the borrowing institution will be expected to consult the curator regarding the further allocation of the material, if necessary by sub-contracting to other institutions, but responsibility for the treatment of the samples will remain with the initial borrower.

A circular letter (signed by the Director, the Curator and the Chairman of the Consultative Committee) was sent in January 1966 to 125 specialists. About 45 people had indicated already by the end of February their wish to collaborate in the analysis of the International Collection. The curator was instructed to prepare additional copies of the letter for circulation according to the lists.

The Committee decided that allocations of material in most of the groups should be deferred until further replies to the circular letter have been received. The curator was instructed to consult with the members of the Committee by correspondence regarding the final selection of specialists for each group.

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The Committee recommends that prominent scientists should be invited to IOBC to draw up programmes of research, including sub-sorting, for certain selected groups.

The Curator was instructed to prepare a handbook for specialists, giving station lists, details of sorting methods and other basic information which the specialists would need as a background to their researches.

It is highly desirable that specialists should obtain copies of a standard chart of the Indian Ocean, in the hope that this would contribute towards a standard form of publication of the results. The Director and the Curator were asked to consider the preparation of such a chart.

9. Data Processing

The Curator reported that processing of the results of basic sorting has been started, designed to facilitate the retrieval of data regarding the distribution of samples and of the sorted categories of organisms, together with information about type of gear, depth and duration of haul, time of day, etc.

10. Atlas

The IIOE Co-ordination Group suggested that the Atlas on the zooplankton of the Indian Ocean should be primarily based on the International Collection. The Committee feels that the work can and should be done by the Curator and staff of IOBC. The specialist analyses will continue over a long period of time and the atlas will appear in a number of separate issues. It will be necessary to ensure continuity of preparation and publication during this period. The Committee, therefore, suggests that the Director of the IOBC would be the most appropriate general editor. It is hoped that CSIR will be able to provide the necessary financial support for this work.

With these points in mind, the Committee supported a draft proposal for submission to IOC for the preparation of the atlas by the staff of the IOBC under the scientific guidance of the Curator and the general editorship of the Director of IOBC.

The Committee suggested that there were three principal stages in the development of the work at the IOBC, in the first two of which atlas-making would play a major part. The stages are:-

i. Atlases of the distribution and abundance of "general faunistic properties". These would include estimates of total biomass (or displacement volume) and of many of the major categories which form the basis of the routine sorting. Dr. Brinton was instructed to make an early start on this work.

ii. Atlases of the distribution and abundance of species. These

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will be dependent on the work of specialists over many years. It is hoped that a measure of agreement can be reached regarding the presentation of results in a form which will facilitate their combination in atlas charts. To this end the Committee suggested that a meeting of specialists might be held in Ernakulam late in 1967 or in 1968 to discuss co-ordination and presitation of results.

iii. The analytical ecology of the plankton of the Indian Ocean. This is the obvious long-term objective of the work at IOBC, designed to contribute to an understanding of the distribution, abundance and composition of the plankton. Although this task will occupy many years and depends on a wide range of research activities, at IOBC and elsewhere, it will be greatly advanced by a sound biogeographical assessment of the International Collection at the IOBC.

11. Liaison with other Institutions

For the compilation of the Atlas a full exchange and comparison of the results of the specialist analyses of the International Collection and of the various national collections taken during IIOE is essential. The Committee encourages therefore the Curator to establish contacts with marine laboratories of the region and of other parts of the world which are engaged in work on plankton in the Indian Ocean. This kind of communication and co-ordination will be essential if the scientific value of the IIOE is to be realised.

12. General

The progress of the IOBC justifies the confidence of the nations which deposited samples in the International Collection. The great potential value of the IOBC is not in doubt. National and international institutions, as well as individual scientists, are asked to recognise the great potential of IOBC which provides the unique opportunity for international co-operation. Continuing support both by UNESCO and by participating countries will be needed as a logical follow up of the IIOE.

The Committee expressed its high regard for Dr. Brinton, who began his work as International Curator in October 1965 and who initiated the the developing research programmes on the International Collection, which will form the next phase of advancement of the Centre and its staff.

13. Election of Chairman

On the retirement of Mr. Glover, who has served as Chairman since March 1964, the Committee elected Professor Krey to assume this office as from 1 July 1966.

ANNEX II

Special index of International Indian Ocean Expedition (IIOE) data received

Catalogue number	Country & Ship	Data catalogued in: Cat. of Data	Supplement number 1	2	3	4
	1. AUSTRALIA					
102.1 G-1	DIAMANTINA	X				
102.1 G-2	"	X				
102.1 G-3	"	X				
102.1 G-4	"	X				
102.1 G-5	"	X				
102.1 G-6	"		X			
102.1 G-7	"		X		X	
102.1 G-8	"		X	X	X	
102.1 G-9	"		X		X	
102.1 G-10	"		X			
102.1 G-11	"			X		
102.1 G-12	"			X	X	
102.1 G-13	"			X	X	
102.1 G-14	"			X	X	
102.1 G-15	"			X		X
102.1 G-16	"					X
102.1 G-17	"		X	X		
102.1 I-7	GASCOYNE			X		X
102.1 I-8	"			X		
102.1 I-9	"					X
102.1 I-12	"					X
102.1 I-13	"					X
102.1 I-14	"					X
102.1 I-15	"					X
102.1 I-17	"					X
102.1 I-18	"					X
102.1 K-1	INVESTIGATOR					X
102.1 K-2	"					X
102.1 K-3	"					X
102.1 K-4	"					
	13. FRANCE					
113.7 D-1	NORSEL				X	X
113.7 E-1	COMMANDANT ROBERT GIRAUD				X	
113.7 E-2	"				X	
113.7 E-3	"				X	X
113.7 E-4	"					X

continued..

Catalogue number	Country & Ship	Data catalogued in:				
		Cat. of Data	Supplement number 1	2	3	4
	20. INDONESIA					
120.1 B-1	R. I. JALANIDHI		X			
120.1 B-2	"		X			
120.1 B-3	"		X			
120.1 B-4	"		X			
	24. JAPAN					
124.2 A-8	HOKUSEI MARU	X		X		
124.2 B-8	OSHORO MARU			X		
124.2 B-10	"				X	X
124.4 A-5	UMITAKA MARU				X	
124.4 A-6	"				X	
124.4 A-7	"				X	
124.7 A-2	KAGOSHIMA MARU				X	
124.16 A-1	KOYO MARU				X	
124.16 A-2	"				X	
	33. PORTUGAL					
133.1 A-1	ALMIRANTE LACERDA				X	
133.1 A-2	"				X	
	36. SOUTH AFRICA					
136.1 A-2	AFRICANA II	X				
136.1 A-3	"		X		X	
136.1 A-4	"		X			
136.1 A-5	"		X			
136.3 A-4	NATAL	X				
136.3 A-5	"	X				
136.3 A-6	"		X			
136.3 A-7	"				X	
236.3 A-1	LADY THERESA			X		
	37. USSR					
137.1 B-6	VITYAZ	X				
137.1 B-7	"			X		
137.1 B-9	"			X	X	
137.5 F-1	NEVELSKOI			X		

continued..

Catalogue number	Country & Ship	Data catalogued in:				
		Cat. of Data	Supplement number 1	2	3	4
	37. USSR (cont.)					
137.12 A-1	V. VOROBYEV					X
137.12 A-2	"					X
137.12 A-3	"					X
	38. UNITED KINGDOM					
138.2 A-4	OWEN		X			
138.5 B-1	DISCOVERY				X	X
138.5 B-2	"					X
	39. U.S.A.					
139.1 D-4	CHAIN				X	X
139.1 E-1	ANTON BRUUN			X		
139.1 E-2	"			X		
139.1 E-3	"			X		
139.1 E-4	"				X	
139.1 E-5	"				X	
139.1 E-6	"				X	
139.1 E-7	"				X	
139.1 E-8	"					X
139.1 E-9	"					X
139.1 E-10	"					X
139.1 E-11	"					X
139.3 B-8	EASTWIND	X				
139.3 C-1	REQUISITE	X				
139.3 C-2	"	X				
139.3 D-1	SERANNO	X				X
139.3 D-2	"			X		
139.3 D-3	"					X
139.8 B-7	HORIZON		X			X
139.8 B-11	"					X
139.8 I-1	ARGO		X			X
139.8 I-3	"		X			X
139.8 I-4	"		X			X
139.8 I-5	"		X			X
139.8 I-6	"		X			X
139.9 A-6	VEMA	X				X
139.9 A-7	"			X	X	X
139.9 A-8	"			X		X
139.9 A-9	"					X

continued..

Catalogue number	Country & Ship	Data catalogued in:				
		Cat. of Data	Supplement number 1	2	3	4
	39. U.S.A. (cont.)					
139.9 C-1	ROBERT D. CONRAD			X		
139.12 D-2	PIONEER			X		
239.2 B-1	ARGO		X			
239.2 B-2	"		X			
239.2 B-3	"		X			
239.2 B-4	"		X			
239.2 B-5	"		X			
239.2 B-6	"		X			
239.2 B-7	"		X			

ANNEX III

IIOE DATA RECEIVED BY WDC-A
(1 July - 31 December 1965)

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data: No. of Stas.	Serial and Computed Data: Data	Serial and Computed Data: Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
102.AUSTRALIA													
102.1 Commonwealth Scientific and Industrial Research Organisation													
102.1 G-16 DIAMANTINA (DM 3/64) (IIOE)	6.V.-8.VI.1964	NE Indian Ocean, South China Sea, Gulf of Thailand								Pigments--65			AODC O.C.R. Provisional data
102.1 G-17 DIAMANTINA (DM 1/64) (IIOE)	28.I.-17.II. 1964	NE Indian Ocean	47	T, S, σ_t, O_2, P(inorg)	100-200, 400-500 Max.-500			D			Ta, Tw, Wd, Cld, Vis, Bar	Waves	AODC Provisional data
102.1 I-8 GASCOYNE (IIOE)										Add: Plankton--32, Particulate Carbon	Add: Vis		Delete: Provisional data Add: Data in pub. rep: continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation										Remarks
			Serial and Computed Data			BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	
			No. of Stas.	Data	Sample Depths								
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
													"Oceanographical Cruise Report No.21" (CSIRO Aust. 1965)
102.1 I-12 GASCOYNE (G 2/61) (IIOE)	21.II.-12.III. 1961	Bass Strait, Tasman Sea, Great Australian Bight	115	T, S, σ_t, O_2, P(inorg), P(total), N	40-150, Max.- 5130			D			Ta, Tw, Wd, Cld, Vis, Bar	Waves	AODC O.C.R. 10 Provisional data
102.1 I-13 GASCOYNE (G 3/62) (IIOE)	7-11.VIII.1962	Great Australian Bight, NE Indian Ocean	18	T, S, σ_t, O_2	50-60, 1100 Max.- 1100			D			Ta, Tw, Wd, Cld, Vis, Bar	Waves, T, S	AODC O.C.R. 16 Provisional data
102.1 I-15 GASCOYNE (G 2/64) (IIOE)	21-26.II.1964	Great Australian Bight	35	T, S, σ_t, O_2	50-100, 1500 Max.- 1500			D			Ta, Tw, Cld, Bar, Vis	Waves T, S	AODC O.C.R. 34 Provisional data
113. FRANCE													
113.7 Muséum National d'Histoire Naturelle													
													continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data: No. of Stas.	Serial and Computed Data: Data	Serial and Computed Data: Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
113.7 D-1 NORSEL (IIOE)							Add: Surface GEK- (9 charts)						Add: Charts of surface currents in pub. rep.: "Circulation Superficielle dans l'Ocean Indien, Resultats de mesures faites à l'aide du courantomètre à électrodes remorquées G.E.K. entre 1955 et 1963" (Extract from Cahiers Océanographiques, XVII Année, Supplement No.3, 1965)
113.7 E-3 COMMANDANT ROBERT GIRAUD (R.G.V) (IIOE)							Add: Surface GEK- (8 charts)						Add: Charts of surface currents in pub. rep.: "Circulation Superficielle dans l'Ocean Indien, Résultats de mesures faites á l'aide du courantomètre à electrodes remorquées G.E.K. entre 1955 et 1963" continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation										Remarks
			Serial and Computed Data			BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	
			No. of Stas.	Data	Sample Depths								
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
													(Extract from Cahiers Océanographiques, XVII Année, Supplement No. 3,1965)
113.7 E-4 COMMANDANT ROBERT GIRAUD (R.G. IV) (IIOE)	8.VII.-15.X. 1962	NW Indian Ocean, Gulf of Aden, Mozambique Channel	115	T, S, σ_t	to 4200 Max.- 4255		Surface GEK- (7 charts)	D			Wd, Ta, Hum, Cld	Waves, T(charted)	Track chart and chart of surface temperature isotherms and currents published in: "Cahiers Océanographiques", XV Année No. 5, 1963 Charts of surface currents published in: "Circulation Superficielle dans l'Ocean Indien Résultats de mesures faites à l'aide du

continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data — No.of Stas.	Data	Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
													courantomètre à electrodes remorquées G.E.K. entre 1955 et 1963" (Extract from Cahiers Océanographiques, XVII Année, Supplement No. 3, 1965) NODC 35013
124. JAPAN													
124.2 Hokkaido University													
124.2 B-10 OSHORO MARU Change to: (Cruise 7) (IIOE)				Add: σ_t, ΔD						Add: Plankton--14, Productivity--10 Fishing-long line--13 Trawls--20			Delete: Provisional data Add: Data in pub. rep.: "Data Record of Oceanographic Observations and Exploratory Fishing" No. 9 (The Faculty of Fisheries, Hokkaido University, Japan, March 1965)
136 SOUTH AFRICA													
136.3 University of Cape Town													continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data — No. of Stas.	Data	Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
136.3 A-7 NATAL, AFRICANA II (Cruises 1, 2, 3 & others) (IIOE)	16.VI.1961 -9.IX.1963	SE Atlantic NW Indian Ocean							Core--50†				†Surface color and texture coded. NODC 110265-1
137. UNION OF SOVIET SOCIALIST REPUBLICS													
137.12 Azcherniro													
137.12 A-1 V.VOROBYEV (IIOE)	10-14.IX. 1962	Arabian Sea	10	T, Cl, S, σ_t, O_2, P, Si, NO_2 -N	700-800 Max.-800			D		Fishery obs		Col, Transp	
137.12 A-2 V.VOROBYEV (IIOE)	16.VI.-18. XII.1963	Gulf of Aden, Arabian Sea	30	T, Cl, S, σ_t, O_2, P, Si, NO_2-N	1500 Max.-1555			D					
137.12 A-3 V.VOROBYEV (IIOE)	4-23.I. 1964	Arabian Sea, Laccadive Sea, Gulf of Aden	15	T, Cl, S, σ_t, O_2, P, Si	to 1500 Max.-1550			D				Transp	
138. UNITED KINGDOM													
138.5 National Institute of Oceanography													continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data — No.of Stas.	Data	Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
138.5 B-1 DISCOVERY (Cruise 1) (IIOE)										Add: Plankton--109			
138.5 B-2 DISCOVERY (Cruise 3) (IIOE)	22.II.-26.IX. 1964	Mediterranean Sea-Western & Eastern Basins, Red Sea, Gulf of Aden, Arabian Sea, NW Indian Ocean, Laccadive Sea, NE Atlantic Ocean	313	T, S, O_2, PO_4-P, NO_3-N, SiO_3-Si	1000-1200 Max.-944			D		Plankton--290	Wd, Bar, Te, Tw, W, Cld, Vis	Waves	Types of observations at each station listed in pub. rep.: "International Indian Ocean Expedition R/S DISCOVERY Cruise 3 Report, Oceanographic work in the Western Indian Ocean 1964" (The Royal Society 1965)
139. UNITED STATES OF AMERICA													
139.1 Woods Hole Oceanographic Institution													continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data — No. of Stas.	Serial and Computed Data — Data	Serial and Computed Data — Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
139.1 D-4 CHAIN (Cruise 43) (IIOE)								Add: Fotos -12 selected samples)					Add: "Narrative of CHAIN Cruise 43 February-August 1964" (WHOI Ref. 65-9, February 1965, Unpublished Manuscript)
139.1 E-8 ANTON BRUUN (Cruise 6) (IIOE)	15.V.-16. VII.1964	Arabian Sea, NW & SW Indian Ocean	28	T, S, O_2, PO_4-P, NO_3-N, SiO_3-Si, NO_2-N	1900-2000 Max.-4288	B*			Dredge--2*	Plankton--25*, Productivity-28*, Fishery obs-61*	Wd	Transp, T	Data in pub. reps.: "U.S. Program in Biology, IIOE, News Bulletin No.8, Narrative Report: ANTON BRUUN Cruise 6" (WHOI, December 1964) "U.S. Program in Biology, IIOE, Final Report ANTON BRUUN Cruise 6, Oceanographic Data, Bathythermograph Positions, Station Lists for Biological Collections" (WHOI, July 1965)
139.1 E-9 ANTON BRUUN (Cruise 7) (IIOE)	29.VII.-10.IX. 1964	NW Indian Ocean, Mozambique Channel	37	T, S, O_2, PO_4-P, NO_3-N, NO_2-N	to 5000 Max.-5292	B		D	Surface Core	Plankton--36* Productivity-36*	Wd	T, Transp	Data in pub. reps.: "U.S. Program in Biology, IIOE, News Bulletin No.9, Narrative Report: ANTON BRUUN Cruise 7"

continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data — No. of Stas.	Data	Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
				SiO_3Si, Chl a, C14									(WHOI, January 1965) "U.S. Program in Biology, IIOE, Final Cruise Report ANTON BRUUN Cruises 7, 8, 9 Vol. 1 (of 2)" (WHOI, October 1965)
139.1 E-10 ANTON BRUUN (Cruise 8) (IIOE)	25.IX.-8. XI.1964	NW Indian Ocean, Mozambique Channel	29	T, S, O_2, PO_4-P, NO_3-N, NO_2-N, SiO_3-Si, Chl a, C14	to 3800 Max.-3853	B*		D	Surface	Fishery obs*, Plankton-29*, Productivity-29*	WS	T, Transp	Data in pub. reps.: "U.S. Program in Biology, IIOE News Bulletin No.10, Narrative Rep. ANTON BRUUN Cruise 8" (WHOI, February 1965) "U.S. Prog. in Biol., IIOE, Final Cruise Rep. ANTON BRUUN Cruise 7, 8, 9 Vol.2 (of 2)" (WHOI, October 1965)
139.1 E-11 ANTON BRUUN (Cruise 9) (IIOE)	18.XI.-28. XII.1964	Mozambique Channel, NW Indian Ocean, Arabian Sea, Gulf of Aden, Red Sea				B*			Surface -33*(13 obs of bottom T, S)	Fishery obs*, Plankton-15*		T	Data in pub. rep.: "U.S. Prog. in Biol., IIOE, Final Cruise Rep. ANTON BRUUN Cruise 7, 8, 9 Vol. 2 (of 2)" (WHOI, October 1965)
139.3 U.S. Naval Oceanographic Office													

continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data — No. of Stas.	Serial and Computed Data — Data	Serial and Computed Data — Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
139.3 D-1 SERRANO						Change to: B-597							Add: NODC (BT) 4216
139.3 D-3 SERRANO (IIOE)	7.XI.-23. XII.1961	Gulf of Thailand, Malacca Strait, Burma Sea, Bay of Bengal	79	T, S, σ_t, δ, ΔD, V_s, O_2	25-100 Max.-3417			D			Wd, Bar, Ta, Tw, ?, Cld. Vis		NODC 31545
139.8 Scripps Institution of Oceanography													
139.8 B-7 HORIZON (Zephyrus Exped.) (IIOE)						Add: B*			Add: Heat flow-16				Add: "Preliminary Results of Scripps Institution of Oceanography Investigations in the Indian Ocean during Expeditions Monsoon and Lusiad 1960-1963" (SIO Ref. 64-19, Univ. Calif., San Diego, 1964)

continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data: No.of Stas.	Serial and Computed Data: Data	Serial and Computed Data: Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
139.8 B-11 HORIZON (Lusiad Exped) (IIOE)	29.IX.-23.XII. 1962	NE, NW, & SW Indian Oceans, Laccadive Sea		C^{14}*, Trace elements*		B*			Heat flow--43, Core-67 (field descrip-tion)				Data in pub. rep.: "Preliminary Results of Scripps Institution of Oceanography Investigations in the Indian Ocean during Expeditions Monsoon and Lusiad 1960-1963" (SIO Ref. 64-19, Univ. Calif., San Diego, 1964)
139.8 I-1 ARGO (Monsoon Exped.) (IIOE)				Add: C^{14}*, Trace elements*				Add: Foto-5	Add: Surface* Core--72 (field description), Heat flow-25	Add: Plankton*, Fishery obs*			Add: "Preliminary Results of Scripps Institution of Oceanography Investigations in the Indian Ocean during Expeditions Monsoon and Lusiad 1960-1963" (SIO Ref. 64-19, Univ. Calif., San Diego, 1964)
139.8 I-3 ARGO (Lusiad II Exped.) (IIOE)				Add: C^{14}*, H^{3}*, Ra*		Add: B*			Add: Heat flow	Add: Fishery obs*, Plankton*			Add: "Preliminary ...1960-1963" (SIO Ref. 64.19, Univ. Calif., San Diego, 1964)

continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation: Serial and Computed Data: No.of Stas.	Serial and Computed Data: Data	Serial and Computed Data: Sample Depths	BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	Remarks
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
139.8 I-4 ARGO (Lusiad III Exped.) (IIOE)									Add: Core--67 (field description)				Add: "Preliminary...1960-1963" (SIO Ref. 64-19, Univ. Calif., San Diego, 1964)
139.8 I-5 ARGO (Lusiad V Exped.) (IIOE)									Add: Core--10 (field description)				Add: "Preliminary...1960-1963" (SIO Ref. 64-19, Univ. Calif., San Diego, 1964)
139.8 I-6 ARGO (Lusiad VI Exped.) (IIOE)									Add: Core--9 (field description)				Add: "Preliminary...1960-1963" (SIO Ref. 64-19, Univ. Calif., San Diego, 1964)
139.9 Lamont Geological Observatory													

continued..

Country Institution Catalogue No. Ship	Period	Region	Type of Observation										Remarks
			Serial and Computed Data			BTs	Currents	Bottom Topography	Bottom Sediments	Biological	Meteorological	Surface	
			No. of Stas.	Data	Sample Depths								
1	2	3	4a	4b	4c	5	6	7	8	9	10	11	12
139.9 Lamont Geological Observatory													
139.9 A-9 VEMA (Cruise 20) (IIOE)	16.II.-9. XII.1964	NE, NW, SE, & SW Atlantic; Caribbean Sea; Mozambique Channel; NE, & NW Pacific Bering Sea; Philippine Sea; Ceram Sea; Banda Sea; NE, & NW Indian Oceans				B-190						T	NODC (BT) 6351

ANNEX IV

International Indian Ocean Expedition - Mean Sea Level Data

Association Internationale d'Océanographie Physique

et

Fédération des Services Permanents d'Astronomie, de Géophysique et de Géodésie

Permanent Service for Mean Sea Level

The Observatory
Birkenhead
Cheshire
England

Station	Latest year for which data has been received	Remarks
Simons Bay	1964	
Hermanus	1964	
Mossell Bay	1964	
Knysna	1964	
East London) Durban)		Local authority not yet commenced reduction of records.
Lourenco Marques	1965	
Beira		Gauge destroyed by storm; to be replaced.
Mozambique Island	1964	
Comoro Island		Not installed; gauges at Nosy-be and Mtwara sufficient.
Nosy-Be	1963	
Port Victoria- Mahe Island	1963	
Grand Port	1960	Gauge damaged by hurricane; not replaced.
Port Louis	1963	
Roderigues		Gauge to be installed 1964
Diego Garcia	1964	

continued..

Addu Atoll	1963	
Minicoy Island		Gauge to be installed 1963.(?)
Mtwara	1962	Gauge being repaired during 1963.
Dar-es-Salaam	1964	All data unreliable.
Tanga	1964	
Kilindini	1966	
Guiba River Entrance		To be installed.(?)
Chisimaio	1963	
Mogadiscio		To be installed.(?)
Eilat	1964	
Aden	1965	
Mukalla		Gauge not installed; gauge at Masirah sufficient.
Salala		Gauge not installed; gauge at Masirah sufficient.
Masirah	1962	Gauge silted up.
Gwadar		Gauge to be installed.(?)
Karachi	1962	
India	1961	11 stations in operation. 25 stations to be established.(?)
Chittagong (Sadarghat)	1961	
Chittagong (Patenga)	1960	
Chittagong (Juldia)	1962	
Chittagong (T.M. Comp.)	1962	
St. Martins Island		To be installed.(?)
Colombo	1957	

continued..

Galle) Trincomalee) Jaffna)		To be installed.(?)
Rangoon	1960	
Moulmein	1961	
Amherst	1961	
Port Blair	1961	
Tjalang) Padang) Benkoelen) Genteng) Tjilaljap) Benoa)		To be installed.(?)
Cocos Island	1964	
Christmas Island	1964	
Albany	1964	
Bunbury	1964	
Fremantle	1964	
Geraldtown	1964	
Port Hedland	1964	

Dr. J. R. Rossiter.
5 April 1966

ANNEX V

SUMMARY OF IIOE CRUISE REPORTS

(Corrections and Additions to Annex VII of IIOE Inf. Pap. No. 16)

COUNTRY/Ship	Period	ser	sur	BT	cur	IOS	zoo	mid	pig	pr.p	bac	syn wx	upp air	exp fish	Remarks for Correction/Addition
JAPAN															underlined
Kagoshima-Maru	8/11/60-16/2/6		/3h	40	M							/3h		L-9	period was missing
	12/7-1/9/61		/4h	19	M							/4h		L-12	
	5/7-29/7/62		/3h	20	M							/3h		L-14	
Keiten-Maru	22/5-14/8/61	29	/4h	29											correction to date
	10/5-5/8/62	28	/4h	28											correction to date
	5/5-5/8/63	20	/4h	20											correction to date
Koyo-Maru	24/10/62-18/2/63	35	/1h			25	V_1 - 25 Q - 24 V_2 - 22 U - 25	19	23	23			RS-33 PB-28		
	25/10/63-18/2/64					33			13	16	S-1		RS-29 PB-28		
Oshoro-Maru	17/11/62-12/2/63			54											
	11/11/63-9/2/64	31		49					12	12					